Considerations in Market Risk Benefits

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This white paper was prepared by the Market Risk Benefits Work Group of the American Academy of Actuaries Life Practice Council's Life Financial Reporting Committee. The white paper provides an overview of some of the challenges and issues associated with implementing the Financial Accounting Standards Board's (FASB) Accounting Standards Update (ASU) 2018-12, Financial Services—Insurance (Topic 944) *Targeted Improvements to the Accounting for Long-Duration Contracts*. Specifically, this white paper discusses challenges and issues with identification, valuation and financial reporting of Market Risk Benefits, a new concept introduced by ASU 2018-12. This white paper is intended for use as a reference tool only and is not a substitute for any legal or accounting analysis or interpretation of the regulations or statutes. This white paper is not a promulgation of the Actuarial Standards Board (ASB), is not an actuarial standard of practice, is not binding upon any actuary, and is not a definitive statement as to what constitutes appropriate practice or generally accepted practice in the area under discussion. In addition, it is not a practice note. Events occurring subsequent to this publication of the white paper, including future regulatory or legislative actions, may make the challenges or issues described in this overview irrelevant or obsolete.

Section A: Definition and Scope

Q A1. What is a Market Risk Benefit (MRB)?

A A1. Accounting Standards Codification paragraph (ASC) 944-40-25-25C (i.e., paragraph 944-50-25-25C of Accounting Standards Codification) defines a market risk benefit as follows: "A contract or contract feature that both provides protection to the contract holder from other-than-nominal capital market risk and exposes the insurance entity to other-than-nominal capital market risk shall be recognized as a market risk benefit." The concept of an MRB was introduced by the issuance by the Financial AccountingStandards Board ("FASB" or "Board") of Accounting Standards Update 2018-12 (ASU 2018-12), *TargetedImprovements to the Accounting for Long-Duration Contracts.* This ASU is generally referred to as Long- Duration Targeted Improvements, or LDTI.

The following questions related to scope explore the various elements of the basic definition provided inthe guidance.

Q A2. How is "protection" described when a Company evaluates whether a contract or contractfeature meets the conditions in ACS 944-40-25-25C?

A A2. ASC 944-40-25-25D(a) describes protection as "the transfer of a loss in, or shortfall (that is, the difference between the account balance and the benefit amount) of, the contract holder's account balance from the contract holder to the insurance entity, with such transfer exposing the insurance entity to capital market risk that would otherwise have been borne by the contract holder (or beneficiary)." ASC 944-40-25-25D(b) goes on to clarify that the protection does not include the death benefit component of a life insurance contract but would apply to death benefit coverage on an investment or annuity contract. So, for example, a no-lapse guarantee on a universal life insurance contract is not a market risk benefit to the extent the guarantee protects the payment of the death benefit. It should also be noted that an additional benefit could be added to a life insurance policy (e.g.,guaranteed minimum withdrawal benefits [GMWB] on a universal life contract), which could meet the definition of a market risk benefit because the benefits would not be protecting the contractual death benefit.

Q A3. How is "capital market risk" described when a company evaluates whether a contract orcontract feature meets the conditions in ACS 944-40-25-25C?

A A3. In paragraph BC71 of the Basis for Conclusion, the Board described capital market risk as includingequity, interest rate, and foreign exchange risks.

Q A4. How is "nominal risk" described when a Company evaluates whether a contract or contractfeature meets the conditions in ACS 944-40-25-25C?

A A4. ASC 944-40-25-25D(c) describes "a nominal risk" as follows: "A nominal risk, as explained in ASC 944-20-15-21, is a risk of insignificant amount or a risk that has a remote probability of occurring. A market risk benefit is presumed to expose the insurance entity to other-than-nominal capital market riskif the benefit would vary more than an insignificant amount in responses to capital market volatility."

So generally, other-than-nominal exposure to capital market risk would exist if the net amount at risk would vary by more than an insignificant amount in response to capital market volatility and has more than a remote probability of occurring. Paragraph 111 in Appendix G of the Life & Health Audit Guide further notes that in making this determination "FinREC [the Financial Reporting Executive Committee of the AICPA] believes an entity considers a range of capital market risk scenarios, which may exclude capital market risk scenarios that have a remote probability of occurring."

Even if the utilization assumption does not impact the classification of the guarantee, it may impact thevaluation of the guarantee. If the utilization rate is expected to be low, the fair value of the guarantee may be small, or may even be deemed to be immaterial.

In paragraphs 118 to 120 of Appendix G to the Life & Health Audit Guide, it is explicitly stated that "FinREC believes the analysis of whether exposure to capital market risk is other-than-nominal should be performed without considering the likelihood of expected contract holder utilization of the contract feature," that "FinREC believes that the likelihood of death is not relevant in the scope assessment for a death benefit contract feature," and that "FinREC believes that the likelihood of annuitization (contract holder utilization) is not relevant in the scope assessment for an annuitization guarantee contract feature." In the case of annuitization, there is a caveat that "FinREC believes that mortality assumptions are relevant to the contract holder when quantifying his/her potential life contingent benefit and, therefore, are relevant in the scope assessment."

Q A6. When does an Insurance entity assess the MRB for a given product?

A A6. Per ASC 944-40-25-25B, an insurance entity should determine at contract inception whether a product (or benefit feature) should be accounted as a market risk benefit. The contract inception datewould be the issue date for a contract sold directly by the insurer. Depending on the entity's accounting policy, the contract inception date may either be the original issuer's contract issue date or the entity's acquisition date for a contract acquired in a business combination.

ASC 944-40-25-40 addresses MRBs in reinsurance contracts. Reinsurance contracts present additionaldimensions. For a reinsurance contract that covers inforce business, it may be appropriate to identify MRBs as of the treaty effective date. For a reinsurance contract that covers future business, it may be appropriate to identify MRBs as new contracts are issued and covered by the reinsurance contract.

Q A7. What are some common examples of market risk benefits?

A A7. Guaranteed minimum benefits, such as guaranteed minimum death, income, accumulation, and withdrawal benefits (sometimes referred to collectively as GMxBs) on variable and indexed annuities areoften classified as market risk benefits. If financial market performance adversely impacts the account balance, these guaranteed benefits typically provide the policyholder with a benefit in excess of the account balance. Thus, the guarantees provide protection against capital market risk. These guarantees are discussed further in sections D and E. In particular, Q D1 provides some circumstances under which certain guaranteed minimum death benefits might not be classified as MRBs.

Stable value features included within certain retirement vehicles, such as guaranteed investment contracts (GICs) and corporate-/bank-owned life insurance (COLI/BOLI) contracts, might also sometimesbe classified as market risk benefits. Stable value features pay the policyholder amounts in excess of account balance under certain capital market scenarios. If the resulting capital market risk is deemed to be "other-than-nominal," the stable value feature would be classified as a market risk benefit. Note thatin some cases the stable value feature may be sold separately from the retirement vehicle (e.g., a synthetic GIC). In these cases, the stable value contract may be deemed a standalone derivative rather than a market risk benefit because the stable value contract may not be an insurance contract within the scope of Topic 944 of Accounting Standards Codification, and thus not covered by the market risk benefit guidance. Section G discusses stable value features in more detail.

Q A8. Can general account products include features that are classified as market risk benefits?

A A8. Yes. In paragraph BC 72 of the Basis for Conclusions to ASU 2018-12, FASB noted that insurance entities may offer benefits in general account products that are in substance similar to benefits that are offered in separate account products, such as guaranteed minimum death benefits in general account indexed products or guaranteed minimum lifetime withdrawal benefits in fixed indexed annuities. To avoid different measurement models for economically similar benefits that may lead to confusion for users of financial statements, the Board decided to include general account products within the scope of market risk benefits. Examples provided in the Basis for Conclusions included guaranteed minimum death benefits in general account indexed products with crediting rates that may go negative orguaranteed minimum lifetime withdrawal benefits in fixed indexed annuities.

In determining whether a feature of a general account is a market risk benefit or not, the same considerations as discussed in Q A1 to Q A6 would be analyzed—i.e., 1) both provides protection to thecontract holder from other-than-nominal capital market risk and exposes the insurance entity to other-than-nominal capital market risk; 2) the form of protection must involve a loss in or shortfall of an explicit account value and benefit amount; and 3) the benefit must not be the death benefit of a life insurance contract, subject to definitions discussed in Q A1 to Q A6.

In analyzing whether item 1) applies, general account product designs may pose a gray area not presentin separate account product designs. For example, the interest rate credited may not be directly capital market driven but may also have an element of discretion. However, paragraph 116 of Appendix G to the Life & Health Audit Guide states that "FinREC believes that exposure to capital market risk can exist whether the interest crediting rate is contractually specified or discretionary." Further, if an interest credit might be negative under conditions linked to capital market movements causing a shortfall, many actuaries would consider that a circumstance that would meet item 1).

In analyzing whether item 3) applies, annuity contracts and investment contracts cannot be analogizedto life insurance contracts. This applies even if the annuity or investment contract is classified as a life insurance contract for GAAP accounting purposes.

Q A9. Are annuitization benefits of general account products market risk benefits?

