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VA GMDBs: Contemplating the Impact of the Proposed SOP on GAAP Income

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As discussed in a previous issue of the *Financial Reporter,* the AcSEC has recently released an exposure draft of the proposed Statement of Position (SOP), *Accounting and Reporting by Insurance Enterprises for Certain Non-Traditional Long-Duration Contracts and for Separate Accounts.* This SOP addresses multiple issues, including accounting for separate accounts, accounting for sales inducements, and liability valuation for products with multiple account balances or returns based on contractually referenced pools of assets or indices. In addition to these issues, the SOP also proposes a methodology for the calculation of GAAP reserves for Guaranteed Minimum Death Benefit (GMDB) provisions on variable annuities.

This article provides an introduction to the new requirements and begins to investigate what impact they may have on GAAP earnings. To this end, we designed a GAAP model for a sample product which calculates the GAAP reserve and DAC asset and computes a stream of GAAP earnings. We ran this model under a variety of scenarios. Those scenarios and the resulting GAAP earnings are presented here, along with commentary and conclusions regarding the potential impact of the GMDB provisions of this proposed SOP. We did not reflect the other provisions of the exposure draft in this exercise, as we wished to focus on the impact of the GMDB reserve requirements.

We intend this article to be a first look at the calculations required by the SOP. Actual application of the SOP requires that a range of scenarios be used to calculate GMDB reserves. For illustration purposes, we primarily chose to focus here primarily on deterministic scenarios. We will study the implications of multi-scenario reserving, and the issues this raises, in a future article

GMDB Reserving Under the Proposed SOP

Insurance or Investment Contract?

The requirements for calculating a GMDB reserve differ based on whether the contract under consideration is deemed to be an insurance or investment contract. Although this concept was first put forth in SFAS 97, the SOP provides additional guidance for making this determination for variable annuity products. Under the provisions of the SOP, classification is determined solely at contract inception and should not be reevaluated during the contract lifetime. Consistent with SFAS 97, a contract is considered an insurance contract if it has significant mortality or morbidity risk. According to the SOP, this risk is assessed by calculating the following ratio:

$$\frac{\text{(Present value of expected excess payments under GMDB provision)}}{\text{(Present value of all amounts assessed against the contract holder)}}$$

Unfortunately, the SOP is not entirely clear on how to evaluate this ratio, although SFAS 5 provides some relevant guidance on issues of materiality. A rule of thumb is that if the above ratio is greater than 2 to 5%, the contract should be deemed to have significant mortality risk, thereby classifying it as an insurance contract. There is currently no definitive guidance on where to set this threshold.

Calculating the Reserve

If the contract is classified as an investment contract, no additional GMDB reserve is permitted to be held under the SOP at any time during the life of the contract. If the contract is classified as an insurance contract, it is necessary to calculate a reserve for the GMDB provision. This is done by first calculating another ratio, called the current benefit ratio. This is analogous to the ratio calculated at inception and is defined as:

$$\frac{\text{(Present value of expected excess payments and settlement costs of GMDB provision)}}{\text{(Present value of total expected assessments)}}$$

evaluated over the life of the contract. Total expected assessments consist of all charges; including administration, mortality and expense, plus investment margin if included in estimated gross profits. The reserve is then calculated as:

Current Benefit Ratio x Cumulative Assessments – Cumulative Excess Payments

accrued with interest.

Relationship to SFAS 60 and SFAS 97
Some provisions of the SOP uphold principles or concepts introduced in SFAS 60 and SFAS 97, while others deviate from the prior guidance. First, the SOP reinforces the need to make a determination of whether the contract is an insurance or an investment contract. The SOP also justifies the holding of a reserve for GMDB provisions by referring back to paragraph 17(b) of SFAS 97, which requires the establishment of a liability for payments made to an insurer for services to be rendered in the future. Also in accordance with SFAS 97, the SOP specifically calls for the unlocking of prospective assumptions and the true-up for historical experience in the determination of the reserve. The assumptions used in the reserve calculation should be consistent with those used for amortization of DAC. The calculation itself is a retrospective reserve calculation and is similar conceptually to the SFAS 60 benefit reserve calculation, where the GAAP benefit net premium equals a constant percentage of the gross premium, and the gross premium equals the assessments.

