Advanced Seminar on Principle–Based Capital
September 23, 2009

Session 5: Implications of Principle-Based Capital

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Advanced PBA Capital Seminar

Implications of Principle-based Capital

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Agenda

- Implications of the new principle-based regulation (PBR)
- State of the Industry
Implications of PBR on Products

- Assessing, measuring and managing the risks in products using stochastic modeling will be the major change in product development and pricing.
- Companies that price using a “deterministic” pricing model will need to educate pricing staff on stochastic approaches.
- Substantially more discussion with the Valuation Actuary will be needed.
- Need to determine approach to calculate expected principle-based reserve levels for pricing.
- Need to increase modeling capabilities/sophistication and size of actuarial staff.
- Incorporating hedging into pricing implies using stochastic-on-stochastic scenarios.

- Impact on the level of capital and reserves by product and in aggregate is not known yet...

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**IMPLICATIONS OF THE NEW PBR**

**... but of course, we have some ideas as to which direction PB capital could go**

<table>
<thead>
<tr>
<th>Product</th>
<th>Expected Trend for PB Capital (vs RBC)</th>
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<tbody>
<tr>
<td>Term</td>
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<tr>
<td>Accumulation Universal Life</td>
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<td>Secondary Guarantee Universal Life</td>
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<td>Whole Life</td>
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<td>Variable Universal Life</td>
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<td>Fixed Annuity</td>
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<td>Variable Annuity</td>
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<td>Group Life</td>
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<td>Group Health</td>
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Implications on Pricing Function

- We expect to see a flurry of product development activities
- Leading-edge companies are using their knowledge of the new regulation by introducing features that mitigate tail risk
- Since principle-based capital applies to all in-force products, we may see some repricing activity
- May see an increase in the frequency of experience studies to develop better dynamic assumptions
- Increased use of stochastic pricing
  - Run without, then with capital included
  - More granular analysis required
  - Companies will need to project future income statements and balance sheets
- Required capital is based on tail risk
  - Rating agency capital models are starting to incorporate the new principle-based methodology
  - Implementing hedging programs can help alleviate increases in RBC requirements

Illustrative Case Study:  
Hedging can reduce RBC requirements, but may increase reserves

Key points
- Hedging reduces capital but may increase reserves at time 0; TAR is lower with hedging
- Capital reduces over time for both, eventually going to 0 due to reduced in-the-moneyness of living benefit and overall fee revenue
Implications on risk and capital management

- Implementing PBR has enabled companies to better understand and implement Economic Capital (EC)
  - EC has become a key metric for quantifying risk within ERM
- Increased scrutiny of regulators and rating agencies
  - All major U.S. rating agencies are currently developing or enhancing their capital adequacy models
  - Analysis of PB capital implementation as part of ERM/EC assessment
- Focus on efficient use of capital
  - Leveraging regulatory work into better EC models
  - Implementation of EC via stress testing or full stochastic model
- Greater focus on risk management and managing financial volatility
  - More volatility expected in statutory capital/reserves
  - Increased use of captives
  - Risk mitigation requires understanding of tail risk
- Better integration of functions
  - All areas need to work closer together

Two approaches have emerged as the most common ways to define EC

- A real-world liability runoff approach
  - The level of total initial assets, less some measure of reserves for liabilities, required to pay all future policyholder benefits at the chosen confidence level
- A one-year mark-to-market approach
  - The level of assets, in addition to the market value of liabilities, needed to cover a fall in the market value of net assets over a one-year time horizon at the chosen confidence level
- In deciding on which approach to use, insurers need to consider a number of factors:
  - Objectives and intended applications of EC framework
  - Constraints (in implementation and ongoing)
  - Nature of the business and underlying risks

US PBR approach is more in line with the real-world runoff approach
Implications on Competitiveness

- Before PBR, all companies experienced very similar drag on results due to redundant asset requirement
- Companies that found lower cost financing alternatives greatly improved price
  - The securitization market has pretty much dried up, though
- Increasing underwriting exceptions to place more cases to make sales in year X can destroy profitability in year X+2
- Emerging experience increases the pressure to unlock an assumption
  - PBR requires margins

Greater cost of being wrong

Implications on volatility of statutory gains/losses

- No DAC to cushion the blow of a change in assumption
- All changes flow through dollar for dollar to equity since tax offset very unlikely
  - Not aware of smoothing/transition rules as with C-3 Phase II
  - PV of an assumption change can be more than 10x a year’s expected profit
- Statutory income will get a higher level of scrutiny than ever before
- Companies are increasingly looking to captive reinsurance arrangements to reduce on-shore volatility
- Greater scrutiny on modeling risks
  - Use of internal models places onus on the Valuation Actuary
**Implications on dynamic behavior**

