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# An Alternative Option-Based Approach to Calculating MRBs

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**A**SU 2018-12 introduced a new concept called “market risk benefits” (MRBs). MRBs are a new accounting classification for benefits within deposit contracts, offering protection from “other than nominal market risk.” This applies to products with account values, including variable and indexed annuities with guaranteed living or death benefits attached (aka GMxBs).

ASU 2018-12 Section 944-40-30-19D mentions both a non-option and an option-based valuation approach to account for MRBs. This article considers the option-based approach. The purpose is to highlight weaknesses in the current application of the option approach to MRBs, propose an alternative method, and consider the benefits of the new approach.

## CURRENT OPTION-BASED APPROACH

Consider a fixed indexed annuity (FIA), with money invested in both indexed and fixed funds. The FIA has a guaranteed minimum death benefit (GMDB) rider attached with no explicit fees. The benefit is subsidized by less generous accumulation parameters (such as credited rates and caps). The GMDB under ASU 2018-12 is an MRB. Under current GAAP practice, the reserve on the base contract at issue is fixed fund value plus host plus value of embedded derivative (VED), where the initial host is equal to indexed premium less VED to avoid a gain or loss at issue. The reserve for the GMDB is held under SOP 03-1 and is zero at issue.

Since the GMDB is considered an MRB under ASU 2018-12, it must be fair valued. The company investigates an option-based approach. Using current GAAP guidance, the present value (PV) of excess benefits on the GMDB rider must be subtracted from the premium to establish the host at issue as follows:

- $MRB = PV \text{ of future excess benefits at issue}$
- $Host = \text{fixed premium} + \text{indexed premium} - VED - MRB$
- $Total \text{ Contract Reserve} = Host + VED + MRB$

The total contract reserve is the initial premium; there is no gain or loss at issue. At future dates, the host accrues at an internal rate of return (IRR) to the ultimate policy guaranteed minimum surrender value.

## The Problem Part 1

But wait ... what happened to the reserve on the fixed fund? Instead of being held equal to the account value, it is included along with indexed funds in the host! This is required because the MRB is based on all policy funds, not just indexed funds. The option approach requires that the **entire contract** be revalued at inception to establish a new host; the new host will accrue at the IRR to the transition date. This change can significantly impact the balance sheet.

## The Problem Part 2

Now consider what happens to the GMDB if there is good performance on indexed funds. Positive fund performance results in less excess benefits and thus less value in GMxB riders. Under the existing option-based approach, the host was reduced to avoid a gain/loss at issue. If after several years the MRB (PV of future excess benefits) is reduced, the host will be lower than an otherwise identical contract without a GMDB because the host at time 0 was lower. The counterintuitive situation occurs where a contract with a GMDB rider will have a lower total reserve at a future date than it would have had if the GMDB rider was never attached.

Under current GAAP, the base contract reserve is unaffected by the SOP 03-1 reserve. Under the current option-based approach, the base contract reserve very much depends on the presence of the rider. This undesirable change to the base reserve is not currently addressed by the option-based approach.

## Why Bother?

You may be wondering “Why would a company ever want to use the option approach? Considering potential changes to the base reserve and increased volatility, what’s the upside?” Two reasons why a company would consider calculating MRBs using the option approach:

1. **No explicit rider fees/avoid a loss at issue:** If you have GMxB riders without explicit fees, then the nonoption approach results in a loss at issue. This situation can happen if the rider benefits are offset by implicit fees, such as reduced caps on an FIA, or higher M&E fees on a variable annuity (VA).
2. **Another choice:** At transition, a company may test both approaches and select the methodology with the most desirable results. The option approach provides this second choice.



### ALTERNATIVE METHOD: OPTION APPROACH TO MRB

Considering the issues above, let's consider an alternative method for calculating the MRB liability. This alternative approach may not be accepted practice today but has significant advantages over the current approach.

The process described below sets up a separate "host" balance equal to the opposite of the MRB liability (PV of excess benefits – PV of fees, if any) at issue. The new "host"—call it "host2"—amortizes to zero over the contract life. The MRB plus host2 equals the net liability for the MRB.

At issue, calculate the present value of excess benefits and present value of rider fees (if any) across a range of appropriate scenarios. Establish an MRB at issue equal to average PV of excess benefits less average PV of fees. The present values are discounted at the scenario-specific discount rate and then averaged across all scenarios to calculate the MRB. Next, establish a host2 equal to and opposite the MRB at issue. The net liability is equal to the MRB liability plus host2 liability, which at issue is zero.

#### Host2 Liability

The host2 established at issue must now be rolled forward to the valuation date.