A A9. Annuitization benefits of general account products can be market risk benefits, subject to analyzing the criteria and definitions discussed in Q A1 to Q A6. The primary example of such a guarantee is a traditional annuitization guarantee in a deferred annuity product (i.e., contract specifiesthe mortality table and the interest rate to be used to determine future annuity payments using the account balance as the consideration at the point of annuitization). For such guarantees, the insurer evaluates the product feature as of the issue date to confirm whether it is exposed to "other-than-nominal" risk as of the contract inception date and whether the feature is providing "protection" from the difference between the periodic payment promised by the annuitization guarantee and the account balance.

If protection for other-than-nominal capital market risk is being provided, then this feature would be classified as an MRB. However, if the annuitization guarantee only locks in the mortality table, but the interest rate used to calculate the annuitization payments would be based on market rates at the futureannuitization date, there is no MRB feature because the contract holder is not protected from capital market risk. This would continue to be accounted for using the insurance accrual model. Section F covers annuity purchase rate guarantees in more detail.

Q A10. Do minimum credited rates on an account value constitute a market risk benefit?

A A10. Not typically. A typical interest crediting feature and guaranteed minimum interest rate do not provide a benefit to the contract holder "in addition to" the account balance, but instead are definingthe "return" provided on the account balance. In other words, the guarantee is not in the form discussed in Q A2. Therefore, they are not considered MRBs. For example, for fixed-indexed annuities with interest crediting rates linked to an equity index, the index crediting feature of the contract is generally not considered an MRB and will continue to be accounted for as embedded derivatives under Topic 815of Accounting Standards Codification.

There may be situations where an index crediting feature of a fixed-indexed annuity might be an MRB. An example would be if the index crediting accumulated to date is not paid upon surrender, but instead is not available until a specified future anniversary date is reached. This may be an amount in addition to the account balance since it is contingently payable only if the policy holder is alive on the future dateand so may be an MRB.

In some cases, a contract may specify that a policyholder might under some circumstances (e.g., death or maturity) receive the greater of the account balance or the premiums accreted at a minimum guaranteed interest rate. In these cases, this guaranteed interest rate may not define the return on theaccount balance but rather could provide an amount in addition to the account balance under the specified circumstance. In these cases, this guarantee could be a market risk benefit if it meets the criteria discussed in Q A1 to Q A6.

Q A11. Are market value adjustments (MVAs) market risk benefits?

A A11. MVA features on account balance products typically work as follows. If the contract surrenders before a certain date, and if interest rates have declined since contract inception, the surrender value is increased to (not necessarily exactly) offset the increase in value of a (hypothetical or actual) bond portfolio backing the account if sold before maturity. Similarly, if interest rates have increased, the surrender value is decreased to (not necessarily exactly) offset the decrease in value of a (hypothetical or actual) bond portfolio backing the account if sold before maturity. Although the policyholder could receive more than the account balance if interest rates decline, the policyholder could receive less than the account balance if interest rates increase. Because the policyholder has a roughly symmetric risk of receiving more or less than their account balance, a typical MVA may generally not be regarded as providing "protection" against capital market risk, and thus may not be considered an MRB.

There are possible exceptions. Some contracts may have an MVA that under some or all conditions provides the policyholder with the benefits of the market value adjustment when interest rates decline, but not the risk of a reduction in value when interest rates rise. For example, the MVA may operate symmetrically upon surrender, but may floor the MVA at zero upon death. So that if interest rates decline, the beneficiary receives the account balance plus any benefit from the MVA, but if interest rates increase the beneficiary simply receives the account balance. Such a design may be regarded as providing "protection" against capital market risk, and thus may be considered an MRB if the capital market risk is deemed to be "other-than-nominal."

Q A12. Can the participation feature of a participating pension closeout be considered a market risk benefit?

A A12. Pension closeouts are often custom designed for a particular customer. In some cases, the participation feature is symmetric, so that the customer may receive more or less than the account balance from the feature, and in some cases the participation feature is asymmetric, so that the customer can only receive more than the account balance from the feature. An asymmetric design might be an MRB if the capital market risk is deemed to be "other-than-nominal."

Q A13. Can a contract contain multiple market risk benefits?

A A13. ASC 944-40-30-19D(c) states that if a contract contains multiple benefits that would on their ownbe classified as market risk benefits, those market risk benefits should be bundled together as a single compound market risk benefit.

Accounting for market risk benefits within an insurance contract often becomes more complex when there are multiple MRB features. Each potential MRB feature would be analyzed separately to determine whether it meets the scope criteria. Once a conclusion is reached that multiple MRB featuresmust be separated from the host contract, the value of the compound MRB is based on one unit of account rather than determining separate fair value measurement for each market risk benefit component and adding them together. Because multiple MRBs within a single insurance contract will likely have an interaction that affects the value of the other MRB benefits, the FASB included provision of one unit of account in ASC 944-40-30-19D(c) to avoid inappropriate valuation results.

Q A14. How does the new definition of market risk benefits relate to classification of contract featuresas a derivative under Topic 815 of the Accounting Standards Codification or other insurance and annuitization benefits under Topic 944?

A A14. Under accounting guidance prior to ASU 2018-12, these features would be classified either as embedded derivatives under Topic 815 of Accounting Standards Codification, or, if they did not fit thatdefinition, as other insurance benefits under Topic 944. Contracts classified as the former were valuedusing the fair value model; those classified as the latter would use the insurance accrual model with retrospectively updated benefit ratio.

In the revised classification hierarchy described in ASC 944-40-25-25B, a contract feature is first tested for whether it meets the definition of a market risk benefit. If it does, fair value accounting applies, though with the additional requirement to record change in instrument specific credit risk (sometimes described as "own credit risk") in Other Comprehensive Income (OCI). If it does not, the feature is testedfor classification as an embedded derivative. If the feature does not meet the criteria for an embedded derivative, it is classified as an other insurance benefit to be valued using an insurance accrual model with a retrospectively updated benefit ratio. Liabilities using this model are often described as Statement of Position (SOP) 03-1 liabilities. The general effect of the revised classification hierarchy is tovalue more features as market risk benefits using a fair value method rather than an insurance accrual model.

The following table illustrates the potential change in classification algorithm Pre-LDTI to LDTI for some common features, subject to "other-than-nominal" capital market risk and other criteria as described inQ A1 to A9. Note that these are common classifications, but the classification for any actual guarantee may vary from what is shown in this table due to the specific contractual provisions.

Feature	Pre-LDTI classification	Accounting model Pre-LDTI	Post LDTI classification	Accounting model Post-LDTI
Guaranteed Minimum Death Benefit (GMDB) on variable annuity or fixed indexed annuity	Other insurance	Accrual	MRB	Fair value splitting change in own credit
Guaranteed Minimum Withdrawal Benefit (GMWB) or Lifetime Withdrawal Benefit on variable annuity or fixed indexed annuity	Diversity: embedded derivative or other insurance benefit	Diversity: fair value or accrual	MRB	Fair value splitting change in own credit
Guaranteed Minimum Accumulation Benefit (GMAB) on variable annuity or fixed indexed annuity	Embedded derivative	Fair value	MRB	Fair value splitting change in own credit
Guaranteed Minimum Income Benefit (GMIB) on variable annuity or fixed indexed annuity	Other insurance benefit	Accrual	MRB	Fair value splitting change in own credit
Guaranteed payout annuitization rate upon conversion of a deferred annuity	Other insurance	Accrual	MRB	Fair value splitting change in own credit
Stable value features	Diversity: embedded derivative or other insurance benefit	Diversity: fair value or accrual	Diversity: MRB or insurance, depending on the feature, unless standalone derivative	Fair value splitting change in own credit (unless standalone derivative, in which case fair value, or unless insurance, in which case accrual)
Index credit on Fixed Index Annuity that is part of the account balance	Embedded derivative	Fair value	Embedded derivative	Fair value
Index credit on Fixed Index Annuity that is payable only upon a contingent future event	Embedded derivative	Fair value	Diversity: MRB or embedded derivative	Fair value splitting change in own credit (unless embedded derivative, in which case fair value)
Secondary Guarantee on Universal Life	Insurance	Accrual	Insurance	Accrual

Q A15. Can life insurance contracts have features that would be classified as market risk benefits?

A A15. ASC 944-40-25-25D (b) explicitly excludes the death benefit of a life insurance contract from being a market risk benefit: "Protection does not include the death benefit component of a life insurance contract (that is, the difference between the account balance and the death benefit amount).This condition does not apply to an investment contract or an annuity contract (including an annuity contract classified as an insurance contract)."

Other benefits within a universal life-type insurance contract besides the death benefit can be market risk benefits. For example, if a variable universal life contract or an equity-indexed universal life contractcontains a guarantee on the account balance—for example, a guaranteed minimum accumulation benefit or a guaranteed minimum withdrawal benefit—those benefits may be market risk benefits if they "both [provide] protection to the contract holder from other-than-nominal capital market risk and [expose] the insurance entity to other-than-nominal capital market risk" (ASC 944-40-25-25C). If the guarantee meets the definition of a market risk benefit, the valuation would be similar to like guarantees on variable annuities or fixed-indexed annuities (see sections D and E).

