Principle-Based Reserving Educational Session

American Academy of Actuaries

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Agenda for this Session

- Overview on the Academy's Role
  - Including qualification of the actuary
- Primer on Principle-Based Reserves
  - Including experience studies
- How PBR Compares to International Solvency Approaches

American Academy of Actuaries

Mission: The Academy's mission is to serve the public on behalf of the United States actuarial profession.

- Independent and objective actuarial analysis
- Identifies and addresses issues where actuarial science provides a unique understanding
- Provides high professional standards of actuarial qualification, practice, and conduct

Life Practice Council (LPC)

- Principle-Based Reserve Work Groups
- Other LPC Groups supporting PBR
- Risk-Based Capital Work Groups

PBR = Principle-based reserves
PBA = Principle-based approaches, which can apply to both PBR and principle-based RBC

Future Focus of LPC

- Continued Development
- Education
- Implementation
- Practice Issues

Why is the Actuary Qualified to do PBR?

- Education
  - Basic and Continuing
- Experience
- Professional Standards
  - Code of Professional Conduct

Credentials for Life and Health Actuaries
ASA = Associate, Society of Actuaries
FSA = Fellow, Society of Actuaries
CERA = Chartered Enterprise Risk Analyst
MAAA = Member, American Academy of Actuaries

Code of Professional Conduct

- Actuaries are required to comply with the Code
  - Professional Integrity
  - Qualification Standards
  - Actuarial Standards of Practice (ASOPs)
- Actuaries who breach code are subject to discipline

Independent Entities Involved in Professional Standards

- Actuarial Standards Board (ASB)
  - Promulgates standards of practice (ASOPs) for the US profession
- Actuarial Board for Counseling and Discipline (ABCD)
  - Serves the five US-based actuarial organizations
  - Provides guidance to actuaries
  - Responds to possible violations of the Code of Professional Conduct

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Definition of Principle-based Reserve

1. Captures the material risks, benefits, and guarantees associated with the contracts.
2. Utilizes risk analysis and risk management techniques to quantify the risks; this may include stochastic models
3. Allows the use of company experience to establish assumptions for risks over which the company has some degree of control or influence

Evolution of Principle-based approaches

- Asset Adequacy Testing
- Equity Indexed Annuity Regulation
- RBC C-3 Phase I
- RBC C-3 Phase II
- Actuarial Guideline VACARVM
- Proposed Valuation Manual
- Proposed RBC C-3 Phase III

Basic Framework for PBR Calculation

The reserve is the greater of:

- A **deterministic calculation** assuming a single economic scenario.
- A **stochastically derived amount** using multiple economic scenarios.

Deterministic Amount

- Serves as a floor for the stochastic amount
- Is not designed to capture all risks
- Exact form of the calculation will differ by product. For example, for life product reserves, the deterministic amount is defined using a gross premium valuation method

Stochastic Amount

- Closer to a "true" Principle-based reserve, since it more adequately captures all risks.
- Multiple economic scenarios are used to capture "tail risk" (risks that have high impact, but low probability)
- The amounts calculated for each economic scenario are ranked from highest to lowest, and the reserve is determined by taking the average of the highest amounts above a prescribed level, such as 70% (i.e., the average of the highest 30%)

PBR Requires a Sophisticated Cash Flow Model

- Cash flow model is needed to project all cash flows arising from the contracts and related assets.
- Expect most companies to use their cash flow testing model
- Cash flow model is used to determine:
  - Liability cash flows (death benefits, surrender benefits, expenses, etc.)
  - Asset cash flows (investment income, asset maturities, asset defaults, etc.)

