# Regulatory Capital Requirements for U.S. Life Insurers

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Insurance Industry Work Group

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# American Academy of Actuaries

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# Discussion Topics

- RBC and the US Solvency Framework
- Purpose of Regulatory Risk-based Capital (RBC)
- Risks covered by Life RBC
- Formula Basics of Life RBC
- The Life Insurance Statutory Balance Sheet: Policy reserves, AVR, IMR
- Concluding Observations
- Questions

# RBC and the US Solvency Framework

- RBC was implemented in 1993 as part of NAIC's first solvency modernization project
  - Three RBC formulas are used: life, health, and casualty
  - Many changes have been made to all three formulas since 1993
- RBC is one part of the framework for monitoring the solvency of insurers operating in the US; other tools include:
  - Risk-focused examinations of insurers
  - Cross-state review of insurers' financial position, with the domiciliary state taking the lead; uniformity in insurance regulations assured through a state accreditation process
  - Conservative statutory accounting and reporting requirements, investment laws governing permissible types and limits on asset classes
  - Actuarial certification of the adequacy of policy reserves based on each company's unique risk profile
  - Newer regulatory processes include supervisory colleges directed toward the regulation of insurance groups and a new requirement being adopted by the states that requires many insurers to submit an Own Risk Solvency Assessment (ORSA)

# Objectives of the RBC System

- Create a relatively simple formulaic structure that identifies potentially weakly capitalized companies
- RBC ratios are not designed to compare capital strength of companies
- Design a formula that is applied to all companies based on publicly available information
- Provide a regulatory tool that initiates a more extensive review of an individual company's risks and capital (including proprietary models and other detailed analysis) for those companies that are likely to be, or are weakly capitalized, in order to determine if corrective action(s) are needed
- Establish an objective standard for triggering regulatory action, including the authority to take over a company under certain conditions, such as falling below a certain capital level

# Background on RBC

- RBC establishes a de facto minimum level of capital
  - RBC creates a “reference point,” via the RBC formula, whereby regulators can compare a company’s actual statutory capital position to this regulatory reference point
  - RBC amount is not related to the “value of business”; RBC does not represent the amount a willing buyer would pay to assume a company’s obligations or an “exit value” but it does represent the minimum amount of capital a willing buyer would have to maintain in the company if it were purchased
- LRBC formula is not designed to achieve a stated calibration level or maintain capital requirements at a stated calibration level as an outcome of the LRBC calculation
- Generally, minimum capital requirements in combination with statutory reserves are expected to be sufficient to protect insurer solvency 95% of the time

# Background on RBC (cont.)

- RBC calculation is based on statutory accounting principles whose goal is to protect policyholders
- Required capital calculation assumes a going concern, not a liquidation environment
- Required capital is an add-on to policy reserves under the assumption that policy reserves are adequate; RBC factors were established to capture risk levels above the levels captured in policy reserves

# Background on RBC (cont.)

- RBC formula is neither pro-cyclical or counter-cyclical; RBC was designed to be cycle-neutral
  - LRBC factors are primarily independent of the current economic environment
  - Many factors are based on the average of past economically driven events; averaging builds in a countercyclical "muting" in contrast to that of factors based on current economic risk factors
- While economic and business environments may cause risk exposures to fluctuate in the short run, the LRBC formula captures the effects of risks that could materialize over a short to medium time horizon

# Risks Covered by Life RBC

- The focus of the original LRBC formula was the identification and measurement of the risks that could affect an insurer's statutory solvency
- RBC framework is based on separate distributions for material risk components (i.e., C0–C4 RBC components) that are aggregated to determine total capital requirements:
  - C-0: risks from affiliates
  - C-1: investment risks
  - C-2: claims risk (i.e., mortality and morbidity)
  - C-3: interest rate risk
  - C-4: general business risks

# Risks Covered by Life RBC (cont.)

- Correlation of risks between these risk categories is reflected:
  - For correlations pertaining to risks other than interest rates and equity returns, a simple assumption was made
  - Each major risk category was considered to be either completely independent of other risk categories, or completely correlated with the other risk categories
  - After this determination was made, a statistical adjustment was made to adjust for risk correlation among the major "C" risk categories, known as the "covariance adjustment"

# Risks Not Included in Life RBC

- The LRBC system assumes that appropriate policy reserves have been established and LRBC provides a cushion for risk levels beyond those risks covered in reserves
- Policy reserves are intended to cover expected losses that arise under moderately adverse conditions
  - Moderately adverse conditions have been implicitly assumed to occur at one standard deviation (roughly the 83rd percentile for normally distributed risks)
- LRBC establishes capital requirements for losses that arise under more adverse conditions (e.g., beyond one standard deviation)

# Risks Not Included in Life RBC (cont.)

- The following types of risks are intentionally excluded from the Life RBC formula:
  - Immaterial over the LRBC time period (i.e., which generally covers risks that could abruptly materialize over a short to medium time frame, such as three to five years)
  - Tail Risks, or risks that materialize beyond the tested portion of the risk distribution (i.e., in the outside tails of the distribution beyond the 95$^{th}$ percentile); these risks materialize so infrequently that they only exist beyond the stated calibration level
  - Risks that cannot be pre-funded by capital, such as liquidity or specific operational risks

# Life RBC Formula Basics

- The Life RBC ratio is defined as the Total Adjusted Capital (TAC) divided by the Authorized Control Level Risk-based Capital
- Total Adjusted Capital is equal to unassigned surplus plus AVR plus one-half of the dividend liability
- The Authorized Control Level Risk-based Capital is 50% of Company Action Level RBC as calculated from the following formula:

$$CAL = C0 + C4a + \text{Square Root of } [(C1o + C3a)^2 + (C1cs + C3c)^2 + (C2)^2 + (C3b)^2 + (C4b)^2]$$