The SOP deviates from prior guidance in the selection of assumptions to be used. Specifically, the SOP requires that a range of reasonably possible assumptions should be used in determining the reserve. This is a significant departure from the single best estimate approach used in selecting assumptions under SFAS 60 and SFAS 97. We expect that, barring further clarification or guidance, insurers could interpret this provision to require anything from a handful of reasonable scenarios to a full-blown stochastic model with thousands of scenarios. Furthermore, since the SOP states that assumptions should be consistent with those used for DAC amortization, this raises some question as to what constitutes consistency. Although SFAS 97 does not prohibit the use of stochastic models, it also does not require their use, and so most insurers currently use a single set of best estimate assumptions. A reasonable approach for GMDB reserving might be to construct a range of scenarios around the single best estimate scenario used for DAC amortization. It is interesting to note that the SOP does not specifically call for a fair value or option pricing methodology to be used in estimating the present value of expected excess payments, but neither does it preclude their use.

Assessing the SOP's Impact

Model and Base Assumptions
To begin to assess the impact of the SOP's guidance on GAAP earnings, we created a model of a single sample product. The model was created using Classic Solutions' MoSes™ software. Our main product assumptions, used in all scenarios, are outlined below. These assumptions are hypothetical and are not intended to reflect any one company's product.

- Male, nonsmoker, issue age 60
- Single $100,000 premium
- 6.5% commission rate
- Initial expenses: $20 per policy and 0.6% of premium
- Maintenance expenses: $30 per policy and 0.25% of account value
- Mortality: 1996 US Annuity 2000 Basic Male
- Fees: M&E charges of 1.50% of account value and investment fee of 25 bps.
- Lapses: 3% for 7 years, followed by 15% thereafter
- Surrender charges: 7%, 6, 5, 4, 3, 2, 1, 0%
- GMDB: Annual 6% rollup on premium with a fee of 25 bps

For our base case, we used a single deterministic scenario with a 7.5% assumed market return. In all cases, regardless of the assumed market return, our DAC and reserve discount rate was assumed to be 7.5%. We assumed a ten-year GAAP horizon in all cases (i.e., assumed all policies surrendered after the tenth year). For purposes of calculating DAC, we assumed that all first-year expenses in excess of maintenance expenses were deferrable, up to the amount allowed by recoverability testing (i.e., the k-factor was restricted so as not to exceed 100%). Any first-year expenses in excess of those determined to be recoverable went directly through income.

The initial step was to model the product without any GMDB provision whatsoever, simply to test that the product was indeed profitable. We ran the model using three different assumed market returns (before fees): 5%, 7.5% and 10%. In all three cases, the model produced positive GAAP earnings in all ten years of the horizon.

Exercise One: With and Without the GMDB Provision
Before analyzing the impact of the SOP, we first wanted to isolate the impact of adding a GMDB provision to the product without holding any additional reserves. We did this by comparing the stream of GAAP earnings for the product with and without the GMDB at our three assumed market returns. This case reflects the present position of many insurers who currently hold no reserve for this feature. Graph 1 shows a comparison of the product without GMDB to the product with GMDB with a zero reserve at our three assumed market rates.

