Principle-Based Reserves
Discussion

May 13, 2019

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Agenda

- **PBR Audit and Observations**

- **Regulatory Discussion**
  - Revisions to VM
  - CA DOI and NY DFS

- **Implementation Issues and Discussion**

- **Q&A**

PBR Audit and Observations

Potential PBR Audit Procedures

Consider for each of NPR, Deterministic, Stochastic

Planning

- Process walkthrough
- Understanding of process

Calculations/ Methodology

- Assess Grouping
- Select sample of calculations/algorithms to be tested
- Test liability/asset calculations/projections for sample policies/assets
- Reasonability test cash-flows (in aggregate)
- Test discount rate calculations
- Test calculation of aggregate reserve
- Test final reserve comparison

Assumptions

- Inventory asset and liability assumptions
- Validate prescribed assumptions (asset default, spread, mortality, etc.)
- Assess both the reasonableness of assumption/margins and the consistency with VM-20
- Test assumptions inputs in valuation system/projection system
- Test data underlying company experience studies and support
- Mortality assumption calculation

Other Inputs

- Test scenario inputs
- Test valuation rates
- Inforce data (asset and liability)

Reserve Movements

- Reserve attribution
- Reserve trending (NPR/1000)

Common Observations

- **Mortality Assumption**

  o Not grading to 100% of the industry table by the later of attained age 100 or 15 years after underwriting

  o The use of alternative credibility formulas for Limited Fluctuation

  o For credibility, seeing a 50/50 split between Limited Fluctuation and Bühlmann credibility

- **ULSG NPR**

  o Confusion around lapse assumption (whether should change or be static)

  o Not including surrender benefits in the VNPR calculation

  o Not including lapses in the actuarial present value calculations

- **Assumptions**

  o Difficulty in setting a margin for premium persistency for ULSG

  o Not increasing expense assumption for inflation in modelled reserve calculation

  o Margins must be defined separately for each risk factor regardless of correlation between risk factors

Common Observations (contd)

- **Modeling of Reinsurance**

  - YRT rates are usually not guaranteed, therefore, consideration has to be made to comply with Section 8.C.7 around counterparties being knowledgeable and exercising the options within the contracts

  - Consideration of a margin on YRT rates

  - Consequently, direct writers will likely ask reinsurers for contractually guaranteed periods for YRT rates

  - Consideration of assumption margins for both gross and net of reinsurance as margins set on one may not increase reserves for the other

- **Documentation**

  - Not enough support/rationale for margins

  - Not enough support/rationale for not modelling riders in the modeled reserve and other approximations

  - Not enough support/rationale for using alternative to the UCS tool (will be named Relative Risk Tool (RRT) in 2019 manual)

Regulatory Discussion

Notable LATF Adoptions – For 2020 Manual

- Mortality - The grading criteria from company experience table to industry table is more granular (smaller ranges of credibility %'s) for 1/1/2020 valuation with option to use for 1/1/2019

- ULSG NPR

    o If multiple secondary guarantees, must look at the one producing the largest NPR versus just the longest guarantee.

    o Dynamic lapse formula is calculated at valuation date and constant for all durations

- ULSG lapses for modeled reserves – now reference the 2015 CIA term-100 study versus the 2007 study

- GI mortality table adoption - 2017 GI table with 75% loading

- Clarification that margin adjustments for less than 100% correlation can not be based on implicit or prescribed margins

- MANY non-substantive clarifications and reference edits driven by CA DOI

Notable Regulators

- CA DOI

  o Many companies received a lengthy letter with questions from the CA DOI

  o Questions included

    ◦ Description of governance process (e.g. board minutes, assumption approvals, model controls, etc)

    ◦ Mortality experience, Underwriting, specific files calculating credibility

    ◦ More support and rationale for all other assumptions and margins as well

    ◦ Model validation, model documentation, and model training

- NY DFS

  o VM passed in House and Senate; awaiting governor approval

  o DFS is allowed to deviate from VM for up to 10 years

PBR Implementation Issues and Discussion

Common issues for PBR Implementers

1. Product aggregation under PBR and how this fits within a company's risk management framework

2. Companies are still evaluating what experience to use for their simplified underwriting mortality experience

3. Companies struggling with modelling reinsurance contracts under existing PBR regulation

4. Forecasting of deterministic and stochastic reserves is proving more challenging than expected

5. Riders and whether they need to be modeled separately or jointly with base policy

Common issues for PBR Implementers (cont'd)

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, modelling, and administrative systems

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 whether to capture dynamic hedging prospectively

Q&A