# Life RBC Formula Basics (cont.)

- RBC is calculated at the legal entity level for every insurance company; no charge for contagion risk
- NAIC has not defined regulatory capital requirements at the group level
- The Life RBC formula calculates a post-tax amount; the P&C and Health formulas are pre-tax

# Regulatory Trigger Points

- Regulatory action levels are triggered when the Total Adjusted Capital falls below certain levels
- Regulatory action levels were empirically established by regulators in the early ‘90s

# Regulatory Trigger Points (cont.)

- When TAC falls below the **Company Action Level (CAL),** the company is required to submit an RBC plan to the commissioner of the domiciliary state, which is subject to commissioner approval
- The **Regulatory Control Level** is defined as 150% of ACL; company must submit plan and subsequent regulatory actions will be mandated
- The **Mandatory Control Level** is defined as 70% of ACL authorizing the domiciliary commissioner to rehabilitate or liquidate the company
- The **Authorized Control Level** is defined as 50% of CAL, authorizing the domiciliary commissioner to take whatever actions are necessary to protect policyholders and creditors

# The Life Statutory Balance Sheet

- Statutory reserves for policy benefits
- Dividend Liability
- Interest Maintenance Reserves
- Asset Valuation Reserves
- Unassigned Surplus (US)
  - RBC is not reported on the balance sheet, but US = CAL* + free surplus
- TAC = unassigned surplus + AVR + 0.5 * div liab

*CAL is the Company Action level RBC

# Provision for Losses in Statutory Requirements: Policy Reserves and RBC

- **Statutory policy reserves provides for expected losses in the future**
  - Existing formulaic policy reserves do not explicitly define the level of expected losses covered. The formulas pre-date actuarial modeling of asset and liabilities and are not based on an individual company's portfolio
  - General actuarial principles suggest that statutory policy reserves cover approximately one standard deviation of losses from all risks. Note that a company's total statutory policy reserves are sufficient to cover future policy benefits and are calculated in two parts: tabular + additional reserves from cash flow testing
- **Required capital provides for adverse losses in excess of expected**
  - C1 component provides for certain investment losses over those covered in statutory policy reserves
  - C2 component provides for losses due to claims in excess of those expected claims funded by policy reserves
  - C3 component provides for ALM or mismatch risks not expected or contemplated in policy reserves
  - C4 component provides for general business risks not expected or contemplated in policy reserves
  - In general, total RBC covers moderately adverse levels of risk considered to be at approximately 1.7 standard deviations
  - RBC is a point in time calculation, but represents the minimum amount required to pre-fund future excess losses

# Provision for Bond Losses in Statutory Requirements: Asset Valuation Reserve

- AVR is a liability, set aside in Life Annual Statements to absorb investment losses and protect statutory surplus against large fluctuations; AVR is also considered by many to be "above the line surplus"
- AVR acts like a fund that moves up and down depending on a company's loss experience, subject to a maximum – a smoothing mechanism
- AVR is part of Total Adjusted Capital; TAC=unassigned surplus + AVR + 0.5 dividend liability. In essence, AVR must be added back to unassigned surplus since holding AVR reduces surplus. AVR "disappears" from the RBC framework. Life RBC factors are unaffected by the existence of AVR.
- An individual company's AVR balance has no bearing on the calculation of required capital or the RBC ratio

# Observations on AVR

- AVR is counter-cyclical; reserving capital for stress conditions
- **AVR buffers unassigned surplus** from the credit effects of debt instrument and the fair value changes of equities
- **AVR reduces what would otherwise be unassigned surplus** so there is less risk of insurers paying excessive dividends or taking other risks, particularly as asset values appreciate
- **AVR encourages conservative and stable dividend policy through economic cycles**. AVR is only required for Life companies. The AVR may be more effective in stabilizing dividend policies for life insurers that are typically funding longer term liabilities.
- Like RBC, AVR is established using estimates of future losses

# Interest Maintenance Reserves (IMR)

- IMR are established to smooth the effects of capital gains in statutory income
- An insurer must amortize capital gains over the remaining lifetime of the asset; capital losses must be reported in statutory income immediately
- IMR has no effect on capital requirements

# Concluding Observations on RBC

- RBC was designed from the ground up, based on distributions of individual risks
- RBC is not a total balance sheet system, or a system based on an integrated view of risk for an organization
- RBC is defined according to statutory accounting principles:
  - The losses covered by RBC are defined relative to statutory principles
  - The goal of statutory reporting is the protection of policyholders; statutory accounting is different from US GAAP and different from fair value

# Concluding Observations on RBC (cont.)

- Different constituencies quantify risk differently
  - RBC is a blunt instrument, designed for insurance regulators to identify potentially weakly capitalized companies
  - Rating Agencies take a different view of risk and establish capital requirements using a different set of principles and methodology
  - Insurance companies take a different view of risk and establish internal capital requirements differently (e.g., a multiple of RBC or economic capital)
- RBC is one element of the US regulatory framework for monitoring the solvency of insurance companies

# Additional Academy Resources

- Report to the NAIC's Solvency Modernization Task Force on the risks covered in the RBC formulas (January 31, 2011) http://actuary.org/files/American_Academy_of_Actuaries_SMI_RBC-Report_2.4.pdf
- Report to the NAIC: Comparison of the NAIC Life, P&C, and Health RBC Formulas (February, 2002) http://actuary.org/files/publications/jrbc_12feb02.pdf

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