Universal life-type contracts sold as COLI (corporate-owned life insurance) or BOLI (bank-owned life insurance) may have market risk benefits related to stable value features. Section G address stable valuefeatures.

If a universal life contract contains a feature permitting the policyholder to annuitize the account balance and receive a guaranteed minimum payout rate, the guaranteed payout rate could be a marketrisk benefit if it meets the definition. Testing for and valuing such a market risk benefit would be similar to that for a like annuitization payout rate guarantee on a deferred annuity (see section F). One possible difference between an annuitization payout rate guarantee on a life insurance contract and on a deferred annuity is that the probability of exercising this guarantee on a life insurance contract may be much lower. That does not impact whether the guarantee meets the definition of a market risk benefit but may result in the value of the benefit being deemed immaterial.

The definition of a market risk benefit explicitly defines "protection" as "the transfer of a loss in, or shortfall (that is, the difference between the account balance and the benefit amount) of, the contractholder's account balance…" (ASC 944-40-25-25D (a)). Therefore, actuaries generally believe that a universal life-type insurance contract or investment contract that does not contain an implicit or explicitaccount balance cannot contain a market risk benefit.

Q A16. Can health insurance contracts have features that would be classified as market risk benefits?

A A16. Unlike the case of a life insurance contract, there is no explicit exclusion of health insurance benefits such as disability income, long-term care, or accident & health benefits from the definition of market risk benefits. As discussed in question Q A2 above, a market risk benefit requires a loss in or shortfall of the contract holder's account balance so if there is no account balance in a traditional health insurance contract, then it does not contain a market risk benefit. Even if the health insurance contract does contain an account balance, ASC 944-20-15-12 states that "If insurance contracts have characteristics significant to the contracts cited in (a) or (b) of the preceding paragraph those contracts are within the scope of the Long-Duration Contracts Subsections of this Subtopic. For example, universaldisability contracts that have many of the same characteristics as universal life-type contracts, with the exception of providing disability benefits instead of life insurance benefits, shall be accounted for in a manner consistent with universal life-type contracts." Actuaries generally interpret this paragraph as requiring an analogy with ASC 944-40-25-25D (b), by which the disability benefit of a universal disability contract (or the long-term care benefit of a universal long-term care contract, etc.) cannot be a market risk benefit. This is supported by paragraph 121 of Appendix G of the Life & Health Audit Guide, which states:

> FinREC believes that the disability and health insurance benefit features (e.g. long-term care) of a universal life-type contract (whether designed as a universal disability or health contract or as a rider to a universal life insurance contract) are subject to the exception in FASB ASC 944-40-25-25D(b) and, therefore, do not meet the definition of a market risk benefit. In evaluating whether a contract or contract feature meets the conditions in FASB ASC 944-40-25-25C, FASB ASC 944-40-25-25D(b) does not explicitly include or exclude disability or health insurance benefit features of a universal life-type contract from the death benefit exception. However, FASB ASC 944-40-25-25D(b) does state that protection "does not include the death benefit of a life insurance contract (that is, the difference between the account balance and the death benefit amount)" and explicitly states that this "condition does not apply to an investment contract or an annuity contract (including an annuity contract classified as an insurance contract)." Further, FASB ASC 944-20-15-12 states that "if insurance contracts have characteristics significant to" those of universal life-type contracts then they "are within the scope of the Long-Duration Contracts Subsections of [FASB ASC Topic 944]. For example, universal disability contracts that have many of the same characteristics as universal life-type contracts, with the exception of providing disability benefits instead of life insurance benefits, shall be accounted for in a manner consistent with universal life-type contracts.

Q A17. Can a disability income, long-term care, or accident & health insurance rider on a universal lifeinsurance contract be a market risk benefit?

A A17. There is no explicit guidance that would exclude health benefits on universal life contracts frombeing market risk benefits. However, death benefits on life insurance contracts are explicitly excluded. And as discussed in question Q A16 above, ASC 944-20-15-12 is generally interpreted as excluding disability benefits on disability contracts from being market risk benefits, even if the disability contractcontains an account balance. As a result, by analogy, actuaries generally believe that disability or otherhealth benefits on universal life contracts are excluded from being market risk benefits. This is supported by paragraph 121 of Appendix G of the Life & Health Audit Guide, as quoted in Q A16.

Q A18. Is a reinsurance contract automatically classified as an MRB if the underlying reinsuredproducts are classified as an MRB on a direct basis?

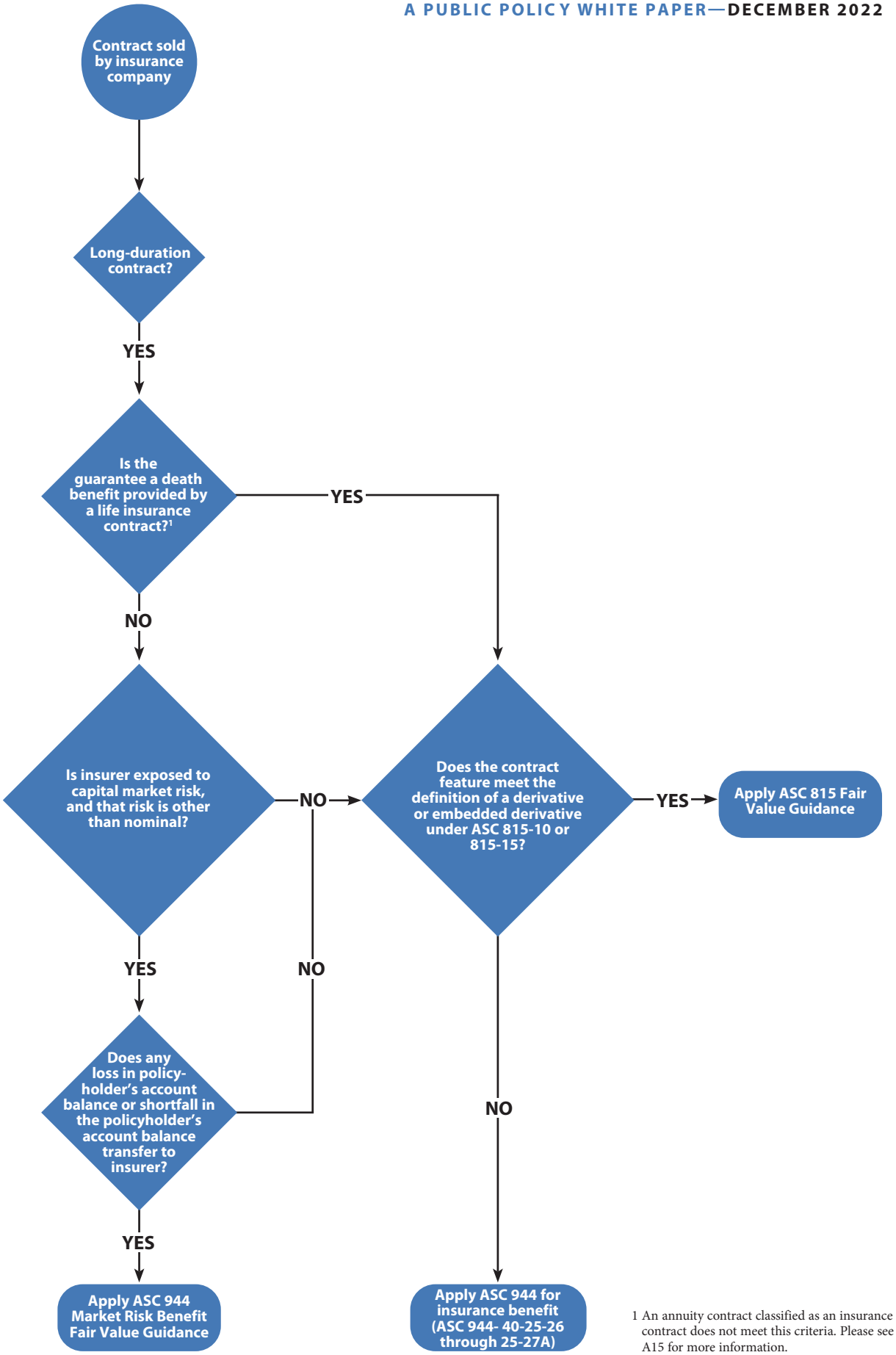
A A18. ASC 944-40-25-40 addresses reinsurance contracts. A reinsurance contract is not automatically classified as an MRB just because the underlying direct contract is classified as an MRB. Both the cedingentity and reinsurer would determine whether such a reinsurance contract should be accounted for under the MRB provision of ASC 944-40-25-25C. For reinsurers, the reference to the account balance in ASC 944-40-25-25D refers to the underlying contract between the direct writer and the contract holder,although the reinsurance contract cash flows are between the direct writer and the reinsurer. Althoughthe reinsurance contract may not automatically be accounted for as an MRB, often if the direct contractcontains an MRB, the reinsurance contract will contain one too.

If the reinsurance contract is not accounted for under the market risk benefit provisions of ASC 944-40-25-25C, then per paragraph 944-40-25-25B, both the ceding entity and the reinsurer should then determine whether such a reinsurance contract should be accounted for as an embedded derivativeunder Topic 815 of Accounting Standards Codification, and if not, then as a death benefit or other insurance benefit feature or annuitization benefit under ASC 944-40, similar to direct products.

