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Principle-Based Reserves

Actuaries Club of the Southwest

November 16th, 2017



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Principle-Based Reserves Agenda

- PBR: What is it?
- Implementation Considerations
- Industry News
- Breadth of Organizational Impact
- Forecasting Impact
- Industry Issues

Minimum Reserve Under PBR

Determined by comparing reserves computed under 3 bases
Could Hold $\text{Max}[\text{NPR}, \text{DR} + \text{DPA}, \text{SR} + \text{DPA}]$

Net Premium Reserve (NPR)

- Minimum reserve
- Prescribed assumptions
- Seriatim
- Cash value floor

Deterministic Reserve (DR)

- Calculate if fail deterministic or stochastic exclusion tests or Universal Life with Secondary Guarantees (ULSG) or employ clearly defined hedging strategy
- Gross premium reserve
- Mix of best estimate and prescribed assumptions
- Determined in aggregate under single scenario
- Discount rate = path of net asset earned rates for model segment

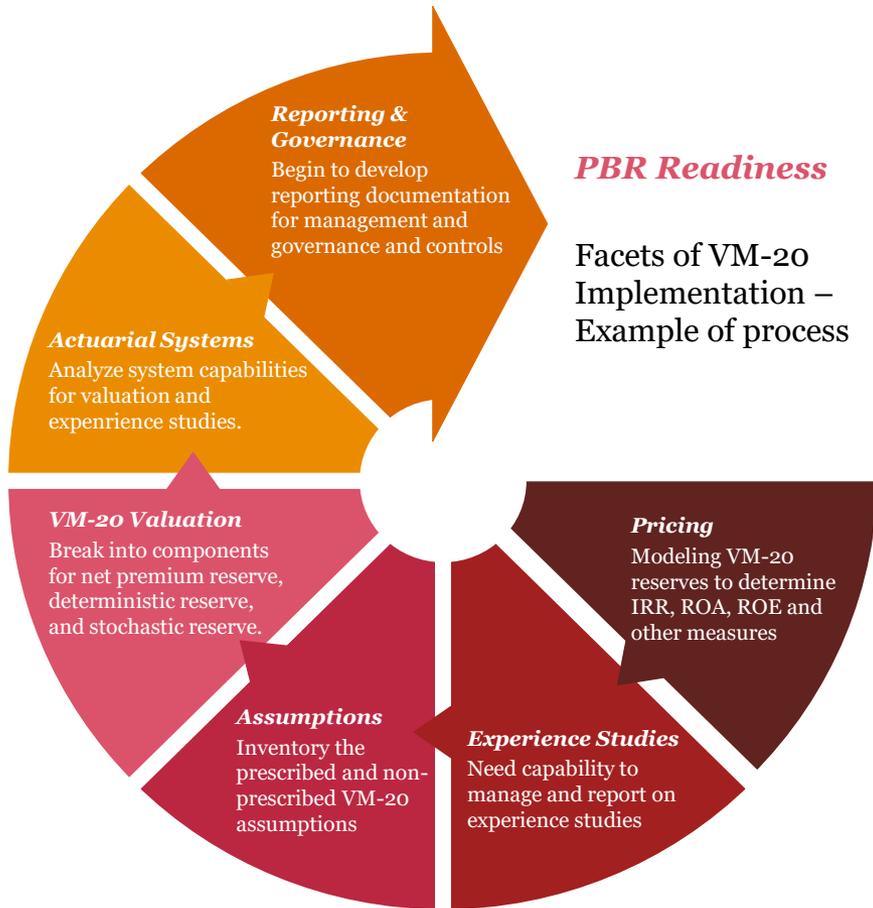
Stochastic Reserve (SR)

- Calculate if fail stochastic exclusion test or employ clearly defined hedging strategy
- Greatest present value of accumulated deficiency
- Mix of best estimate and prescribed assumptions, including dynamic policyholder behavior
- Determined in aggregate, multiple scenarios
- Discount rate is prescribed = 105% of 1-year Treasury rate
- Equals average of highest 30% of resulting reserves (CTE 70)

