Life Risk-Based Capital and the Asset Valuation Reserve

Presentation to the NAIC's IRBC Working Group

Nancy Bennett, Co-Chairperson
American Academy of Actuaries C1 Work Group

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Discussion Outline

- Statutory Requirements: Policy Reserves, AVR, RBC

- AVR Background
  - Purposes
  - Observations

- Statutory Balance Sheet
  - Presentation
  - Continuum of Loss Provision

- Additional Background on Quantification of Expected Losses in the C1 Bond Model

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

- Statutory policy reserves make provision 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 asset reserves from cash flow testing.
  - Note that the new Valuation Manual (i.e., VM-20) prescribes the default assumptions, but only for new policies issued after the effective date of VM (2016?). The margins built into the VM-20 baseline defaults are at a CTE 70 level, approximately at the 85th percentile – higher default losses than assumed in existing policy reserves.

- Required capital (C1) makes provision for adverse losses in excess of expected
  - C1 bond provision covers losses approximately at the 95th percentile over a ten-year time horizon (at portfolio level).
  - 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 needed to pre-fund future losses.

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Provision for Bond Losses in Statutory Requirements: Asset Valuation Reserve

- AVR is a liability, set aside in Life Annual Statements to absorb losses and protect statutory surplus against large fluctuations. AVR is also considered by many to be "above the line surplus." However, AVR does affect:
    - Investment limits under the Model Investment Law
    - Limitations on Ordinary shareholder dividend
    - The cap on Admitted Deferred Tax Asset

- AVR acts like a fund that moves up and down depending on a company's loss experience, subject to a maximum – a smoothing mechanism.

- The Annual Statement instructions and the AVR NAIC Handbook state that the AVR reserve objective was set to cover default losses at the 85th percentile, with valuation reserves assumed to be set at the 85th%. Maximums for fixed income are set equal to the post-tax C1 factor for each asset type

- 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.

- An individual company's AVR balance has no bearing on the calculation of required capital or the RBC ratio.

AVR Details

- For bonds, mortgages and other fixed income assets there is a **default** component

- For common stock, real estate and other equity assets there is an **equity** component

- Once re-measured each reporting period, the components are combined to form the total AVR

- Increases or decreases in the AVR are reported as direct adjustments to surplus, not income

How is the default component determined?

- Basic contribution – based on estimated annual after-tax losses assuming no variation from the 1992 baseline assumptions. The basic contribution does not allow for any deviations, particularly in the tail of the distribution.

- Reserve objective – based on 85% of the distribution of losses for each asset class.

- Maximum reserve – equal to the after-tax Risk Based Capital factors for each asset type.

- Accumulated balance = beginning balance +/- gains (losses) + basic contribution.
  - Note that gains/losses are added – no offset for any recoveries.
  - C1 bond model pre-funds net losses. The projected fund does not reflect projected gains or investment income.

- Ending balance = beginning balance +/- gains (losses) + basic contribution + 20% of (reserve objective – accumulated balances) + voluntary contribution.

- Ending balance not to exceed maximum reserve.

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How is the equity component determined?

- Basic contribution – set to zero

- Reserve objective – common stock is set to 20% with an adjustment for portfolio beta; real estate is set to 7.5%

- Maximum reserve – 20% for common stock and 7.5% for real estate. These maximums were selected to keep reserves close to objectives. RBC factor maximums would have created excessive AVR.

- Accumulated balance = beginning balance +/- gains (losses) + basic contribution

- Ending balance = accumulated balance + 20% of (reserve objective – accumulated balance) + voluntary contribution

- Ending balance not to exceed maximum reserve

From 2002 AVR Report:
Primary Functions of the Asset Valuation Process

- Assure that all assets and liabilities are reported on as consistent a financial basis as is practical.

- Minimize the impact that capital gains and losses arising from movements in interest rates have upon provisions for credit related losses. That is, distinguish capital gains/losses arising from changes in interest rates from capital gains/losses arising from changes in the assets' credit worthiness.

