

2020 **VALUATION
ACTUARY**
VIRTUAL SYMPOSIUM

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Asset Modeling Best Practices in the Current Environment

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SOCIETY OF ACTUARIES

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Session Overview

Asset cash flow modeling and asset assumptions are growing in importance with **PBR** especially considering the **low interest rate environment**. The Academy's Life Practice Council and Life Valuation Committee have formed a Low Interest Rate Asset Adequacy Testing Task Force which has conducted an **industry survey to raise awareness and summarize the actuarial best practices** for financial reporting actuaries practicing in today's very low interest rate environment. As the scrutiny on the asset side ratchets up, actuaries must consider how best to develop the asset assumptions as well as model the reinvestment and disinvestment strategies. Coherent assumptions and modeling practices across modeling exercises are expected while respecting the purpose of each calculation.

Panelists

Marc Altschull

*Senior Consulting Actuary & Life Practice Leader
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Dan Finn

*Managing Director
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Polysystems*

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LW Consulting Group*

Question 1: Mean Reversion for Stochastic Interest Rate Generator

Does your stochastic interest rate generator utilize mean reversion?

- a) Yes
- b) No
- c) Don't know

Question 2: Mean Reversion for Stochastic Interest Rate Generator

Do you plan to change your mean reversion targets in 2020?

- a) Yes
- b) No
- c) Don't know
- d) *My stochastic interest rate generator doesn't utilize mean reversion*

Question 3: Mean Reversion for Stochastic Interest Rate Generator

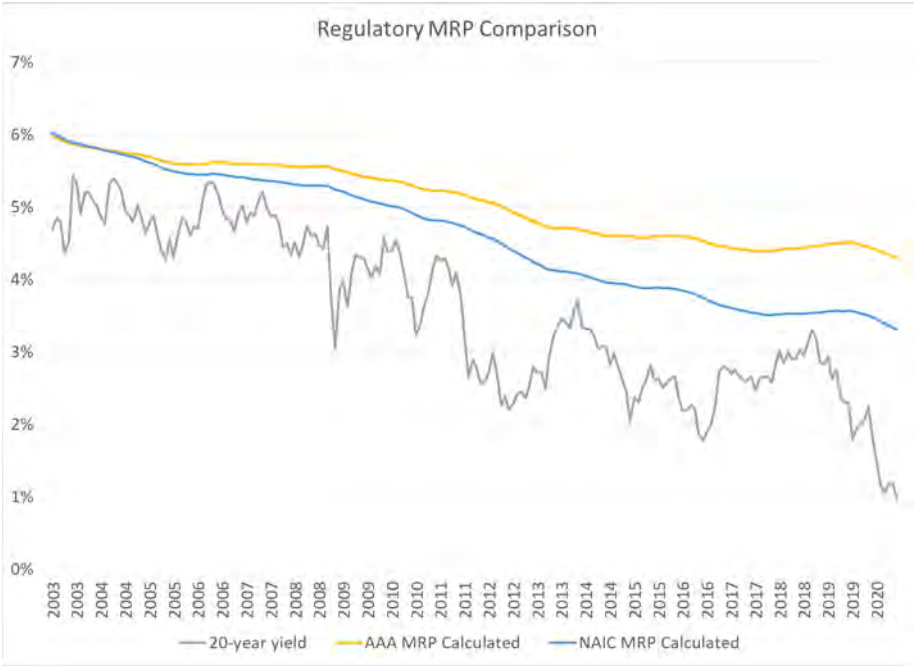
What magnitude of change do you expect to make at the 10-year point (or other long rate tenor, if applicable)?

- a) < -2.00%
- b) -2.00% to -1.01%
- c) -1.00% to -0.51%
- d) -0.50% to -0.01%
- e) 0.01% to 0.50%
- f) 0.51% to 1.00%
- g) 1.01% to 2.00%
- h) > 2.00%
- i) Don't know
- j) *My stochastic interest rate generator doesn't utilize mean reversion or you don't plan to change your mean reversion targets in 2020*

Discussion: Mean Reversion for Stochastic Interest Rate Generator

- Implications of mean reversion for stochastic interest rate generators
- Considerations for utilizing mean reversion in stochastic interest rate generators
- Considerations for changing the mean reversion targets for 2020
- Available guidance for mean reversion assumption