- Surrenders now important to statutory reserve calculations
- For lapse supported products, reserves will be very sensitive to persistency assumptions and even more so to their slope and to shock lapses
  - Again, consider the “cost” of being wrong on a block’s profitability
- Consider the end of the level term period
  - No longer necessarily zero reserve at end
  - Anti-selection can easily require a reserve
  - Zero lapses not necessarily conservative

**Implications on organizational resources**

- Greater freedom = greater responsibility
- Need significant hardware / software investments
- Increased cost of financial reporting
- Shortage of modeling actuaries (industry-wide)
- Need more education / training (understanding the tail)
  - Most companies do have a proper understanding of their risk appetite / risk tolerances
  - Link in with hedging results (if using a CDHS)
CFOs strongly believe that the new principles-based regulation will dramatically change the competitive landscape for life insurers in a variety of ways.

### Anticipated Changes to Competitive Landscape

- Will create greater need to develop hedging programs: 90%
- Will lead to new ways to manipulate the system due to flexibility allowed in setting it up: 82%
- Will lead to lack of comparability of results across companies: 81%
- Will significantly reduce reserve redundancies for term and UL secondary guarantee products: 70%

Source: Towers Perrin CFO Survey

### Impact of New Principles-Based Regulations on Existing Risk Management Framework

- Greater need for modeling resources/capacity: 83%
- Greater need for education: 61%
- Greater need for establishing or expanding use of an EC metric: 57%
- Greater need for establishing or expanding use of an ERM framework: 52%
- Greater need for expanding software/hardware: 52%

Source: Towers Perrin CFO Survey
Most CFOs expect the new regulatory framework to increase demands on their companies in six key areas, including the need for external advisors.

**Impact of New Regulatory Framework on Company**

- **Amount of year-end work:**
  - Significant increase: 38%
  - Moderate increase: 62%
- **Software and hardware requirements:**
  - Significant increase: 29%
  - Moderate increase: 71%
- **Cost of financial reporting:**
  - Significant increase: 3%
  - Moderate increase: 91%
- **Staffing requirements:**
  - Significant increase: 9%
  - Moderate increase: 86%
- **Need for external advisors:**
  - Significant increase: 29%
  - Moderate increase: 52%
- **Strategic management of reserves and capital:**
  - Significant increase: 10%
  - Moderate increase: 60%
- **Risk-based capital requirements:**
  - Significant increase: 41%
- **Earnings volatility/tail risk:**
  - Significant increase: 33%

Source: Towers Perrin CFO Survey

CFOs overwhelmingly believe the new PBR will create a need for more resources, increase expenses and increase complexity in dealing with regulators.

**Anticipated Changes to Company’s Approach to Dealing with Regulators**

- Will create greater need for company resources: 100%
- Will increase expense levels for the company: 100%
- Will create more complex regulation for us to deal with: 91%
- Will create significant challenges for our external communications: 73%
- Will allow regulators to gain a better understanding of what our company is doing: 50%

Source: Towers Perrin CFO Survey
To ensure implementation success, companies will need to commit significant resources to modeling, establish rigorous assumption setting and improve modeling hardware/software.

### Requirements for Successful Implementation

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<th>Requirement</th>
<th>Percentage</th>
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<tr>
<td>Commit significant resources to implement modeling processes</td>
<td>52%</td>
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<tr>
<td>Establish policies to ensure valid, defined procedures for setting assumptions</td>
<td>52%</td>
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<tr>
<td>Improve hardware/software modeling capabilities</td>
<td>44%</td>
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<td>Develop new reports to communicate/explain results to management</td>
<td>30%</td>
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<tr>
<td>Establish process for determining what margins are appropriate for each risk</td>
<td>26%</td>
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<tr>
<td>Improve experience monitoring and gathering processes</td>
<td>22%</td>
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<tr>
<td>Establish better dialogue with regulators and/or rating agencies</td>
<td>17%</td>
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</tbody>
</table>

Source: Towers Perrin CFO Survey

### Progress in Preparing for New Regulations

- **Currently in a “wait and see” mode**: 25%
- **Just started to analyze**: 46%
- **Setting up committees**: 17%
- **Planning is well underway**: 8%
- **Largely implemented**: 4%

Source: Towers Perrin CFO Survey
Conclusions

- The status quo is not going to work for companies as they adapt to principle-based regulation
- Preparing for and analyzing the potential impact of this new regulation should be a major priority for life insurers
- Implementation of the proposed principle-based framework is a landmark undertaking that will lead to further bifurcation in the industry
  - Larger, more sophisticated companies will be better able to capitalize on the new rules through new products and risk management techniques
  - May need replicating portfolios to project future balance sheets
- Leading-edge companies are already seizing opportunity to forge ahead (e.g., on VA)
  - Innovative products with lower tail risk
  - Lower cost of capital and reserves
  - More competitive pricing/lower cost to consumers

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