Section I discusses reinsurance issues in more detail.

Q A19. What are the steps in identifying MRBs?

A A19. ASC 944-40-25-25B describes the guidance to determine the accounting model for contract feature in insurance and investment contracts that provide potential benefits in addition to accountbalance. The decision tree below may be helpful.



1 An annuity contract classified as an insurance contract does not meet this criteria. Please see A15 for more information.

Section B: Valuation of MRBs (General)

Q B1. How are market risk benefits valued for the Generally Accepted Accounting Principles (GAA balance sheet?

A B1. ASC 944-40-30-19C states:

> A market risk benefit shall be measured at fair value. Total attributed fees used to calculate thefair value of the market risk benefit shall not be negative or exceed total contract fees and assessments collectible from the contract holder.

Therefore a market risk benefit is reported at fair value. The fair value would take into account all the expected benefits payable under the MRB. Depending upon whether an option-based valuation approach or a non-option valuation approach is used, contractual fees and assessments may be includedwithin the fair value, but not exceeding the amounts of fees collectible from the contract holder. SectionC discusses option-based and non-option valuation approaches in more detail. Also see Q D6 for more information on the use of certain revenue sources within the fair value calculation.

Topic 820 of Accounting Standards Codification provides the general guidance for determining fair valueunder U.S. GAAP. Topic 820 codified the guidance that had formerly been contained in *Statement of Financial Accounting Standards No. 157: Fair Value Measurements*, often referred to as FAS 157.

Q B2. How are changes in fair values of market risk benefits reported in the GAAP income statement?

A B2. ASC 944-40-35-8A states that:

> Changes in fair value related to market risk benefits shall be recognized in net income, with theexception of fair value changes attributed to a change in the instrument-specific credit risk of market risk benefits in a liability position. The portion of a fair value change attributable to a change in the instrument-specific credit risk of market risk benefit in a liability position shall bereported in other comprehensive income.

A literal interpretation of this paragraph is that most changes in fair value of a market risk benefit are reported in net income. The exception is changes in fair value related to change in the instrument-specific credit risk of market risk benefit in a liability position. Changes in fair value related to change inthe instrument-specific credit risk of market risk benefit in a liability position are reported in other comprehensive income.

An alternative interpretation of this paragraph that is accepted generally by actuaries and accountants isthat the phrase "in a liability position" is meant to emphasize that only the entity's own credit risk is recorded in OCI, and that counterparty credit risk (e.g., reinsurer credit risk) is reported in net income.

Under this interpretation, if the value of an MRB in an asset position includes a component for own credit, the change in own credit for that MRB would be reported in OCI whether the MRB is in an assetor liability position (see Q H5).

Changes in the instrument-specific credit risk of market risk benefit in a liability position are sometimesreferred to as "non-performance risk" or "own credit risk." Section H deals with own credit issues in more detail.

Q B3. What is the unit of account for fair valuing MRBs?

A B3. The MRBs of each contract represent their own unit of account for calculating the fair value. This means that the limit on attributed fees not exceeding fees collectible from the contract holder (discussed in Q B1) would apply on a contract-by-contract basis. As discussed in Q A13, if a contract hasmultiple features that qualify as MRBs, those features are aggregated into one compound MRB for calculating fair value. In some cases, it may be more practical to calculate fair values for MRBs on cohorts of contracts rather than for the MRBs on each individual contract. This may be appropriate if itdoes not produce a materially different result from a contract-by-contract calculation.

Q B4. What valuation and actuarial techniques are used to determine the fair value of a market riskbenefit?

A B4. Section 820-10-55 provides three valuation techniques to fair value, which include the market, cost, and income approaches. Further, in question 8 of the Academy's *Practice Note on FAS 157 & FAS 159*, released in February 2009, the income approach was deemed to be the most likely used for valuinginsurance liabilities under fair value.

Further, question 9 of the Academy's *Practice Note on FAS 157 & FAS 159* provided various examples ofactuarial techniques that may be used as tools to determine the fair value. This included the actuarial appraisal, the risk-neutral valuation method, the budget method, and Black-Scholes.

The actuarial technique most likely to be used for indexed products MRBs is the **risk-neutral valuation method**. This method has the property of maximizing the use of observable capital market inputs and iscommonly used for calculating the fair value of MRB features on variable annuities with similar characteristics. Paragraph 820-10-35-16AA states that when calculating fair value, "a reporting entity shall maximize the use of relevant observable inputs and minimize the use of unobservable inputs."

The **actuarial appraisal method** is unlikely to be used as discussed in questions 9 and 10 of the Academy's *Practice Note on FAS 157 & FAS 159* given that it would not maximize the use of observable market inputs relative to the risk-neutral valuation method. (Although the actuarial appraisal method and risk-neutral valuation method may produce a consistent result if the assumptions in the actuarial appraisal method—namely the net investment earned rate—is based on risk-neutral rates plus the non-performance risk and the difference between book and market is computed separately rather than running through investment earnings.)

Closed form methods such as Black-Scholes are unlikely to be used for most MRBs because the structureof the guarantee is generally more complex than can be accommodated by a closed form method. The Black-Scholes method may be useful if the assumptions underlying the Black-Scholes model are met andthe guarantee is very simple, e.g., where there is a single payment of the guaranteed amount at a fixed point in time, and there is no possibility of unexpected contractual cash flows such as additional deposits or lapses or discretion over credited rates. A disadvantage of the Black-Scholes method is that it may be complicated to split the change in fair value resulting from instrument-specific credit risk from other changes in fair value.

The **option budget method** is unlikely to be used because the critical assumption underlying this method is that certain future cash flows will always offset each other in the future. For example, futurechanges in the cost of funding the guarantees (i.e., future changes in the value of the guarantees) will always be offset by future changes in credited rates or other pricing parameters. While this critical assumption can apply to the index crediting feature on an indexed contract, it is unlikely to hold for MRBguarantees on the indexed contract.

Q B5. How are actuarial assumptions such as mortality, lapse, election rate, and persistency determined?

A B5. Fair value assumptions differ from assumptions used in calculating liabilities for other insurance benefits valued using an insurance accrual model with a retrospectively updated benefit ratio, often described as SOP 03-1 liabilities. Insurance accrual model liability assumptions are based on management's own best estimate of future expectations, while fair value assumptions are based on thebest estimate of the assumption that a market participant would use. ASC 820-10-35-53 states that "unobservable inputs shall reflect the assumptions that market participants would use when pricing theasset or liability, including assumptions about risk." ASC 820-10-35-54A goes on to explain that:

> A reporting entity shall develop unobservable inputs using the best information available in thecircumstances, which might include the reporting entity's own data. In developing unobservable inputs, a reporting entity may begin with its own data, but it shall adjust those data if reasonably available information indicates that other market participants would use different data or there is something particular to the reporting entity that is not available to other market participants (for example, an entity-specific synergy). A reporting entity need notundertake exhaustive efforts to obtain information about market participant assumptions.

However, a reporting entity shall take into account all information about market participant assumptions that is reasonably available.

An actuary would therefore estimate what the market's assumptions would be. Actuaries typically use a combination of experience and judgment to estimate non-market-based actuarial assumptions for a company underwriting the risk. Absent evidence to the contrary, actuaries typically assume that non-market assumptions would be based on a company's own experience, if credible. Otherwise, actuaries would typically assume that a third party would make similar credibility adjustments as the company would make. As a consequence, an actuary will typically use his/her best estimate actuarial assumptions as his/her estimate of the market-based actuarial assumptions. Consistent application of the method used for determining these estimates would ordinarily be advised.

Some companies create two sets of scenarios running in tandem—one risk neutral, one real world—and set the policyholder behavior on corresponding real-world scenario. Others believe this is inconsistentwith a risk-neutral framework (see Q D4).

The Academy's *Practice Note on FAS 157 & FAS 159* contains additional details about practices used todetermine actuarial assumptions for a fair value calculation.

Q B6. How are expenses reflected in the valuation?

A B6. Administration expenses specifically related to the market risk benefit would be included in thefair valuation only if there is an assumption that a market participant would include such expenses when determining the price for such a benefit. Practically speaking, companies may exclude such expenses based on materiality considerations. Some actuaries believe that items that are unique to acompany—such as tax position, cost of doing business, or cost of managing the business—should generally not be included in a fair value estimate, because these items represent company-specific assumptions, not market participant assumptions. Items such as sales commissions would typically notbe included in fair value estimates unless they are considered comparable to a bid/ask spread, because, again, a fair value calculation uses market participant assumptions.

Q B7. Are deterministic or stochastic scenarios used for the valuation of MRBs under the risk-neutral valuation method?

A B7. To the extent that an MRB provides a guarantee with asymmetric payoffs, stochastic scenarios would typically be used to value them under the risk-neutral valuation method. Cash flows associated with these MRBs would typically be sensitive to market movements. As such, stochastic scenarios wouldbe required to probability-weight and discount these cash flows (see ASC 820-10-55-9 and ASC 820-10-55-13 to 15).