Comparison of Mean Reversion Parameter Progressions



Question 4: Reinvestments in the Current Environment

Do you plan to make changes to the reinvestment asset mix in your 2020 Asset Adequacy Testing models due to the current environment? (select all that apply)

	Increase	Decrease
Investment grade bond allocation	A	B
High yield bond allocation	C	D
Mortgage loan allocation	E	F
Structured security allocation	G	H
Equity allocation	I	J
Other invested allocation	K	L
Asset duration	M	N
No changes	O	
Don't know	P	

Discussion: Reinvestments in the Current Environment

- Considerations for increasing and decreasing specific asset classes
 - Investment grade bonds
 - High yield bonds
 - Mortgage loans
 - Structured securities
 - Equities
- Considerations for changing the asset duration
- Available guidance for reinvestment asset mix assumption

Question 5: Sensitivity Testing for 2020 Asset Adequacy Testing

Will your 2020 Asset Adequacy Testing include more sensitivity tests than were performed for your 2019 Asset Adequacy Testing? (select all for which you intend to expand your sensitivity testing)

- a) Premium persistency
- b) Mortality
- c) Morbidity
- d) Lapses
- e) Renewal expenses
- f) Inflation
- g) Spreads
- h) Defaults
- i) Option/rider election rates
- j) No expansion of sensitivity testing intended for 2020
- k) Don't know

Discussion: Sensitivity Testing for 2020 Asset Adequacy Testing

- Considerations for sensitivity testing of:
 - Premium persistency
 - Mortality
 - Morbidity
 - Lapses
 - Renewal expenses
 - Inflation
 - Spreads
 - Defaults
 - Option/rider election rates
- Considerations for determining adequate amount of sensitivity testing
- Available guidance for sensitivity testing

Question 6: PBR Scenario Reduction

Are you planning to use a reduced number of scenarios (i.e., less than 10,000) for your 2020 principle-based valuation of stochastic reserves?

- a) Yes
- b) No
- c) Not required - PBR exemption
- d) Not required - pass the stochastic exclusion test
- e) Don't know