**Roll forward:** Once the host2 at time 0 is established, one method for rolling forward to the valuation date is straight-line amortization from the issue date to maturity. The method of rolling forward host2 to policy maturity is the only difference between the current option approach and this new approach for

policies with an established host liability. Rolling forward the host2 balance using straight-line amortization is consistent with ASU 2018-12's simplified approach to DAC amortization and is applicable for policies with or without an underlying host on the base contract, making it a logical choice.

**New premium/partial withdrawals:** The host2 liability established at time 0 needs to be adjusted for new premium and partial withdrawals on the base contract. To make this adjustment for new premium, the host2 is ratioed upward. The host2 is ratioed downward for partial withdrawals. The suggested ratio will use the concept of historical premiums paid to date.

**Historical premium paid:** Historical premium paid is equal to the initial contract premium, plus additional premium, minus partial withdrawals. Adjust the host2 at time 0 based on this value so that we can amortize the host2 to 0 when the fund value has run out.

**Example: Calculating the host2 value at time t:** Assume that initial premium is \$100K, host2 at time 0 is negative \$10K, there's an additional \$50K premium at first anniversary, and a partial withdrawal of \$40K is taken in the fifth year, when the account value is \$200K (prior to withdrawal). The historical premium after all transactions as of the fifth anniversary is calculated as follows:

- Historical premium paid (at t=0) = \$100K
- Historical premium paid (at t=5) =  $(\$100K + \$50K) * (1 - \$40K/\$200K) = \$150K * 0.8 = \$120K$

Use the historical premium paid to ratio the host2 balance at time 0. The host2 at issue was  $-\$10K$ . The new host2 after accounting for additional premiums and partial withdrawals is  $-\$10K * \text{historical premium (5)} / \text{historical premium (0)} = -\$10K * (\$120K / \$100K) = -\$12K$ .

To determine the host2 liability at the valuation date, use straight-line amortization. For this example, assuming a time to maturity of 50 years, the host2 (5) =  $\text{host2 (0)} * (\text{time to maturity} / \text{total contract life}) = -\$12K * (45 / 50) = -\$10.8K$ . The general formula is  $\text{host2 (t)} = \text{host2 (0)} * (t / 50)$  for this contract.

This method is not perfect. There is a disconnect between straight-line amortization of host2 and the payment of excess benefits. Another method would be to establish host2 (0) as above and amortize the time zero balance using historical premium paid, essentially making host2 a DAC-type asset similar to a sales inducement asset.

#### Market Risk Benefit Liability

To calculate the MRB post-issue, the model must first be updated to reflect the current market. The MRB liability is calculated

Figure 1  
MRB Balance Under Option Approach: Current vs. Proposed

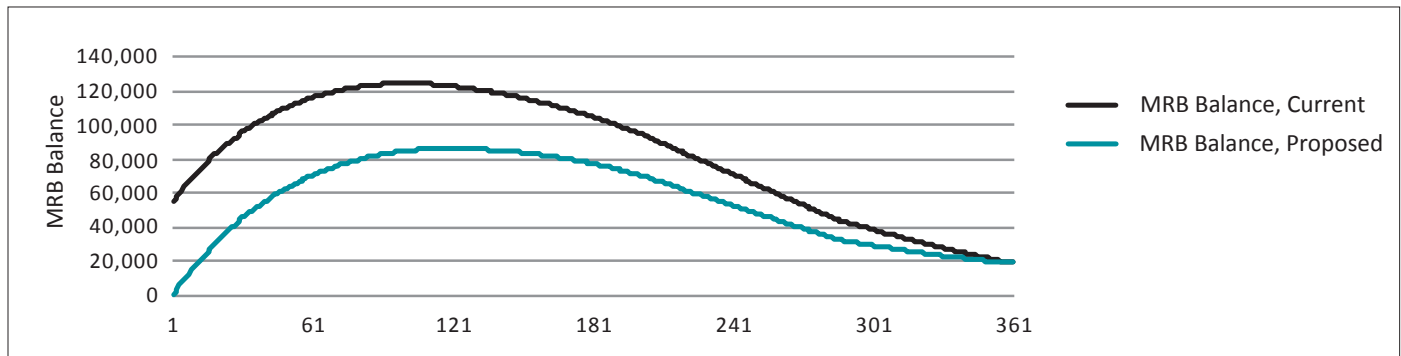
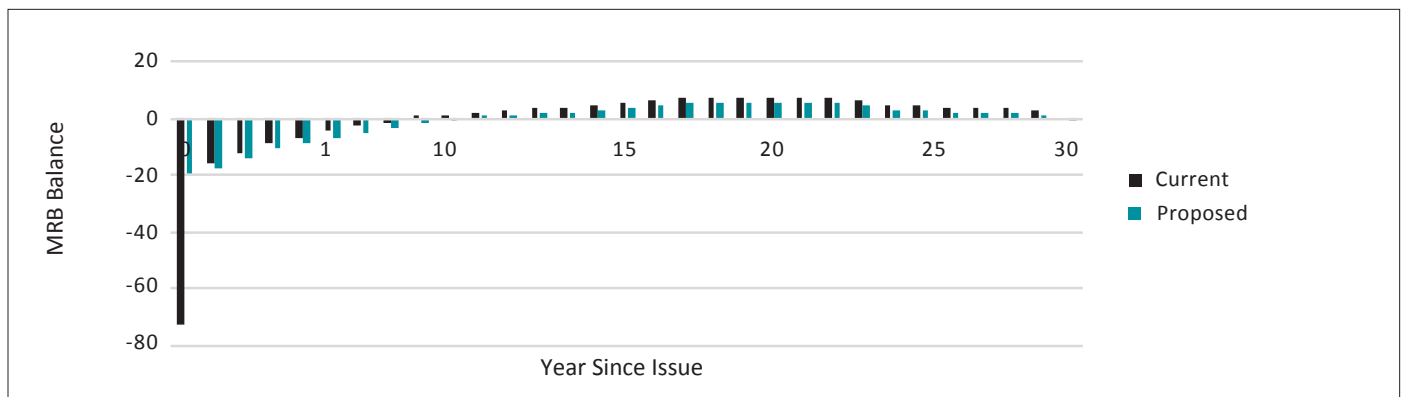