In some cases, actuaries may find that a deterministic scenario may provide a reasonable approximationfor the valuation of certain MRBs depending on the nature of the product features. This may be appropriate when the guarantee is deep in-the-money or deep out-of-the-money, such that the valuation under a deterministic scenario approximates the valuation under stochastic scenarios.

Q B8. Are risk margins used when valuing a market risk benefit?

A B8. ASC 820-10-55-5 notes that one element of a fair value calculation using present value techniquesis "the price for bearing the uncertainty inherent in the cash flows (that is, a risk premium)." Thus, if there is significant uncertainty in the cash flows, a risk margin should be considered. This risk margin is not a provision for adverse deviation to introduce conservatism into the fair value calculation but represents the best estimate of the price a market participant would require for bearing such risk.

Because not all actuarial inputs can be calibrated to observable market prices, a risk margin should be considered for these items if they could significantly impact the present value of cash flows. That is because a third party would be expected to add a margin to compensate for the risk due to the inabilityto hedge the input. The Academy's *Practice Note on FAS 157 & FAS 159* contains additional informationon practices being used to calculate risk margins for a fair value calculation.

Q B9. Does the insurer's own credit risk impact the market risk benefit valuation?

A B9. Topic 820 of Accounting Standards Codification defines fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants," which effectively requires an exit value calculation. Topic 820 requires companies to takeinto account a company's own non-performance risk—the risk that the obligation will not be fulfilled—when determining the fair value of liabilities. Therefore, a reporting entity is required to consider the effect of its own credit standing in determining fair value under Topic 820. Per ASC 820-10-35-18, "When measuring the fair value of a liability, a reporting entity shall take into account the effect of its credit risk (credit standing)."

Furthermore, a letter sent by the Securities Exchange Commission to chief financial officers in September 2008 (known as a "Dear CFO Letter") states that, if material, companies should consider explaining "how your credit risk affected your valuation of derivative liabilities and the resulting gain or loss that you included in earnings related to the change in credit risk…" for items carried at fair value.

Although Topic 820 and the 2008 Dear CFO Letter require consideration of own credit risk when calculating liability fair values, they do not explicitly require consideration of own credit risk when calculating asset fair values (although counterparty risk on, say, a reinsurance contract would be considered). Under certain circumstances, the fair value of a variable annuity guarantee may be an assetto the company. There are multiple approaches in practice as to how the own credit or nonperformancerisk is applied to the fair valuation of a feature. One approach is to apply the adjustment for nonperformance risk to the claim leg of the MRB only. This is because a policyholder not paying the fee is not a default as the policyholder has a contractual right to lapse the contract. Also, the fee leg is a payment from the policyholder, not the insurer, and therefore not subject to the claims paying ability ofthe insurer.

Another approach is to apply the own credit risk adjustment to both the claim leg and the fee leg, but only if the resulting MRB is in a liability position. A third approach would be to apply the adjustment toboth the claim leg and fee leg regardless of whether the MRB is an asset or a liability, based on the premise that policyholders would no longer pay fees if the insurer were to default on the claim payments. Regardless of the method used, there would be consistency between the methodology applied in determining the attributed fee (also referred to as the ascribed fee) upon issuance of the contract and the methodology applied for subsequent valuations.

Section H of this paper discusses own credit risk issues in more detail.

Q B10. Can actuaries justify the use of illiquidity premiums when valuing MRBs under fair value?

A B10. Per 820-10-35-9A, "fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction in the principle (or most advantageous) market at the measurement date under current market conditions (that is, an exit price)." Some believe they can observe and earn a premium in excess of the risk-free rate that is independent of thecredit risk for holding assets. They refer to this as an illiquidity premium. An insurance entity too can benefit from this illiquidity premium by investing illiquid assets for funding insurance cash flows that are predictable and liabilitiesthat are illiquid.

Illiquidity premium in an insurance context might also be explained as the cost borne by the policyholderdue to the inability of accessing the entire value of the benefit in a single instance if this uncertainty is not already addressed in the projected cash flows.

For certain MRBs, such as guaranteed minimum withdrawal benefits, benefits paid to the policyholder post account value depletion are fairly predictable and payments cease to exist only upondeath of the policyholder. The policyholder does not have the ability to receive a settlement amount inexchange for the future benefit payments. In such instances, the insurance entity can benefit from illiquidity premium and reflect the same in the MRB valuation. This consideration may justify use of an illiquidity premium in the valuation of an MRB if a market participant would use an illiquidity premium in setting an exit price for the MRB.

Q B11. How might an actuary quantify and incorporate illiquidity premiums?

A B11. The actuary can take credit for an illiquidity premium when discounting MRB cash flows to theextent the MRB is illiquid. If the actuary is using risk-neutral economic scenarios, the actuary may addthe illiquidity premium to the risk-free interest rates to ensure consistency between the economic scenarios and the discount rate if such a premium is observable in similar products.

If the actuary believes that an illiquidity premium is warranted, as a first step the actuary can quantifythe illiquidity premium for a fully illiquid asset. The quantification would:

- Be based on market observations and not based on assets held by the insurance company.
- Exclude any premiums for default risk.

An example of the quantification technique is to observe the spread of an illiquid but highly secure assetover the Treasury rates. If the MRB is based on equity scenarios, a similar analysis between liquid and illiquid equity positions could be done.

As a second step, the actuary can quantify the illiquidity of the specific MRB. An example of this quantification technique is to compare the average MRB-related claims over stochastic real-world scenarios versus a prudent level from more stressed scenarios that are tested in other exercises such as statutory asset and reserve adequacy testing and classifying the MRB as 0%, 25%, 50%, 75%, and 100% illiquid. Such an assessment can be performed at inception of the product as the nature of the MRB maybe unlikely to change over time. If the actuary determines the MRB to be 25% illiquid compared to a fully illiquid liability, the actuary can incorporate only 25% of the illiquidity premium for a fully illiquid asset.

An actuary would typically estimate the illiquidity premium in such a way so as not to overlap or duplicate the own credit spread. Any illiquidity premium would be based on observable market data.

Section C: Types of Bifurcation

Q C1. Does the value of a market risk benefit produce a value of zero at inception?

A C1. Depending on the nature and value of the guarantee, the market risk benefit may or may not have a zero inception value. Although the market risk benefit may or may not have a zero inception value, the bifurcation of amarket risk benefit has zero impact to the value at inception of the entire contract. In other words, any value assigned to the market risk benefit needs to be allocated from the total contract and the remainder after separating embedded derivatives is the starting host value.

The determination of whether to enforce a zero inception value for the market risk benefit hinges mainly upon whether the insurance company considers the market risk benefit to be analogous to 1) afreestanding derivative, 2) an embedded derivative using an option-based valuation approach, or 3) anembedded derivative using a non-option valuation approach.

ASC 944-40-30-19D says that with respect to MRBs analogous to embedded derivatives:

a) Consistent with paragraph 815-15-30-4, if a non-option valuation approach is used, the terms of the market risk benefit shall be determined in a manner that results in its fair value generally being equal to zero at the inception of the contract.

b) Consistent with paragraph 815-15-30-6, if an option-based valuation approach is used, the terms of the market risk benefit shall not be adjusted to result in the market risk benefit being equal to zero at the inception of the contract.

Note that the valuation approaches described above do not necessarily imply that the MRBs are or arenot options. The nature of MRBs (providing protection) means that they typically will be options. But ifthe fees for the MRB are received over time, the MRB can look more like a swap, and so often uses a non-option valuation approach. In fact, some companies classify these benefits as deferred premium options but still use a non-option valuation approach. If the fees for the benefit are all received upfrontor if the contract has no explicit fees, the benefit would typically be valued using an option-based approach.

The nature of the host contract helps dictate the approach taken. If the host is a variable annuity, for example, an option-based approach may not be available because a host adjustment cannot be madeto the separate account.

Analogous to a Freestanding Derivative

If the insurance company classifies the market risk benefit as analogous to a freestanding derivative—i.e.,the entire contract is an MRB—it would not necessarily have a zero inception value. This is because the practice of setting the inception value of a derivative to zero typically applies to embedded derivatives only, and not to freestanding derivatives.

However, if the MRB was acquired in an arms-length transaction, it would normally be expected that thefair value at inception of the MRB would be the initial premium paid for the MRB. If there was no initial premium for the MRB (e.g., the MRB is funded by fees paid over time), an initial fair value of zero would generally be expected because the initial premium paid for the MRB would be zero. These results are what would be expected in a fair market between unrelated parties that are not under duress and any other outcome (e.g., gain or loss at inception) should be rare.

Analogous to an Embedded Derivative Using Option-Based Valuation Approach

If the insurance company uses an option-based valuation approach, typically a zero inception value is not required. The initial value of the MRB would be the average present value at inception of projectedfuture excess benefits, adjusted for a risk margin and also for non-performance/own credit risk if that isnot reflected in the discount rate. Typically, the host contract value would be adjusted to offset the initial value of the MRB using an option-based valuation approach so that there would be no gain or loss at inception. In the unlikely event that the initial MRB fair value exceeds the value of the host contract, the host adjustment may be capped at the value of the host contract and a loss at inception may occur.