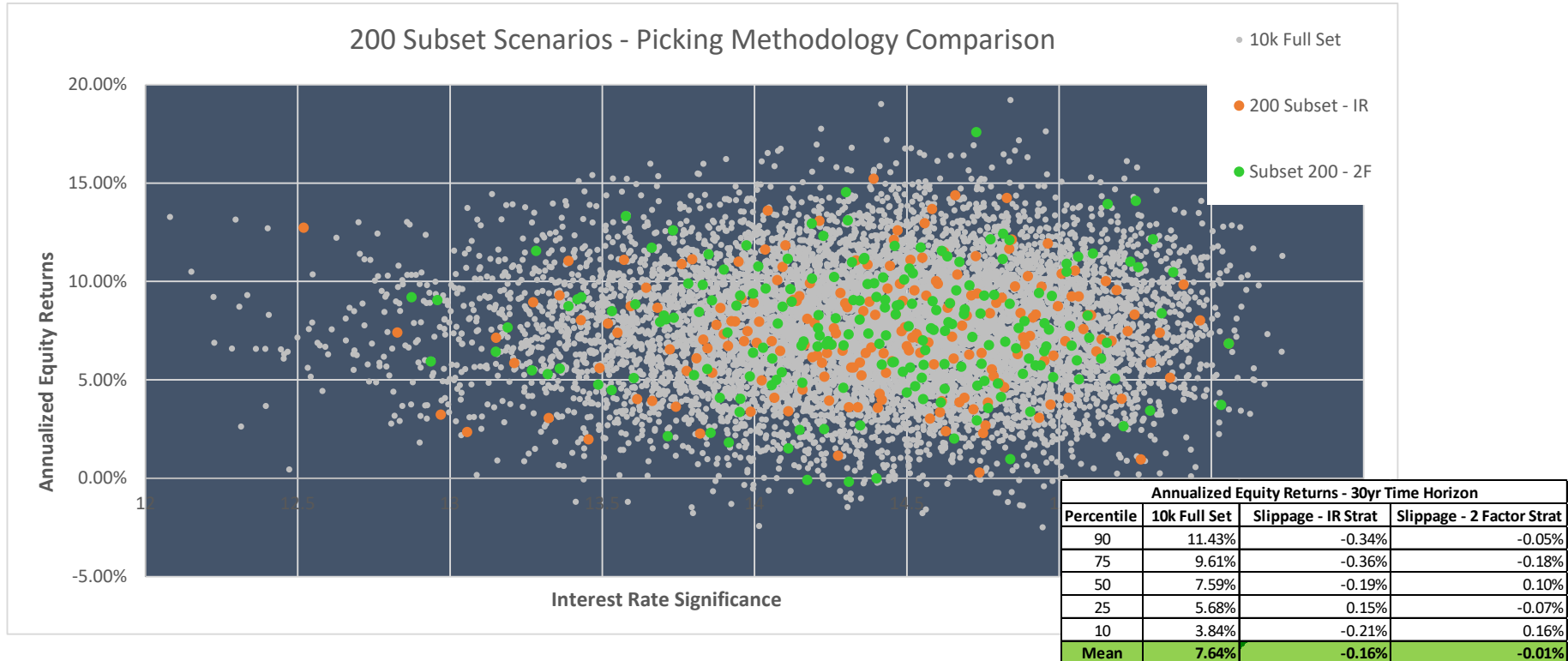
PBR: Scenario Reduction

- *VM-20 Section 7.G.2:*
 - c. Use of fewer scenarios rather than a higher number of scenarios is permissible as a model efficiency technique provided that:
 - i. The smaller set of scenarios is generated using the scenario picker tool provided within the prescribed scenario generator, and
 - ii. The use of the technique is consistent with Section 2.G.
 - d. The number of scenarios required to comply with Section 2.G will depend on the specific nature of the company's assets and liabilities and may change from time to time. Compliance with Section 2.G would ordinarily be tested by comparing scenario reserves of a simpler model or a representative subset of policies, run using the reduced scenario set, with the scenario reserves of the same subset or simpler model run using the larger scenario set.
 - e. Companies also shall perform a periodic analysis of the impact of using a different number of scenarios on the stochastic reserve, noting the difference in results as the number of scenarios is increased. Again, an appropriate subset of the entire in-force block can be used for this analysis.
- *VM-31 Section 3.D.6.t:* Number of scenarios used for the stochastic reserves and the rationale for that number

Discussion: Scenario Reduction

- Potential issues for scenario reduction
- Considerations for using a representative subset of policies
- Rationales for number of scenarios used for the stochastic reserves

Picking By Impactful Market Parameters



PBR: Starting Asset Collar Net of Reinsurance

- *VM-20 Section 7.D.3:* If for all model segments combined, the aggregate annual statement value of the final starting assets, less the corresponding PIMR balance, is
 - a. Less than 98% of the modeled reserve; or
 - b. Greater than the largest of:
 - (i) 102% of the modeled reserve;
 - (ii) the NPR for the same set of policies, net of due and deferred premiums thereon; and
 - (iii) zero,

then the company shall provide documentation in the PBR Actuarial Report that provides reasonable assurance that the modeled reserve is not materially understated as a result of the estimate of the amount of starting assets.

- *VM-20 Section 7.D.4:* The company shall select starting assets for each model segment that consists of the following:
 - a. All separate account assets supporting the policies
 - b. All policy loans supporting the policies that are explicitly modeled under Section 7.F.3.b.
 - c. The relevant balance of any due, accrued, or unearned investment income
 - d. All derivative instruments held at the projection start date that are part of a derivative program and can be appropriately allocated to the model segment
 - e. An amount of other general account assets such that the aggregate value of starting assets meets the requirements in Section 7.D.1. These assets shall generally be selected on a consistent basis from one reserve valuation to the next. Any material change in the selection methodology shall be documented in the PBR Actuarial Report.

Question 7: Negative Interest Rate Scenarios

Did your 2019 Asset Adequacy Testing scenarios include negative interest rates?

- a) Yes, for both deterministic and stochastic
- b) Yes, for deterministic only
- c) Yes, for stochastic only
- d) No, due to model limitations
- e) No, for other reasons
- f) Don't know

Question 8: Negative Interest Rate Scenarios

Do you anticipate using any negative interest rate scenarios in 2020?

- a) Yes, for both deterministic and stochastic
- b) Yes, for deterministic only
- c) Yes, for stochastic only
- d) No, due to model limitations
- e) No, for other reasons
- f) Don't know

Discussion: Negative Interest Rate Scenarios

- Considerations for using negative interest rate scenarios
 - Deterministic
 - Stochastic
- Implications of using negative interest rate scenarios
 - Deterministic
 - Stochastic
- Available guidance for using negative interest rate scenarios



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