LIFE PRACTICE NOTE 1995–5
December 1995

Use of the AVR/IMR in Cash Flow Testing

Introduction

This practice note was prepared by a work group organized by the Committee on Life Insurance Financial Reporting of the American Academy of Actuaries. The work group was charged with developing a description of some of the current practices used by valuation actuaries in the United States. This work group was originally formed in 1992 and issued the first set of Life Practice Notes that year; changes have been made to this set of practice notes on an annual basis to reflect additional information on current practices.

The practice notes represent a description of practices believed by the work group to be commonly employed by actuaries in the United States in 1995. The purpose of the practice notes is to assist actuaries who are faced with the requirement of adequacy testing by supplying examples of some of the common approaches to this work. However, no representation of completeness is made; other approaches may also be in common use. It should be recognized that the information contained in the practice notes provides guidance, but is not a definitive statement as to what constitutes generally accepted practice in this area. Moreover, these practice notes are based upon the model Standard Valuation Law of the National Association of Insurance Commissioners (NAIC). To the extent that the laws of a particular state differ from the NAIC model, practices described in these practice notes may not be appropriate for actuarial practice in that state. This practice note has not been promulgated by the Actuarial Standards Board, nor is it binding on any actuary.

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Comments are welcome as to the appropriateness of the practice notes, desirability of annual updating, validity of substantive disagreements, etc. Comments should be sent to Donna R. Claire at her Directory address.

Q. How may the portion of the asset valuation reserve (AVR) that can be used to support a certain business unit be determined?

A. One method is to take the pro rata share of the default component of the AVR, based on the assets chosen to back the line, based on page 46 of the annual statement, with the following variables:

ratio = [actual current bond and preferred stock component (Line 6)] / [maximum current bond and preferred stock component (Line 7)]; or

[actual mortgage component (Line 6)] / [maximum mortgage component (Line 7)] respectively, for bonds and preferred stocks versus mortgages;

factor = reserve factor by investment grade group (page 47 of the annual statement); and

statement value = amount in Schedule D, Part 1, Column 4 of the assets equal to reserves backing the particular line of business by investment grade.

The pro rata share of AVR for the assets backing the line is equal to the sum over all investment grade groups of (ratio × factor × statement value). (If one wanted to add an extra element of precision, this result may be increased for the AVR on the assets that are assumed to back AVR (i.e., the AVR on the AVR).) Other companies specifically assign AVR to various lines of business.

Q. How can the AVR for a segment be used?

A. There are several ways in which this can be used.

1. For each scenario, make the projection twice: without defaults and with defaults. Discount the difference in ending surplus back to the projection date at an appropriate sequence of interest rates for the scenario. If the maximum present value of this difference, for all specified scenarios, is less than the pro rata portion of the AVR described above, then the actuary can run the projections without the AVR assets and without defaults (under the assumption that the AVR covers the cost of defaults).

2. If this pro rata share of AVR is not sufficient to cover the present value of the cost of defaults for all scenarios, then for each scenario the actuary could add assets equal to the pro rata AVR, and run the projections with defaults modeled.

3. Alternatively, if the actuary can model the development of the AVR itself, then the actuary could start with assets equal to the liability reserves plus the full pro rata AVR, and model the contributions to AVR as well as the projected defaults. (*Note*: New York limits the use of assets supporting the AVR to no more than the present value of defaults.)

Q. The NAIC model *Actuarial Opinion and Memorandum Regulation* states that the interest maintenance reserve (IMR) must be used in asset adequacy testing. Why?

A. The IMR is part of the statutory reserve. The IMR consists of the capital gain (or loss) on formerly owned assets that were sold or called, which is amortized over the remaining life that the asset would have had. The purpose of the IMR is to maintain the original matching between assets and liabilities that might be destroyed by the sale of an asset. Originally, it was anticipated that the IMR would be allowed to go negative, as long as the asset adequacy testing showed that the total statutory reserves, including the negative IMR, were sufficient to cover the liabilities. However, compute IMR to be a negative number in the annual statement, so the starting IMR will not be negative. There is no prohibition regarding the use of negative IMR within the asset adequacy testing; a number of actuaries are allowing the IMR to go negative within the testing period.

Q. How does one determine which portion of the IMR can be used to support certain products, and how can the portion of the IMR be used?

A. If the actuary allocates those former assets by line, then one possibility is to increase the starting assets by the amount of the unamortized portion of the capital gains for the former assets that are allocated to a certain product or business unit. Another possibility is to allocate the IMR proportionately to starting assets. The advantage to this second method is that it is simpler. A disadvantage to this method is that longer liabilities probably have longer assets, which produce higher capital gains when sold after a given drop in interest rates than shorter assets do.

Alternatively, if the actuary has software that is able to model the development of the IMR itself, then he or she could start with assets equal to the liability reserves plus the portion of the IMR, and model the changes to IMR as assets are called and sold during the projection.

Q. If products with relatively short lives are cashed out at the end, and the IMR and AVR are being modeled, what happens to the IMR and AVR at the end of the testing period?

A. The AVR only covers default risk. If there are still assets left at the end of the period, the AVR could be considered when determining the value of those assets. The IMR may be positive (or negative), even when there are no policies left that need to have interest maintained. Because the IMR is included in testing, the value of the IMR is included in calculating the ending surplus.