Analogous to an Embedded Derivative Using Non-Option Valuation Approach

If the insurance company uses a non-option-based valuation approach, a zero inception value is generallyrequired unless the calibration is restricted (e.g., attributed fees are capped at total contract fees collectible from the contract holder—see Q B1 and B3). If the fees are inadequate to cover the benefits,there could be a host adjustment similar to that described for the option method in order to avoid a loss at inception. In some cases, it may not be possible to make a host adjustment—for example, if the host contract is a variable annuity with all the funds in separate accounts. In such cases, a loss at inception may be necessary if fees are inadequate, even if there are other sources of profit in the contract (e.g., interest spreads from expected future transfers to general account funds).

Q C2. What are the common methods for the calibration of the value of a market risk benefit using non-option method to zero at inception?

A C2. Insurance companies have often used the Attributed Fee or Ascribed Fee Method described below for variable annuity embedded derivatives in the past, and many are anticipated to also use this approach for variable annuity market risk benefits.

Attributed Fee or Ascribed Fee Method

Under this method, the fee charged for the guarantee is split into an attributed fee or ascribed fee (also known as the benefit cost fee) and any fee amount not required to cover future benefit costs. The attributed fee will consist of the fee needed, under a stochastically generated set of risk-neutral scenarios, so that the mean present value of claims, including any risk charge, is equalto the mean present value of the projected attributed fees. Post-issue, the value of the derivative is the present value of future benefits, less the present value of future attributed fees.

The attributed fee may be characterized in terms of all the contract fees or in terms of just thefees explicitly charged for the market risk benefit. The latter is particularly common for riders, where there is an explicit fee for the market risk benefit that can be identified. In that case, if theattributed fee is less than the explicit fee actually charged for the benefit, the remainder of theactual charged fee is considered part of the host contract and would typically be included in net income. If the attributed fee is greater than the explicit fee actually charged for the benefit, the excess is typically "borrowed" from the other fees in the host contract, reducing the amount offees from the host annuity that would be included in net income.

For example, assume that an annuity contract has a GMWB rider. The fees in the base contract are 100 basis points and the separate rider fee for the guarantee is 50 basis points. Assume that the attributed fee at issue is calculated to be 40 basis points. Each future reporting period, 40 basis points would be used to determine the present value of future fees in the GMWB market risk benefit calculation. One hundred ten basis points (100 from the base contract plus 10 excess basis points from the rider) would be considered part of the host contract.

Alternatively, assume that the attributed fee at issue is calculated to be 70 basis points. Each future reporting period, 70 basis points would be used to determine the present value of future fees in the GMWB market risk benefit calculation. Eighty basis points (100 from the base contract less 20 basis points "borrowed" from the host to fund the rider) would be considered part of the host contract. The company would need to evaluate whether the remaining fees are sufficient so that the host portion of the contract is not considered an onerous contract.

The attributed fee method might not result in an initial zero fair value when an MRB is acquired in a business combination. One method of calculating the attributed fee in these situations is as follows:

Assume the MRB value at PGAAP date is 0.

Then the attributed fee percentage can be solved for as:

Present value of future benefits / Present value of future fees

As with MRB that are sold by the reporting entity, the attributed fee percentage on acquired business is capped at 100% of the total contract fees at a contract-by-contract level. When capped at 100%, the resulting MRB value often will be greater than 0.

If the price paid for each MRB is known (or can be estimated), then the attributed fee percentage can be solved for as:

(Present value of future benefits – Price paid) / Present value of future fees, subject to the 100% cap.

Q C3. Is an initial nonzero value of a market risk benefit recognized immediately in net income?

A C3. The only situation in which a nonzero market risk benefit is typically recognized immediately in netincome for an MRB embedded within a contract is when fees are inadequate to cover the benefits and itis not possible to adjust the host to offset the difference (e.g., a variable annuity with all the funds in separate accounts), as discussed in Q C1.[1]

Even though in most cases a nonzero market risk benefit will not produce a gain or loss at issue of the contract, a nonzero market risk benefit is not adjusted. A nonzero MRB would be presented on the balance sheet. If the initial MRB value is nonzero (i.e., a liability), the host contract would be adjusted bythe amount of the MRB, if it is possible to make a host adjustment.

1 As discussed in C1, another possible but unlikely situation where a non-zero MRB might need to be recognized is if the initial MRB fair value exceeds the value of the host contract.

The host adjustment would be run off consistent with the nature of the host contract. For example, if the host contract is a debt instrument (as is typical for insurance contracts), the host adjustment would typically be amortized using an effective yield method as described in ASC 310-20-35-18.

Under an effective yield approach, the host adjustment at contract inception reduces the initial host investment. This results in a higher solved host internal rate of return (IRR) to be used as the host interest rate. The host adjustment would be amortized as follows. At each future period, two IRRs would be calculated based on the expected host cash flows—one IRR would use the contract value net of the host adjustment and the other IRR would use the contract value without taking the host adjustment into account. The contract value net of the host adjustment would accrue at its corresponding IRR and the contract value without taking the host adjustment into account would accrue at its corresponding IRR. The difference between these two values at any period would be the updated balance of the host adjustment.

In some cases, it may not be possible to make a host adjustment. This may be the case in situations suchas a variable annuity with all the funds in separate accounts, because a host adjustment cannot be madeto the separate account balance. In these cases, a loss at inception would be recorded to the extent thatthe initial nonzero MRB balance could not be offset by a host adjustment. However, for such contracts an attributed fee approach would typically be used, in which case a host adjustment would not even be considered unless total contract fees were inadequate to cover the market risk benefit.

For MRBs that are themselves standalone contracts, it is possible for the initial fair value of the MRB tobe less than the premium charged. However, if the reinsurance treaty was an arm's-length transaction,then the expected claims would typically be expected to equal the expected premium and the initial MRB value would be zero. So if the contract value at inception is nonzero, one might consider adjustingthe risk margin to obtain a zero value to be consistent with the price of the arm's-length transaction.

Q C4. How are market risk benefits aggregated at issue for valuation purposes?

A C4. The unit of measurement for market risk benefits is the base contract. Per ASC 944-40-30-19D(c),market risk benefits within each contract should be valued together as a single compound market risk benefit. Embedded derivatives are valued separately from market risk benefits. Valuation may not be more granular than the contract level.

Because the unit of measurement for measuring MRBs is the contract level, that is the level at which attributed fees are supposed to be capped at total contract fees collectible from the contract holder, if using an attributed fee method of bifurcation. Aggregation of contracts into cohorts may be more convenient administratively, but may only be done if the result is not materially different from a contract-by-contract valuation at inception orover time.

Q C5. Can a contract contain both an embedded market risk benefit and an embedded derivative?

A C5. Yes. Per ASC 944-40-25-25B, a contract is first analyzed for whether it contains a (possibly compound) MRB. Then any features that are not MRBs are analyzed for whether they are embedded derivatives under ASC Topic 815. If a contract contains both an embedded MRB and an embedded derivative, both would be bifurcated separately. This is because embedded derivatives and MRBs are reported separately and because the treatment of instrument-specific non-performance risk/own creditrisk differs between embedded derivatives and MRBs. When bifurcating both an embedded derivative and an MRB from a contract, it is important to be careful not to double-count cash flows within both theembedded derivative and the MRB.

Examples of contracts that may contain both an embedded MRB and an embedded derivative include:

a. Fixed index annuities with GMxBs. The GMxBs may be market risk benefits and the indexcrediting feature may be an embedded derivative.
b. Variable annuity GMxBs reinsured under a modified coinsurance or funds withheld agreement.The GMxBs in the reinsurance contract may be market risk benefits and the modified coinsurance or funds withheld feature may contain an embedded derivative.

Section D: Guaranteed Minimum Benefits (GMxBs) on Variable Annuities

Q D1. What elements of variable annuity contracts fall within the scope of market risk benefits?

A D1. As discussed in Q A1 through Q A4, ASC 944-40-25-25C defines the scope of market risk benefits as: "A contract or contract feature that both provides protection to the contract holder from other-than-nominal capital market risk [i.e. equity, interest rate, and foreign exchange risk] and exposes the insurance entity to other-than-nominal capital market risk shall be recognized as a market risk benefit," and ASC 944-40-25-25D further clarifies the concepts of protection and other-than-nominal capital market risk.

In general, any variable annuity product feature or rider that, contingent on a specified trigger event, can potentially guarantee the contract holder a benefit with value in excess of the account balance would be considered a market risk benefit. Variable annuity "GMxB" riders typically are therefore viewed as market risk benefits. This includes guaranteed minimum accumulation benefits (GMAB), guaranteed minimum maturity benefits (GMMB), guaranteed minimum income benefits (GMIB), guaranteed minimum withdrawal benefits (GMWB), and guaranteed lifetime withdrawal benefits (GLWB). Regardless of the trigger for paying the benefit, all these benefits could pay amounts in excess of the account balance as a result of capital market returns, causing the account balance to decrease, orto increase less than the value of the guarantee.

Assumed and ceded reinsurance of GMxBs classified as MRBs would typically also be accounted for asMRBs.

There are other examples of situations where a market risk benefit may exist within variable annuity contracts. All variable annuity products sold in the U.S. include a nominal annuitization option, typically at a purchase rate based on prevailing market mortality and interest rate assumptions subject to nominal purchase rate maximums. Assessment of whether such annuitization guarantees are MRBs is discussed in section F.