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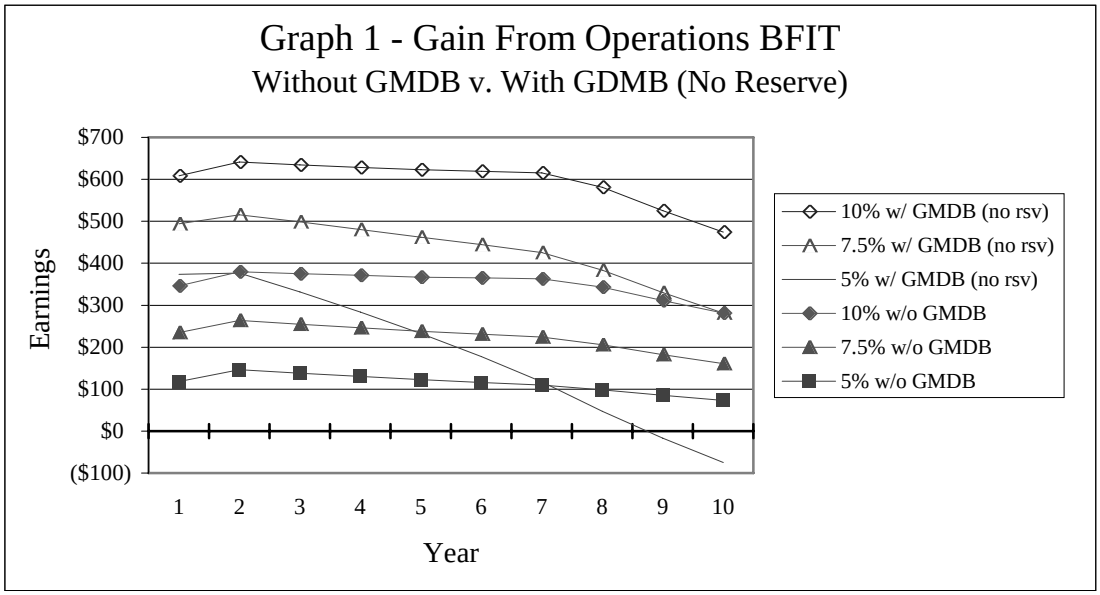
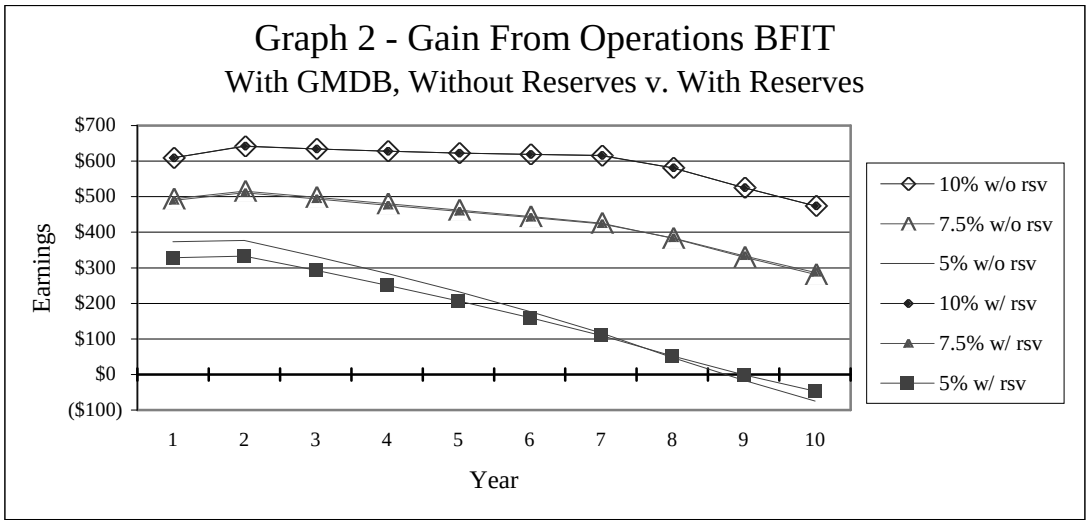


Note that this particular product has much higher GAAP earnings with the GMDB than without, except at the 5% market return. In general, the higher earnings result from the fact that fees are being paid for the GMDB, but an immaterial amount of claims are paid because the assumed market returns generally exceed the 6% GMDB roll-up provision. In the case of the 5% market return, the product with the GMDB becomes less profitable than the product without GMDB in durations nine and ten. This is due to the payment of excess claims under the GMDB feature.