- Provide a reserve consistent with valuation actuary standards that adequately provides for future volatile incidence of asset losses.

- Provide appropriate recognition of long-term expected returns for equity type investments.

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From 2002 AVR Report (Pg. 8): Reserve Adequacy and AVR

- The Valuation Actuary's Opinion includes a statement that the assets backing the liabilities make adequate provision for the company's liabilities. That is, the Actuary must look beyond the statutory valuation formulas and satisfy himself that the cash flows generated by the assets will probably be sufficient to discharge the liabilities.

- Prior to the AVR and IMR, there were many circumstances under which the statutory formula valuation methods gave rise to inappropriate results.

- It is desirable that the valuation of the assets and liabilities be made as consistent as possible to (1) minimize the instances where, in order to render a clean opinion, the actuary must establish extra reserves due to interest rate gains or potential for defaults and (2) increase the likelihood that assets supporting liabilities are sufficient even in the absence of an Actuarial Opinion. The development of an AVR and IMR will correct many of these deficiencies in consistency.

From 2002 AVR Report (Pg. 24): Reserve Adequacy and AVR

- An additional asset valuation reserve (AVR), is appropriate under statutory accounting because there will be variation from expected results.

- The AVR accumulates the risk portion of each investment yield payment to provide for future credit losses as they occur and builds toward a desired reserve objective.

- The AVR is built up gradually toward the desired reserve objective. Such buildup is funded annually by a portion of the extra yield on the asset (to the extent not needed to pay for current asset losses).

- The AVR works very well in an environment of formula statutory minimum reserves and book value accounting of assets. It also works effectively in a cash flow testing environment, and to this end the reserve should be treated the same as any other actuarial reserves for cash flow testing purposes. When the asset valuation reserve is low, the actuary doing cash flow testing may need to set up additional reserves and vice versa.

- The AVR concept emphasizes the "reasonably conservative" approach and is analogous to the level of conservatism in policy reserves. As such, the AVR is an important measure of some of the asset risks of the company, just as reserves measure some of the other risks.

- The remainder of the asset risk (the provision for catastrophic risks) should be covered by unallocated surplus according to standards set in a consistent manner. RBC was developed to cover the minimum surplus requirements.

Observations

- 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. As C1 factors are updated, AVR factors should also be updated.

The Life Statutory Balance Sheet

- Statutory reserves for policy benefits

- Dividend Liability

- Asset Valuation Reserves

- Unassigned Surplus (US)
  - 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

Risk-based Capital

- RBC is NOT a balance sheet item.

- RBC is often considered the minimum capital requirements for a life insurer in order to avoid regulator intervention.

- RBC ratio is a reference measure designed to identify when regulatory action is triggered.

The Continuum of Loss Provision in the Statutory Annual Statements: two perspectives

- Policy Reserves: 0-60th*
- AVR: 60-85th
- Company Action Level Capital: 85 – 95th
- Free Surplus: 95th and beyond
  OR
- Policy Reserves: 0-60th
- Company Action Level Capital: 60-95th
- Free Surplus: 95th and beyond

Under the perspective that AVR's purpose is to cushion surplus via smoothing, the C1WG believes the second perspective is the proper construct for establishing C1 factors.

* The use of the 60th percentile is consistent with life statutory policy reserves covering losses up to approximately the first standard deviation.

2013 Approach for Quantifying Expected Losses: Loss Distribution Method

- Preliminary recommendation is to set C1 factors as a point on the loss distribution: 92nd – mean
  - Note that the choice of the Mean is somewhat arbitrary and includes some conservatism since statutory reserves backed by assets probably cover losses at a level higher than the mean.
  - The C1 factor for assets that don't back statutory reserves should not be reduced for any reserve offset.
- Loss distribution method is transparent and transferrable to other asset types.
- Loss distribution method is used in new RBC approach for commercial mortgages.
- A level bp method (e.g., a weighted average bp that varies by asset quality) would require consideration of varying asset spreads, thus complicating the model.
- Using AVR factors as a proxy is circular.