Figure 2  
Annual Income Under MRB Option Approach: Current vs. Proposed



in exactly the same manner that it was calculated at time zero. The calculation of MRB at time  $t$  is prospective with MRB ( $t$ ) equal to the average PV of excess benefits across scenarios less the average PV of fees (if any) across scenarios.

**Net Liability**

The new host2 ( $t$ ) uses straight-line amortization from time 0 to time  $t$  as described above. The MRB ( $t$ ) is a prospective calculation done using updated assumptions and in force. At time  $t$ , the net liability for the MRB using the option approach is  $host2(t) + MRB(t)$ . Note that after time zero, this value may be positive or negative.

**Graphical Comparison**

The graphs in Figures 1 and 2 demonstrate the pattern of results. The underlying product is an annuity with a GMDB, without any rider fees. Figure 1 illustrates that using the current method, there is an immediate loss, while the proposed method has no gain or loss at issue. The proposed method has a lower

MRB at every point due to the host2 asset while maintaining a similar pattern of reserve accrual.

Figure 2 plots annual income over time. The current method includes a loss at time zero. At each point after time zero, the current method has a higher annual income than the proposed method. Beginning in year 8, the annual income using the current approach becomes positive. Under the proposed method, the flip from negative to positive income due to the MRB occurs later, in year 10.

This alternative method has the following benefits:

1. **No impact to base contract reserve at transition:** For fixed and variable funds, the base contract benefit reserve will remain the fund value.
2. **Reserve at issue is equal to current method:** Establishing “host2” as a separate liability is equivalent to including it in the base contract FAS 91-style host on an FIA. The only

difference is how host2 is amortized or accrued from time zero to maturity.

3. **The option-based approach can now be applied to all products:** It can apply to products whether or not they have explicit rider fees, an existing host contract, funds in both separate and general accounts, etc.
4. **Auditable and intuitive:** Since the MRB calculation is not tied to the host portion of the base contract reserve, the policy-level calculations become easier to audit and more intuitive.
5. **Lower volatility:** Variable and fixed fund reserves remain at account value instead of host plus VED, lowering volatility due to VED fluctuation.
6. **No loss at issue:** There is no loss at issue for any policies.
7. **Better fit for awkward contracts:** There is better application to contracts that are otherwise “awkward” under fair value. Consider a VA with a GMDB but without rider fees. Since it’s a variable annuity, there is no host. Therefore, you can’t use the current option approach. However, there are

no explicit fees, so you can’t use the non-option approach without incurring a loss.

## CONCLUSION

The purpose of this article is to highlight the shortcomings of the current option-based approach and describe a better method for implementing MRBs. The alternative method sets up a “host2” at issue, which is then written down over the life of the policy. The net liability for the MRB becomes host2 plus MRB, with no changes to the base contract reserve. This new alternative method is not consistent with the way that the option-based approach is used in either the insurance or the banking industry, where practice is well established. However, the MRB is a new accounting classification under ASU 2018-12, and now is the ideal time to consider a new approach. The many advantages of the proposed method over the currently accepted method make this an alternative worth considering. ■



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