



INSURANCE

The New Risk-Based Capital

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AGENDA

- ◆ **Overview – Principles-Based Approach (PBA)**
- ◆ **PBA Framework**
- ◆ **Status of Proposals**
- ◆ **Potential Implications**
- ◆ **Risk-Based Capital (RBC) and Economic Capital (EC)**

Note that the material in these slides reflects the current state of the PBA proposals; however, the proposals continue to evolve. No item should be considered final, and changes can occur.

1. OVERVIEW – PRINCIPLES-BASED APPROACH (PBA)

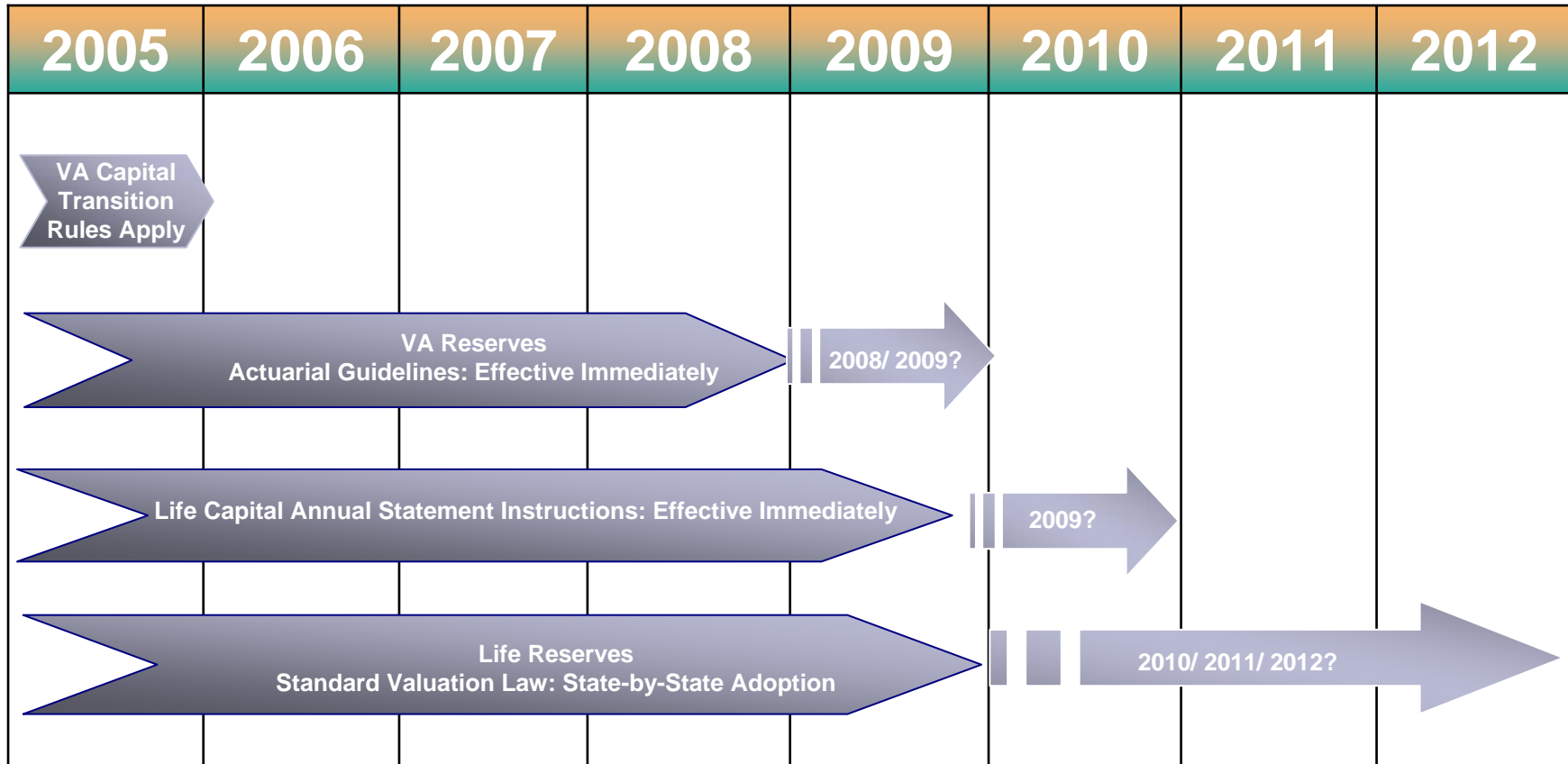
Principles-Based Capital Requirements

- ◆ **Current approach based on “one-size-fits-all” formulas**
 - Hard to adapt to new products: e.g., variable annuities and universal life with secondary guarantees
- ◆ **Proposed RBC Phase 3 approach based on company-specific modeling (as is Basel II for banks)**
- ◆ **Company-specific models will increase complexity (and risk?) for companies, regulators, and auditors**

