

### **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

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#### 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%)

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### 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.)

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## **Valuation Assumptions**

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

- Prescribed Assumptions
- Stochastically Modeled Assumptions
- Prudent Estimate Assumptions

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### **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

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### 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

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- 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

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## **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

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## **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)

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## **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

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#### **Uses of Data**

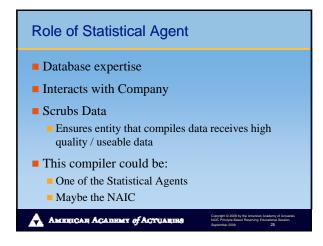
- Regulators: To review the reasonability of company-specific assumptions
- Companies: To assist in developing valuation assumptions when the company has little or no credible and/or reliable experience data.

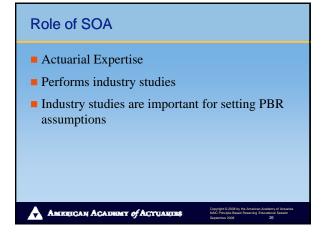
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#### Roles

- Statistical agent
- SOA
- NAIC
- State Regulators

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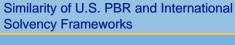












- Report true risk
- Blend of company and market experience
- Auditable and verifiable
- **■** Uniformity
- Establishment of control levels
- **■** Practical Options
- Objective to disclose margins in assumptions



# 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



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

- - 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



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