2013 Approach for Quantifying Expected Losses: Loss Distribution Method

- C1WG analysis of 1992/2001 C1 model results are not consistent with the loss coverage described in various reports and Annual Statement Instructions.
  - Results for below investment grade securities show little to no offset for the expected losses in statutory reserves.

- The loss distribution method is being tested in the C1WG's initial modeling.

- <u>Additional analysis is needed.</u>

Outstanding Questions

- If C1 is set at 92-mean, then how are AVR factors determined?

  - AVR factors are defined relative to C1 factors and statutory policy reserve requirements.

  - Reserve objective for fixed income provide the same level of conservatism as that of all valuation reserves (about 85%).

  - Maximums for fixed income are set equal to the post-tax C1 factor for each asset type.

- Given significant changes to life valuation requirements (PBR) and RBC updates since 1992, a review of AVR (e.g., its purpose, theoretical levels, intended level of conservatism) should be undertaken.

Appendix:
Background on Quantifying Expected Losses in the C1 Bond Model

Reflecting Expected Losses: 1992 C1 Factors

- Bond model projects total bond losses minus a risk premium for expected loss (i.e., a reserve offset).

- The modeled risk premium varies by NAIC designation, even though minimum statutory reserves (the tabular reserves defined in the SVL) do not vary depending on an insurer's asset portfolio.

- The risk premium is an attempt to eliminate double counting of the provision for credit risk between statutory policy reserves and required capital.

- Since the expected loss covered by policy reserves is not explicitly defined in the current Standard Valuation Law, the AVR (i.e., the reserve objective factor), adjusted for maximums, was used as a proxy for the expected losses in policy reserves.

- C1 bond model assumes the contribution is made of 30% of the difference between the maximum balance and the current balance.

- Different assumptions regarding the AVR balance were reflected in the '92 factor model vs. the model used to develop the 2001 factors, post-codification.
  - 1992 model assumed AVR balance =0.
  - 2001 model assumes AVR initially funded at approximately 80-85%ile level.
  - In the 2001 C1 model, the risk premium offset is capped by the AVR maximum.

Reflecting Expected Losses: 2013 C1 Factors

- **Approach 1: Risk Premium Offset**
  - Quantify expected loss and deduct from portfolio cash flows.
  - Risk Premium Offset could be defined by a level bp amount or by some other proxy, such as AVR.

- **Approach 2: Loss Distribution**
  - Allocate the provision for losses between stat reserves and required capital.
  - Assume reserves cover expected losses, defined according to the future loss distribution.
    - The losses will arise from the assets backing reserves.
    - Some consideration should be given to the assumption for expected losses from the assets backing surplus (s/b 0).
  - C1 factor set equal to total loss minus expected losses
    (e.g., 92nd %ile - 50th %ile OR 92nd %ile − Mean).
  - Note: commercial mortgage factor assumes policy reserves covers losses up to the mean, pending full review of bond assumptions.

2013 Approach for Quantifying Expected Losses: Loss Distribution Method

- Recommend setting C1 factors as a point on the loss distribution: 92nd – mean.
  - Note that the choice of the Mean includes some conservatism since statutory reserves backed by assets probably cover losses at a level higher than the mean. However, the C1 factor for assets that don't back statutory reserves should not be reduced for any reserve offset.

- Loss distribution method is transparent and transferrable to other asset types.

- Loss distribution method is used in new RBC approach for commercial mortgages.

- A level bp method is not reflective of pricing methods used by more sophisticated insurers. Reflecting a bp charge would require consideration of varying asset spreads, thus complicating the model.

- Using AVR factors as a proxy is circular.

- The loss distribution method is being tested in the C1WG's initial modeling. Further analysis will be performed.

Questions

For more information, please contact:
John Meetz, Academy Life Policy Analyst
meetz@actuary.org
(202) 223-8196