Exercise Two: Pre- v. Post-SOP

The next analysis we performed considered the stream of GAAP earnings before and after the application of the GMDB reserving methodology proposed in the SOP. For the sake of simplicity, we calculated the GMDB reserves on a deterministic basis using the applicable assumed market return in each scenario.

Graph 2 shows a comparison of GAAP earnings for a product that has a GMDB with and without the additional GAAP liability. These results are shown for all three assumed market returns.



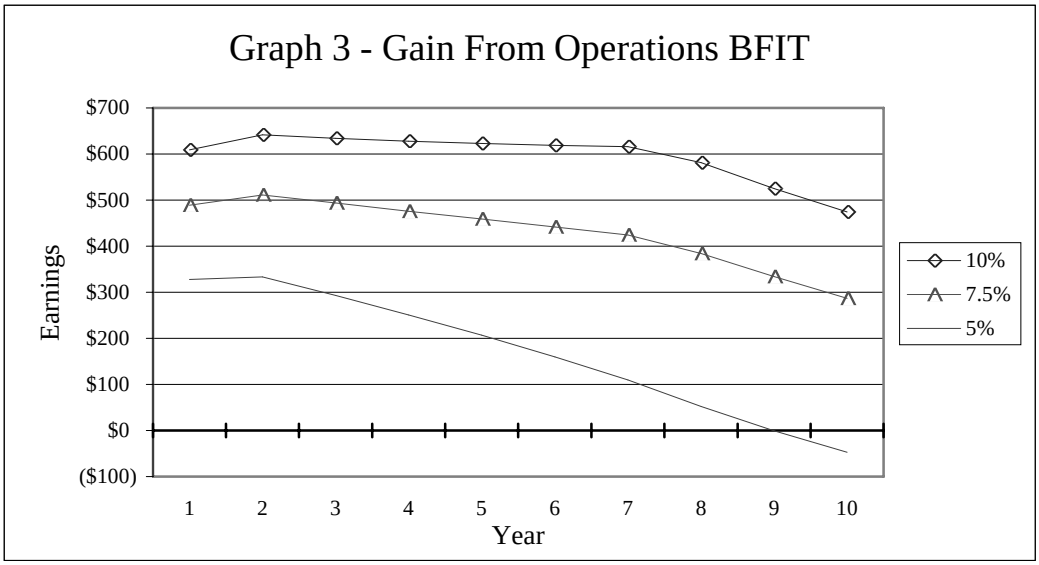
Although this is not shown on Graph 2, we note that when deterministic GMDB reserves are held, the product with the GMDB is still more profitable than the product without the GMDB at both the 7.5% and the 10% market returns. For the 5% market return, the product with GMDB reserves is more profitable than the product without GMDB until duration 7. It is important to note that while the inclusion of the reserve modifies the pattern of GAAP earnings, it does not alter the total amount of earnings over the life of the contract.

As shown in Graph 2, the additional reserve dampens earnings in those scenarios where an additional reserve is required. Although our rollup rate is set at 6%, the 7.5% scenario gives rise to a small amount of GMDB reserves because of the fees and charges, totaling 200 basis points, that are assessed against the 7.5% return, resulting in a net return of 5.5%. The 10% scenario generates no GMDB reserve because the net return exceeds the 6% roll-up, so no excess benefits are ever paid.

In any duration, the increase in the GMDB reserve does not fall directly into income. This is because the impact of the additional reserve on income is partially offset by its impact on DAC amortization. Specifically, when the GMDB reserve is implemented, DAC amortization in the early durations is slowed, while it is increased in the later durations.

Exercise Three: Level Assumed Return

Next, we considered the impact of the GMDB reserve under various level assumed returns. We again used 7.5% as the expected return for our base case, and compared this to cases with 5% and 10% returns. Graph 3 shows the earnings pattern over ten years for each of these cases.