DPA = Due & Deferred Premium Asset

VM-20 Implementation

PBR readiness involves up-front planning



Sample reporting timeline



PBR Governance

The Valuation Manual enumerates Board responsibilities under PBR

Board Responsibilities	Information that will be provided by Management
<ul style="list-style-type: none"> • Understand the process undertaken by management including infrastructure put in place to implement and oversee principle-based reserving process. This includes policies, procedures, controls, model validation and adequacy and experience of resources. • Review the results of testing controls including the process of correcting any material weaknesses identified and their impact on the reserves process. • Evaluate the information provided by management to determine what additional information is necessary to rely on the principle-based reserve valuation function. • Document the Board’s review and actions undertaken in the Board minutes. • The degree of oversight should be commensurate with the materiality of the PBR reserves 	<ul style="list-style-type: none"> • The Appointed Actuary will present a report on the PBR reserves annually to the Board. The report will identify the critical risk elements related to the assumptions, methods and models. • The PBR report will summarize the general level of conservatism in the reserves and the materiality of the PBR reserves in relationship to the total reserves of the company. • Internal audit will provide an annual certification on the effectiveness of internal controls. The controls will ensure that all material risks in the liabilities and associated assets are included in the valuation and that the calculation satisfies the requirements of the Valuation Manual.

Principle-Based Reserving (PBR)

Industry News

- Term, IUL, and ULSG repricing efforts ongoing:
 - Number of companies have converted to PBR for 2017 issues
 - Benefits mostly driven by optimized profit signatures and capital positioning
 - AG48 continues to be an effective solution for PBR “Light” implementation
- LATF still considering changes to PBR manual given implementation issues
 - IUL crediting rates given equity scenarios
 - Reinsurance implementation of PBR
 - Simplified issue mortality under PBR

Challenges in Implementing PBR

Technical requirements

Companies face many technical issues in implementing PBR including:

- Scoping – performance of deterministic and stochastic exclusion tests
- Assumption setting – based on own company or industry experience, or prescribed amounts
- Margin setting – for each of the major assumptions based, in part, on sensitivity testing
- Scenario generation – for asset and liability modeling
- Asset modeling – including current portfolio and reinvestments
- Liability modeling – of dynamic policyholder behavior
- Grouping – of experience and model cash flows

Challenges in Implementing PBR

Company functions impacted

Company actuaries are not the only resources impacted by PBR:

- Financial reporting – additional reporting and disclosures
- Investments – modeling assets and strategies
- Information technology – access to data and computing power
- Risk management – assumption governance and model validation
- Executive management – oversight and Board communications

It is necessary to communicate with and engage many stakeholders in order to effectively implement PBR