Principles-Based Capital Requirements (cont'd)

- ◆ **Models will be at least partly “stochastic”—average over a large number of investment scenarios**
- ◆ **Regulators want strong “governance,” such as some board involvement (particularly for reserves)**
- ◆ **Already in place for variable annuity capital requirements (C3 Phase 2)**
- ◆ **New capital requirements would apply to ALL inforce**
- ◆ **Capital levels would be defined in terms of the Total Asset Requirement (TAR) less reserves (either current method or PBA method)**

Potential Timelines



Statutory Hierarchy – Impacts Timelines

◆ Standard Valuation Law (SVL)

- Statutory framework that defines CRVM and CARVM; must be adopted by legislatures

◆ Regulations

- Give details of valuation process; must be adopted in accordance with state laws

◆ Actuarial Guidelines

- Intended to explain and interpret the SVL and thus do not require adoption by states; effective upon adoption

◆ Annual Statement Instructions

- Changes effective for the next annual statement; apply to annual statements filed in all states. Risk-based capital requirements are set by annual statement instructions



2. PBA FRAMEWORK

PBA Framework – for both Life Insurance and Annuities

- ◆ **Capital formulas vary by product category (life vs. variable annuity)**
- ◆ **Calculations use company-specific cash flow models**
- ◆ **Models use Prudent Estimate Assumptions**
- ◆ **Derivatives or hedging are included in models, with certain limitations**
- ◆ **Possible simplifications are being developed and discussed**
- ◆ **Company to provide certification of capital and a report**

PBA at a Glance (Simplified)

| | Variable Annuities | Life Insurance |
|--|---|---|
| Capital <i>(passed by Annual Statement Instructions)</i> | RBC = TAR* – Reserves TAR = Maximum (Stochastic, Deterministic) Stochastic at CTE(90) All inforce business <i>Effective: 2005, transition rules</i> | RBC = TAR* – Reserve TAR = Stochastic only Stochastic at CTE(90) All inforce business <i>Effective: 2009?</i> |
| Reserves | Reserve = Maximum (Stochastic, Deterministic) Stochastic at CTE(70) Inforce 1981 and later <i>Effective: 2009? implemented through an Actuarial Guideline</i> | Reserve = Maximum (Stochastic, Deterministic) Stochastic at CTE(65) New business only <i>Effective: 2011/2012? state-by-state adoption required for SVL</i> |

* **TAR = Total Asset Requirement**

Most Common Measures of Risk

- ◆ **Value at Risk (VaR) – Loss for a once-in-x-years event (equivalent to loss at the p-percentile: once in 200 years = 99.5 percentile)**
- ◆ **Conditional Tail Expectation (CTE) – Average loss from extreme events (that is, CTE90 = average of the worst 10% of scenarios)**

CTE, VaR (Value at Risk) and all that

| Scenario Number | 1 to 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | SUM | AVG |
|--------------------------|--------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| Percentile | *** | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | | |
| Loss Amounts | 20 | 4 | 5 | 5 | 6 | 7 | 8 | 11 | 16 | 22 | 34 | 42 | 180 | 9 |
| Loss Amounts – worst 35% | | | | | | 7 | 8 | 11 | 16 | 22 | 34 | 42 | 140 | 20 |
| Loss Amounts – worst 10% | | | | | | | | | | | 34 | 42 | 76 | 38 |

VaR(50) = 4

CTE(0) = 9

VaR(65) = 6

CTE(65) = 20

VaR(90) = 22

CTE(90) = 38

PBA Framework: RBC

RBC = Total Asset Requirement (TAR) – Reserve

Life Insurance:

- TAR is stochastic calculation
- Stochastic calculation:
CTE(90) = Average assets required over the highest 10% of scenarios

Variable Annuities:

- TAR = Maximum (stochastic calculation, deterministic calculation)
- Stochastic calculation:
CTE(90) = Average over the highest 10% of scenarios
- Deterministic calculation:
Seriatim calculation (rules differ from VA CARVM)

Life Insurance: Company-specific Cash Flow Models

- ◆ Both the deterministic and the stochastic components of TAR are based on company-specific cash flow models
- ◆ One cash flow model for each “Model Segment” (set of policies and related assets grouped together under the company’s asset segmentation/allocation policy or investment strategy)
- ◆ Cash flow models are used for two purposes
 - Project **net cash flows** (premiums, other revenue, benefits and expenses) to be discounted
 - Project total asset and liability cash flows to determine **rates used for discounting**