As might be expected, the results do not exhibit symmetry; in other words, the additional 2.5% of return (from 7.5% to 10%) has much less positive impact on earnings than the negative impact generated by the reduction of market return by 2.5% (from 7.5% to 5%).

Exercise Four: Shock Market Return

Our next test involved a 10% spike or drop in market values in the 25th month of our projection. We used the base case of a 7.5% return and applied either a spike or drop to this case. The resulting patterns of GAAP earnings are illustrated in Graph 4 on page 14.

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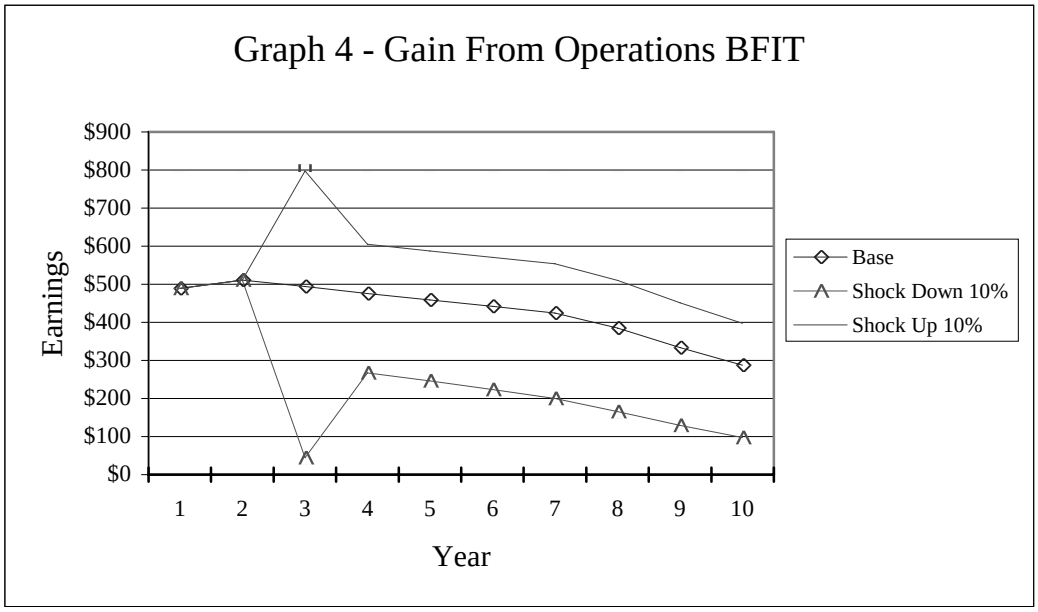
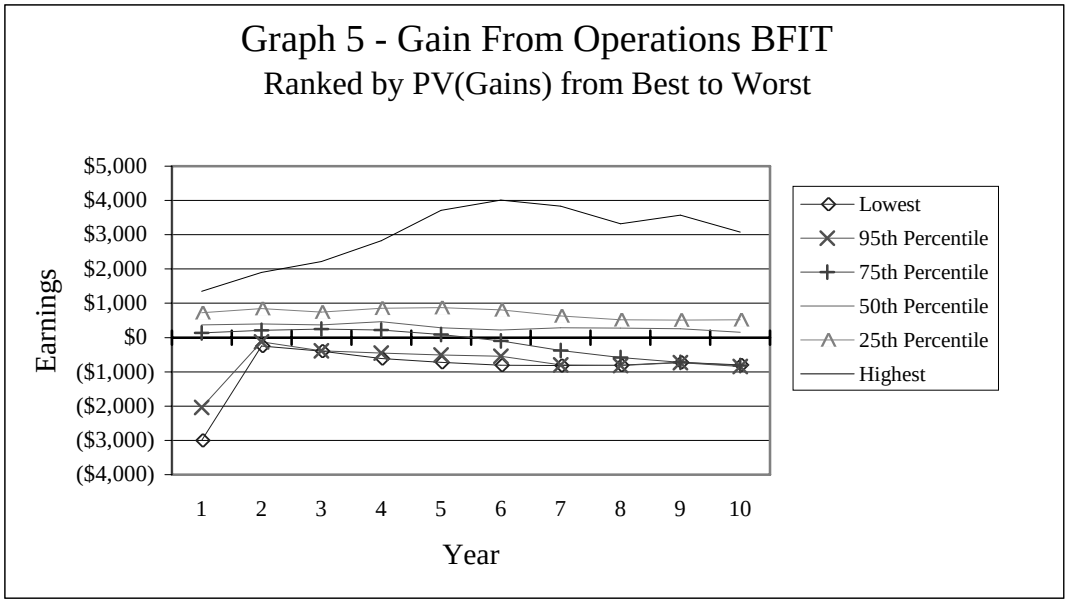