Challenges in Implementing PBR

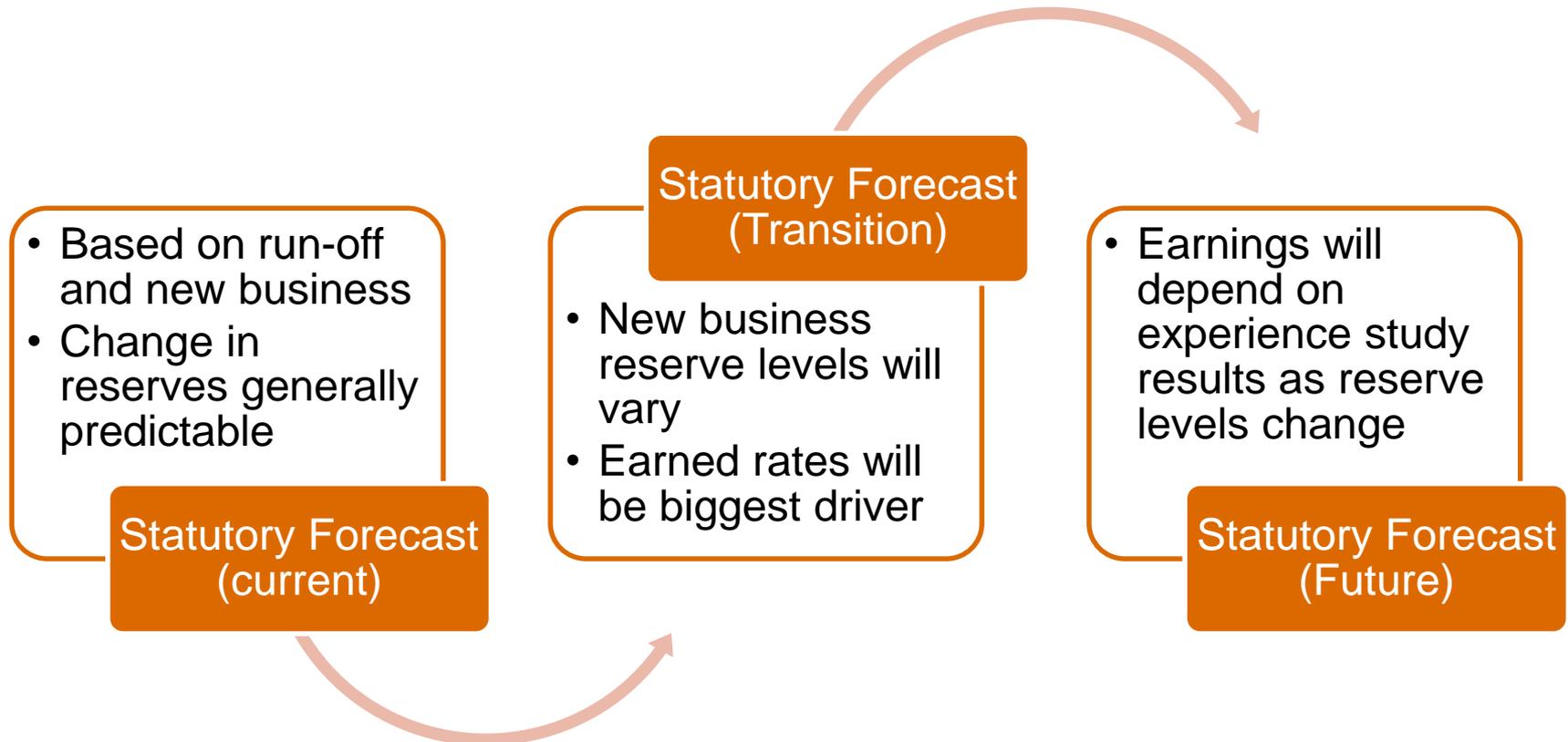
Management information

Financial planning and analysis will be very different under PBR:

- Statutory profit signatures under PBR will be different
- Potential for more volatility in statutory earnings (and capital)
- Company business plan projections may have to incorporate stochastic processes
- Key performance indicators and attribution analyses will be very different under PBR
- Senior management and the Board are likely to need additional instruction on changes in potential profit emergence, increased volatility and range of expected outcomes

RBC Considerations

Contribution from earnings will be less predictable driven by reserve changes



Modelling Considerations for Implementation

Common issues for PBR implementers

1. Product combinations under PBR and how this fits within a company's investment accounting framework
2. Companies are still evaluating what experience to use for their simplified underwriting mortality experience
3. Companies struggling with modeling reinsurance contracts under existing PBR regulation
4. Strategic decisions have focused on tax reserve levels and potential product grouping
5. Forecasting of deterministic and stochastic reserves is proving more challenging than expected

Modelling Considerations for Implementation

Common issues for PBR implementers

6. Governance needs to be modified to include PBR assumptions, models, and results
7. Modifying experience reporting functions to include VM-50 reporting requirements
8. Limitations of current valuation, modeling, and administrative system
9. Margin setting (and evaluation of the conservatism of total margins) has been a focus of many clients as management approaches PBR
10. Indexed products and how to capture dynamic hedging prospectively

Modelling Considerations for Implementation

Common issues for PBR implementers

11. Group insurance treatment and modeling considerations
12. Riders and whether they need to be modeled separately or jointly with base policy
13. Tax reserves as well as non-forfeiture requirements with 2017 CSO

Thank you

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