Life Insurance: Prudent Estimate Assumptions

- ◆ **Anticipated experience plus margin (reflecting estimation error and adverse deviation)**
- ◆ **Valuation assumptions that are not stochastically modeled must be Prudent Estimates (i.e., must include a margin)**
- ◆ **Sensitivity testing**
 - Desirability of formalized sensitivity testing has been discussed; references to it are included in the new draft of a proposed Actuarial Standard of Practice

Life Insurance: Derivatives

- ◆ **Derivatives that are currently held are included in projections**
- ◆ **Costs and benefits of future derivative transactions are included if**
 - They qualify as a Clearly Defined Hedging Strategy
 - If non-hedging (e.g. replication, income generation) and are normally modeled as part of the company's risk assessment and evaluation processes
- ◆ **Significant documentation requirements, including certification of CFO, Treasurer, or CIO**
- ◆ **Requirements are basically consistent with those for VACARVM (latest draft)**

Life Insurance: Possible Simplifications

- ◆ **Exempting (or phasing in) certain product lines**
- ◆ **Allowing the commissioner to exempt certain product lines, or single-state exemption**
- ◆ **Material tail risk test to demonstrate that stochastic modeling is not required**
- ◆ **A simplified approach to model non-guaranteed elements for policies without material tail risk**
- ◆ **Using data/models as of an earlier date for stochastic runs**

Life Insurance: Material Tail Risk Test

- ◆ **Uses a small number (i.e., 12) of prescribed scenarios**
- ◆ **Gross premium reserve calculated for each scenario**
 - Using anticipated experience assumptions
- ◆ **Calculate variability ratio**
$$\frac{\text{Largest GPV reserve} - \text{Reserve using anticipated experience}}{\text{PV of benefits using anticipated experience assumptions}}$$
- ◆ **If ratio is less than x%, then policies can be exempted from stochastic modeling**
- ◆ **“Safe harbor” test; company can utilize other methods to justify not doing stochastic modeling**



3. STATUS OF PROPOSALS

Status: Variable Annuities with GMDBs or GLBs

| | Reserves | Capital (RBC) |
|-------------------------------|--|---|
| Status | <ul style="list-style-type: none"> ◆ Latest draft exposed at September 2007 LHATF, some redrafting may result based on Life ◆ Awaiting analysis of the results from 14 largest VA writers (now delayed to June 2008 LHATF) ◆ June NAIC update | <ul style="list-style-type: none"> ◆ Effective in 2005 ◆ Transition rules – new capital being phased in at 20% per year from 2005 ◆ June NAIC update |
| Key Issues Impacting Adoption | <ul style="list-style-type: none"> ◆ Insistence by some state regulators on very conservative floors ◆ Lack of governance procedures for Board and management ◆ Application to nearly all issue years ◆ Tax implications | <ul style="list-style-type: none"> ◆ No issues since already adopted |

Status: Life Insurance

| | Reserves | Capital (RBC) |
|-------------------------------|--|---|
| Status | <ul style="list-style-type: none"> ◆ Latest drafts of the SVL and Valuation Manual exposed at March 2008 LHATF; redrafting expected in a number of areas | <ul style="list-style-type: none"> ◆ Proposals were to be adopted in 2007, but now pushed to 2008 (unclear if this leaves enough time for a 2008 implementation) |
| Key Issues Impacting Adoption | <ul style="list-style-type: none"> ◆ Completing drafting of SVL and Valuation Manual ◆ Lack of governance procedures for board and management (note: independent actuarial review removed at December 2008 LHATF) ◆ Tax implications (ACLI in active dialogue with the IRS – recent Treasury Notice) ◆ Proposals by some state regulators for very conservative floors | <ul style="list-style-type: none"> ◆ Drafting of life reserve language may impact language for RBC |

Status: Other Product Lines

| | Annuities | Health Group |
|--------|---|---|
| Status | <ul style="list-style-type: none"> ◆ Annuities group is addressing reserves and RBC for all annuities (variable and fixed), not just ones with supplemental guarantees ◆ Analysis subgroup is comparing preliminary results from five actuarial modeling systems, and investigating differences ◆ Proposals for modeling exclusion are being evaluated ◆ Intent is to make all approaches as consistent as possible | <ul style="list-style-type: none"> ◆ Health group is addressing reserves and RBC for certain health products ◆ Long-term care is the first product being reviewed ◆ Intent is to make all approaches as consistent as possible |



4. POTENTIAL IMPLICATIONS

Other Potential Implications

- ◆ **Financial**
- ◆ **Strategic**
- ◆ **Internal Controls**
- ◆ **Board of Directors**
- ◆ **Actuarial and Operational**
- ◆ **Reinsurance**
- ◆ **Pricing and Product Development**
- ◆ **Risk Management**