Another feature that may be a market risk benefit would be a death benefit on an annuity contact that pays an amount in addition to the account balance if the contract is in a gain position at the time of the policyholder's death. The intent of such a feature is typically to cover the taxes that would be due on thegain. Because the death benefit represents an amount payable in excess of the account balance, this feature may meet the definition of a market risk benefit.

Q D2. What are the key differences between valuing a variable annuity guaranteed minimumbenefit as a market risk benefit and valuing other insurance liabilities under U.S. GAAP?

A D2. Both guaranteed minimum benefits and other insurance liabilities may be valued as the presentvalue of future cash outflows, less the present value of future cash inflows, similar to gross premium reserves calculated for loss recognition testing. Or, if one analogizes the attributed fee to a net premium, the calculation could be analogized to a net premium calculation. In these situations, other insurance liabilities generally use management's best estimate and/or contractually defined assumptions to determine how benefits are defined, when benefit payments occur, what portion of inflows to use, and what interest rate is used for discounting future cash flows (either at time of issue or a combination of historical and management's best estimate for the future under GAAP). Variable annuity guaranteed minimum benefits valued as risk benefit valuations typically use market-consistent assumptions for market-related inputs, best estimate assumptions for non-market related inputs (to theextent these can be justified as being consistent with the assumptions a market participant would use), and risk margins that market participants would assume.

Most other insurance liabilities are valued under a single scenario. One exception is the additional liability for death or annuitization benefits that use the insurance accrual model, which typically uses multiple scenarios and often those scenarios are generated stochastically. Multiple scenarios are typically used for liabilities using the insurance accrual model in order to adequately reflect the guarantee—under a single "best estimate" scenario the guarantee may not have any value, but there may be scenarios under which the guarantee can become very valuable.

Variable annuity market risk benefits are similar to liabilities using the insurance accrual model in the respect that they represent a guarantee, and so multiple scenarios are typically necessary. These scenarios are typically generated stochastically in order to take into account market participant inputs into the variability of the parameters that could make the guarantee valuable. For economic scenarios, market-consistent implied volatilities are often available for some variables (e.g., stock price movements, interest rate movements), at least up to some point in time. Other volatilities may need to be estimated (e.g., long-dated interest rate volatilities, long-dated stock price volatilities, volatilities for prices of less liquid instruments). See Q D5 for more information about estimating volatilities. The value of the market risk benefit is typically the average over all scenarios of the present value of future cash flows, plus a risk margin for non-observable inputs. See Q B8 for more information about risk margins.

Besides calibrating to market-consistent inputs and incorporating a risk margin, one other difference between valuing variable annuity market risk benefits and valuing some other insurance liabilities is thatthe "premium" associated with the market risk benefit is typically locked in at contract inception. For a variable annuity guarantee, the "premium" associated with the market risk benefit is typically a fixed proportion of the total fees in the contract or a fixed proportion of the fees specifically charged for the guarantee, often referred to as an "ascribed fee" or "attributed fee." See Q C2 for more information about calibrating the attributed fee. For a liability using the insurance accrual model, the benefit ratio, which serves a similar purpose as the attributed fee, is retrospectively unlocked when assumptions are updated or trued up for actual experience. For a future policy benefits reserve, the net premium ratio is retrospectively unlocked when assumptions are updated or trued up for actual experience. Unlocking the benefit ratio or net premium ratio generally reduces the impact of a change in future cash flows on the reserve. Because the attributed fee in a market risk benefit is locked in, the liability value is typically more volatile when assumptions change than for other insurance liabilities.

Q D3. What policyholder behavior assumptions are generally used to value guaranteed minimum benefitson variable annuities?

A D3. Per Topic 820 of Accounting Standard Codification, policyholder behavior assumptions should reflect what a hypothetical market participant would do. Assumptions generally reflect that an optionwill impact policyholder behavior, and the degree to which it impacts policyholder behavior will be a function of how much the option is in the money. For example, a policyholder is more likely to elect a minimum withdrawal benefit if the account value is below the guaranteed value because the policyholder can reinvest this amount in a different contract.

Because the valuation is typically done using risk-neutral assumed returns, some actuaries believe that it is appropriate to adjust the policyholder behavior assumptions to reflect policyholder decisions basedon a "real-world" environment. Others believe that this approach is inconsistent with a risk-neutral framework.

Q D4. What assumptions are used for financial market parameters when valuing variable annuity guarantees?

A D4. Topic 820 of Accounting Standards Codification specifically states that "valuation techniques used to measure fair value shall maximize the use of observable inputs and minimize the use of unobservable inputs." Typically, risk-neutral economic assumptions, consistent with those used in thederivatives markets, are used. Risk-neutral economic assumptions are the market's view as to returnsand volatility of returns. Returns would typically be based on observable risk-free rates (i.e., Treasury rates or swap rates). Volatility varies by a number of factors, including asset class and tenor (term), andcan be obtained from the market prices of both exchange-traded and over-the-counter derivatives.

Some actuaries use a single volatility assumption across all tenors, and some use a volatility assumption that varies by tenor. In addition, some actuaries use a volatility assumption that varies by how much the underlying option is in the money. Items for consideration when using a single volatility assumption across all tenors and/or levels of "moneyness" are to ensure that the result is consistent with observable market prices and that the requirements of Topic 820 are met.

Q D5. What are some of the different methods for determining implied volatility?

A D5. Implied volatilities on major equity indices up to about five, or in some cases 10, years are generally available and may be reliable if based on substantial volumes of trades of options that extend for such periods.[2] But trades in options longer than five or 10 years tend to be very thin, and thus the resulting implied volatilities may be unreliable or even unavailable. Also, even short-term volatilities on smaller indices may need to be estimated if there is insufficient market activity to generate reliable implied volatility values.

Different approaches can be used to estimate the longer-term volatilities. In determining the approach to use, the approach that a market participant would use would be taken into account. If the entity for which the valuation is being performed is a market participant, its own approach may be appropriate.

One approach would be to extrapolate the long-term volatilities from the observable implied volatilities at shorter durations. Because the observable short-duration implied volatilities would incorporate the market's risk margin already, it may not be necessary to add a separate risk margin to the extrapolated values, depending on how the extrapolation is performed.

Another approach would be to use actual historical long-term volatilities to estimate the projected long-term volatilities for the fair value calculations. If the average historical volatility is used, there may be a need for a separate risk margin because the observed average historical volatility would not include any risk margin.

ASC 820-10-35-54C through 54J provide guidance for measuring fair value when the volume and level of activity for an asset or liability have significantly decreased and for identifying transactions that are not orderly. These paragraphs provide guidance indicating that a previously appropriate observable input may no longer be appropriate if the volume and level of activity associated with that input has decreased significantly. They also provide guidance on identifying whether a transaction is "orderly," one of the requirements in Topic 820 of Accounting Standards Codification related to determining whether market prices are considered fair value. This guidance may impact the assessment of whether previously used market inputs continue to be relevant.

2 Volatilities up to five to 10 years were generally available at the time this white paper was written. Subsequent events may cause additional or fewer durations to become available.

Q D6. If an attributed fee approach is used, can revenue sharing be included in the fees on which the attributed fee is calculated?

A D6. Some variable annuities (or certain separate account funds within some variable annuities) have a feature where the separate account manager pays the insurer a percentage of the fees charged on the amount invested in the separate account fund. This is separate from any mortality and expense fees charged by the insurer and is sometimes referred to as "revenue sharing." Paragraph 944-40-30-19C states that "Total attributed fees used to calculate the fair value of the market risk benefit shall notbe negative or exceed total contract fees and assessments collectible from the contract holder." Therefore, actuaries generally believe that revenue sharing is not included in the calculation of the attributed fee because it is the result of a separate contract between the insurer and the fund manager,and not "assessments collectible from the contract holder."

Q D7. Can the value of the variable annuity guarantee MRB be negative (i.e., an asset) after contract inception?

A D7. In similar situations related primarily to mortgage options, the Securities and Exchange Commission (SEC) has taken the position that a written option cannot be an asset. However, some companies are of the opinion that the SEC's view does not apply to variable annuity guarantee MRBsbecause they believe these MRBs are "swap-like" in nature, and not viewed as options.

Some actuaries believe that the fair value guidance issued in FAS 157 (now Topic 820) eliminates any ambiguity about whether the fair value of an item such as a variable annuity guarantee MRB can be an asset and confirms that the value of such an MRB can be an asset after inception. An important consideration in determining whether a variable annuity guarantee MRB can have an asset value is whether a market participant would actually be willing to pay to acquire such an item. This may be the case if the present value of attributed fees exceeds the present value of expected benefits (including anyrisk margin) and if there are restrictions on or disadvantages to the policyholder lapsing the MRB (for example, the MRB could only be lapsed if the entire host annuity contract is lapsed as well).

If a non-option valuation method (such as an attributed fee approach) is used to determine the fairvalue, ASC 944-40-30-19D clarifies that the fair value at inception is zero (but see Q C3 for a possible exception if the attributed fee exceeds all the fees in the contract).