We notice that the spike and drop have a huge impact in GAAP earnings in the year in which they occur (duration three). In the remaining durations of the projection, the earnings patterns are consistent with duration three in direction, although the magnitude of the effect is significantly dampened. The large spike for the shock down scenario reflects the large increase in the additional reserve for the GMDB; in duration four, much of the additional reserve is released bringing earnings back up. The opposite pattern occurs for the shock up scenario. The earnings continue to deviate from the base pattern even after the duration in which the shock occurs because the fees, which drive earnings, are generated from a larger or smaller fund value, as the case may be.

Exercise Five: Stochastic

Finally, we performed a stochastic analysis using 100 randomly generated scenarios. The scenarios were generated by the ESE application in MoSes based on a 7.5% average return and 20% volatility. GAAP earnings were calculated on a deterministic basis for each scenario with no true-up or unlocking in future periods. Graph 5 shows the pattern of earnings for specific scenarios ranked according to present value of earnings.



We note that approximately 50% of the scenarios resulted in a ratio in excess of 2% at inception, which would suggest classifying the contract as an insurance contract. We note also that a significant number of the scenarios result in materially negative earnings. This reflects the cliff-type profile of this risk: under many scenarios there is no significant impact to insurer's earnings, but under the few scenarios with significant declines in the market, there is the potential for a significant hit to GAAP income.

Conclusions and Remarks

Based on our study, we have identified several significant points regarding the proposed GAAP reserve methodology:

1. The distinction between investment and insurance contract as defined in the SOP is important. If insurer's assumptions regarding future expected earnings are overly optimistic at contract inception, they may lose the opportunity for the remainder of the contract life to post a reserve for the GMDB benefit, despite the fact that there is a reasonable chance the GMDB option will be in the money at a future date. Therefore, it is important for insurers to include a reasonable range of assumptions when considering the significance of insurance risk at contract inception.

2. Since a range of assumptions is used to determine the classification of the contract, it is natural to wonder how many scenarios must give rise to a significant ratio before the contract should be considered an insurance contract. 25%? 50%? All of them? While there is no definitive answer to this question, insurers must carefully weigh the potential for significant losses on these contracts and the potential need for future reserves when determining how to evaluate these results.

3. The GMDB reserve could have a material earnings impact when the separate account performance deviates from expected.

4. DAC amortization impacts will help to dampen but not eliminate the impact of the GMDB reserve requirements.

The SOP provides the first guidance specifically addressing the issue of reserving for VA GMDBs. However, this guidance may raise more questions than it answers. In particular, the determination of insurance risk, the question of consistency between DAC and GMDB reserve assumptions, the calculation of the present values required for the ratios, and the determination of a reasonable range of assumptions will all require careful consideration and interpretation by insurers applying the SOP.

The interpretation and implementation of this guidance will provide challenges for VA writers, especially since many currently hold no reserves for these products and others are using reserve methodologies that are inconsistent with the proposed approach. Companies will need more sophisticated valuation models and processes to accommodate the proposed requirements, and actuaries will need to exercise judgment in several important aspects of the reserve determination. In a subsequent article, we will illustrate the reserve and earnings implications of the proposed requirements using multi-scenario valuation techniques.

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