Financial

- ◆ **Limited modeling of Life Insurance products to date**
- ◆ **Academy 2005 Survey for Variable Annuities:**
 - Impact on RBC: 1/3 increase, 1/3 decrease, 1/3 no change
- ◆ **Potential increase in capital requirements for products with heavy tail risk**
- ◆ **Key point: The current reserve plays a role in whether or not capital requirements will increase given the “TAR – Reserve” formula**

Financial (continued)

- ◆ **Possibly lower reserves – but what about capital?**
- ◆ **More volatility**
 - Assumptions reviewed at least annually
- ◆ **Annuity reserve proposal under consideration**
 - Could this lead to a significant reduction in surplus?
- ◆ **TAR will depend on use of risk management techniques**
 - Especially for products with significant tail risk

Strategic

- ◆ **Potential impact of PBA on the position of U.S. life insurers in the financial services market**
- ◆ **Will returns on statutory capital be more meaningful?**
- ◆ **Capital deployment – in line with PBA reserves and RBC**
- ◆ **New risk/reward profile – possible entries and exits from the life insurance or annuity market**
- ◆ **How will the rating agencies react?**

Internal Controls

- ◆ **Identification of Qualified Actuary**
- ◆ **Controls relative to the model risk inherent in the PBA process**
 - Controls over choice of key assumptions, such as policyholder behavior and mortality assumptions
- ◆ **Sufficiency of controls and related documentation relative to**
 - NAIC Model Audit Regulation applying to statutory financial reporting beginning in 2010
- ◆ **CFO prepared to participate in the actuary's evaluation of such controls**

Board of Directors

- ◆ **Current board awareness of the PBA proposals**
 - Inclusion of virtually all life insurance products
 - Imminence of adoption
 - Potential expense of compliance
- ◆ **Potential volatility of surplus, as well as the impact these could have on the ability to pay dividends**
- ◆ **Proposal requiring the board to hire an independent actuarial reviewer has now been removed – but board should consider the additional information/assurances they need regarding PBA**

Actuarial and Operational

◆ Systems/Models

- Use current reserve systems – or need to replace?
- Modeling software – built or acquired? Has it been tested?
- Efficiency of modeling process
 - Hardware and networking structures
 - Time required to complete a set of stochastic scenario runs
- Optimization of model segments, considering both reserves and RBC

◆ Possible timing issues

- Impact of full model calculations (if required) on ability to hit target dates for financial reports
- Interaction of independent review process with normal period-end procedures

Reinsurance

- ◆ **Effectiveness of reinsurance programs in reducing PBA reserves and capital**
 - Consider need to modify treaty provisions so that their impact may be taken into account in the reserve and RBC calculations
- ◆ **Possible impact on reinsurance**
 - Evaluate current treaty terms
 - Financial reinsurance – will it disappear or change?
 - New forms of reinsurance

Pricing and Product Development

- ◆ **Impact of policyholder options and guarantees on reserve levels**
- ◆ **Significant replacement activity of any product line**
 - What will be the company response?
 - Is there any GAAP impact under SOP 05-1?
- ◆ **Setting of assumptions, including aggregate margin**
- ◆ **Modeling of future reserve and RBC balances for pricing purposes**
- ◆ **Definition of profitability targets**

Risk Management

- ◆ **Determine whether current hedging qualifies as a Clearly Defined Hedging Program**
 - Level of documentation
 - CFO/Treasurer/CIO requirement to certify that the derivative program is being applied consistent with that documentation
- ◆ **Need for a “road map” connecting the analysis used for PBA to ERM policies and procedures**
 - Economic capital
 - Diversification analysis
 - Efficient frontier analysis

5. Risk-Based Capital (RBC) and Economic Capital (EC)

Definition of Economic Capital

- ◆ **Economic capital (EC) – what it takes to cover potential losses at a given risk tolerance level and over a specified time horizon**
- ◆ **Potential losses (risks) may be categorized as credit risk, market risk (interest rate risk, equity market risk), underwriting risk, operational risk**
- ◆ **Risk tolerance level and specified time horizon are generally covered by Value at Risk (VaR) or Conditional Tail Expectation (CTE) measures**

Economic Capital vs. new RBC

◆ Economic Capital

- Focus is capital efficiency
- Usually measured by VaR
- Time horizon is often one year
- Includes operational risk
- An ERM tool
- Rating agency focus

◆ RBC

- Focus is capital adequacy
- Measured by CTE
- Time horizon is the life of the business
- Statutory requirement
- Regulator focus



Questions?



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