Valuation Assumptions

Under PBR, valuation assumptions will fall into one of three categories:

- Prescribed Assumptions
- Stochastically Modeled Assumptions
- Prudent Estimate Assumptions

Prescribed Assumptions

- **Prescribed assumptions** are deterministic assumptions used for risks where the company has very little or no influence or control over the outcome
- For these types of risks, all companies will be required to use the same assumptions
- Expect their use to be limited

Stochastically Modeled Assumptions

- **Stochastically modeled assumptions** are used for risks that can be properly modeled through a stochastic process.
- Currently, only interest rate movements and equity returns are required to be modeled stochastically.
- Is a subset of prescribed assumptions, since the company must:
  - Use prescribed pre-packaged scenarios, or
  - Satisfy prescribed calibration criteria if the company uses their own scenario generator

Prudent Estimate Assumptions

- **Prudent estimate assumptions** are used where the company has some degree of influence on the outcome of the risk factor
- Equals the actuary's best estimate of the future, (i.e., "anticipated experience") plus a margin that includes a provision for adverse deviation and estimation error
- Must be reviewed periodically and updated as appropriate

Assumption Margins

- Reflects the degree of uncertainty in the anticipated experience assumption
- Provides an element of conservatism
- Regulators are concerned about:
  - the degree of discretion given the actuary to establish margins
  - Whether margins are determined separately for each risk factor, or determined in the aggregate
  - What to do if there is a lack of credible experience data

Major Challenges

- Additional resources (staff and tools) for both companies and regulators
- Balancing the desire for simplicity with the need to properly capture the underlying risks
- Auditability of reserve calculations for regulators
- Determining appropriate assumption margins
- Impact on taxes (tax deductibility & 7702 issues)

Experience Reporting

- Under PBR, companies will be required to submit their own company experience (mortality, lapse, expenses, etc.)
- Current framework relies on companies to voluntarily submit data
- May have exemptions for small companies

Uses of Data

- Regulators: To review the reasonability of company-specific assumptions
- Companies: To assist in developing valuation assumptions when the company has little or no credible and/or reliable experience data.

Roles

- Statistical agent
- SOA
- NAIC
- State Regulators

Role of Statistical Agent

- Database expertise
- Interacts with Company
- Scrubs Data
  - Ensures entity that compiles data receives high quality / useable data
- This compiler could be:
  - One of the Statistical Agents
  - Maybe the NAIC

Role of SOA

- Actuarial Expertise
- Performs industry studies
- Industry studies are important for setting PBR assumptions

Proposed Role of NAIC / State Regulators

- Need to set up experience reporting structure
- Set up process for selecting statistical agents
- Determine data format (i.e., statistical plan)
- Oversee statistical agents
- Determine additional PBR-related needs

Uniformity

- Plan is to have all 50 states require submission in the same format.
- Discussions continuing with all parties to make uniformity in data reporting happen.

Confidentiality

- Access Rights being discussed
- Only regulators and their designated agents will have access to individual policy records.
- Only regulators and their designated agents will have access to company-level data.
- Public will have access to aggregate industry report.

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Similarity of U.S. PBR and International Solvency Frameworks

- Report true risk
- Blend of company and market experience
- Auditable and verifiable
- Uniformity
- Establishment of control levels
- Practical Options
- Objective to disclose margins in assumptions

Common Elements of U.S. PBR/PBA & Solvency II Frameworks

- Reserves are sum of a central estimate and a margin
- Capital is for extreme events
- Capital requirement meant to reflect actual risk position and the management of the company

Differences between U.S. PBR/PBA & Solvency II Frameworks

- Scope
  - U.S. framework is more product & risk specific
  - Life PBR will apply only to new business
- Measurement
  - Solvency II – favors using one-year horizon, "market-consistent" approach
  - U.S. PBA – CTE and Greatest Present Value of Accumulated Deficiency over the life of the business

Raising the "Bar"

- Moving forward with U.S. PBA will help actuaries further develop their "skills"
  - For example, modeling, developing assumptions, reporting, and reviewing results
  - Better understanding of process and product risks
- These "skills" can be used in different accounting and solvency regimes
  - "current" – U.S. PBA, circa 2012
  - "new" – such as PBA/Solvency II hybrid, circa 2016