Q D8. Can a variable annuity contract contain more than one market risk benefit?

A D8. As discussed in Q A13, a contract with multiple features that would qualify as MRBs would be considered to have a single compound market risk benefit. It is common for a variable annuity to containboth a guaranteed minimum death benefit and some kind of living benefit, such as a guaranteed minimum annuitization or withdrawal benefit. While each of these benefits on their own would be classified as an MRB, a variable annuity containing both would be considered to have a single compoundmarket risk benefit covering both guarantees.

From a valuation perspective, it may be efficacious to value each of the guarantees separately and thenadd the values together to determine the compound MRB value. One consideration would be whether assumptions and particularly risk margins should be adjusted to account for the combination. For example, the risk margin on the compound MRB might be smaller than the sum of the risk margins for the individual components because it may not be possible to have both higher mortality than expected,adversely impacting the GMDB, at the same time as higher survivorship than expected, adversely impacting the value of the living benefit. These and any other interactions between the different components of the compound MRB may require an adjustment to the sum of the MRB components in order to get the compound MRB fair value.

Although GMxBs are the most common market risk benefits on variable annuities, it is possible to haveothers. Any other features that would be treated as standalone MRBs on their own would need to be included in the compound MRB value. One possible such feature would be an annuity purchase rate guarantee on the account balance, analogous to the guarantees discussed in section F.

Q D9. Are the guarantees within each variable annuity valued separately, or can like contracts begrouped?

A D9. The actuary may wish to consider whether contracts can be grouped for practical purposes if it can be demonstrated that the results from a grouped calculation are not materially different than thoseof a seriatim calculation. It may make sense to consider reviewing any such grouping on each valuation date in order to confirm that the grouping would not result in a material difference relative to a seriatimcalculation.

Section E: Additional Consideration for GMxBs on Indexed Annuities

Q E1. What products are covered in this section?

A E1. This section addresses general valuation considerations for MRB features associated with indexedproducts.

For the purpose of this white paper, the term "indexed product" refers to any universal-life type contract as defined under ASC 944-20-15-11a (e.g., accumulation annuities and universal life) where theaccumulation of the underlying account value is dependent on index-based crediting features. We define index-based crediting generally as crediting features where the amount of interest to be creditedis dependent on the performance of an underlying index (equity or other) coupled with the terms of the contracts and other crediting parameters.

Generally, the index crediting parameters are periodically reset by the insurance entity based on the option budget set for the policyholder. The "option budget" represents the amount the insurer expectsto be able to spend in order to purchase options to support the index crediting parameters. As a typicalexample, an annual point-to-point strategy based on the S&P 500 index, subject to a cap of X% (X revised annually) and floor of 0% would meet the definition of index-based crediting. However, index-based crediting features can take different forms and actuaries would evaluate if the product(s) in question meet the definition when reserving for market risk benefits.

Products with such index-based crediting features include, but are not necessarily limited to, fixed indexed annuities, structured annuities, registered indexed-linked annuities, and indexed universal life.

Market risk benefits on indexed products would generally include product features such as (but not limited to) guaranteed minimum benefits that provide protection to the policyholder from either a lossor a shortfall in the policyholder's account balance relative to the benefit amount, with such feature exposing the insurance entity to capital market risk that would have otherwise been borne by the policyholder. Considerations for determining whether such guarantees in indexed annuities are MRBs are consistent with those for variable products discussed in Q D1. However, the index-based crediting features mentioned above would generally be scoped as embedded derivatives and not MRBs. That is because the index-based crediting features would generally determine the amount of the account balance, rather than defining an amount paid to the policyholder in addition to the account balance.

Q E2. Why would there be additional considerations for the valuation of MRBs on indexed products compared to MRBs on variable products?

A E2. While actuaries have had experience reserving for certain types of MRBs associated with variableannuities such as guaranteed minimum accumulation benefits (GMAB) and guaranteed minimum withdrawal benefits (GMWB) under Topic 820 prior to the transition date ASU 2018-12, there are several unique aspects associated with indexed products that require additional consideration when calculating the fair value of MRBs associated with these contracts. This is primarily due to the differentnature of capital market protection provided by MRBs on indexed products relative to their counterparts on variable products.

First, the fund accumulation of indexed products is not as closely tied to market performance or equity risk as variable annuities. The primary driver of fund accumulation for indexed products is typically the option budget and/or fixed crediting rates. The actual performance of the underlying indexes associatedwith the crediting strategies is a secondary driver. In contrast, with variable annuities the fund accumulation is directly tied to the performance of the various separate accounts the fund is allocated to.

Further, crediting strategies on indexed products are usually subject to a floor, reducing the downside risk (this floor would be 0% on products such as fixed indexed annuities or indexed universal life), whichcontrasts to the perspective of direct losses in account value on variable annuities that is typically seen during market downturns.

Additionally, the option budget and fixed crediting rates are generally not directly tied to market performance, as they can be influenced by the insurance entity management decisions and performanceof the underlying general account assets.

Valuation considerations associated with the underlying account value growth are discussed in questions Q E3 to Q E8.

Second, the crediting features on indexed products are typically embedded derivatives, which are also accounted for at fair value. Considerations for actuaries seeking consistency in the valuation of MRB andembedded derivatives is discussed in Q E9.

Lastly, MRBs on indexed products may be partly or fully funded by the interest spread on general account returns. This provides specific considerations when evaluating the fees attributable to the MRBs. This is covered along with additional considerations for interaction with the adjusted host contract calculation in Q E10 and Q E11.

Q E3. What valuation and actuarial techniques are used to determine the fair value of MRBsassociated with indexed products?

A E3. Consistent with valuation considerations for MRBs in variable annuities as covered in Q D4, the risk-neutral valuation method is most likely to be used by actuaries to determine the fair value of MRBsassociated with indexed products.

Similar to other market risk benefits, this method would allow actuaries to maximize the use of observable inputs relative to other methodologies. However, due to the unique nature of indexed products and due to the entity's influence over the option budget, the actuary may incorporate elements of actuarial appraisal technique along with the risk-neutral valuation method to determine thefair value of the MRB. Additional thoughts on this topic are also provided in Q E5.

Although the option budget method is frequently used to fair value the embedded derivatives associated with indexed products (see Q B4), it is unlikely to be used to fair value the MRBs on these same products. The critical assumption behind the option budget approach is that the cost of funding the strategies is offset by the cost of hedging the interest credited. This is unlikely to be relevant when fair valuing MRBs associated with such indexed products because MRB cash flows may be asymmetric ina stochastic valuation.

Q E4. Are deterministic or stochastic scenarios used for the valuation of MRBs on indexed productunder the risk-neutral valuation method, and what approximations might actuaries use?

A E4. As discussed in Q B7, stochastic scenarios would typically be used to value MRBs on indexed products under the risk-neutral valuation method as the associated cash flows would typically be sensitive to market movements. As such, actuaries may find that the use of stochastic scenarios for indexed product's MRBs would be in accordance with ASC 820-10-55-9 and ASC 820-10-55-13 to 15 as itwould provide probability-weighting of the risk-adjusted discounted MRB cash flows.

However, other actuaries may find that making simplifications to the market components being reflected in these stochastic scenarios or even using a deterministic scenario may provide a reasonable approximation for the valuation of indexed product MRBs. Such approximations could be considered reasonable depending on the nature of the MRBs, underlying index-based crediting, and expected management actions. For example, if the guarantee is far in or out of the money, with little chance of that changing, a deterministic scenario may be appropriate. If the combination of these features shows limited sensitivity to the MRB value orexpected future cash flow to market fluctuations, some actuaries might conclude that such approximations may prove to be reasonable.

Given that the option budget and/or fixed crediting rates are typically the primary driver of account value growth with the underlying market performance being a second-order growth driver, actuaries may find it appropriate to simplify stochastic index returns over stochastic interest rates. This is contraryto variable annuities, where equity risk is generally a primary driver and interest rates are a secondary driver.

Actuaries would typically use judgment when using such approximations. They would want to be able todemonstrate that the simplified stochastic scenarios are representative of a full set of stochastic scenarios and do not introduce bias now or in potential future economic environments.

Q E5. How could the option budget be determined under the risk-neutral valuation technique?

A E5. Prior to the accounting change, certain MRB features (e.g., GMWB and GMDB) included on fixed indexed annuity products were commonly reserved under the insurance accrual model often referred toas an SOP 03-1 liability. This calculation was founded on real-world scenarios and actuaries generally used a methodology for setting the option budget as part of the insurance accrual model calculation that was reflective of the company's actual process. For example, some actuaries may have used the book returns of modeled portfolio of general account assets minus a spread to approximate the option budget that would have been set by management. Alternative methodology may also have been used toreflect their company's approach.

However, methodologies used by actuaries to define the modeled option budget under the insuranceaccrual model made sense primarily in a real-world concept and actuaries may find it challenging to extend this methodology under risk-neutral valuation.

A few alternative methodologies that are used to determine the option budget in a risk-neutral settingfor market risk benefits are provided below to illustrate potential alternatives. Q E9 describes considerations an actuary may take into account when electing a method for option budget.

Actuaries typically would also take into consideration the inherent nature of the market protection provided by the MRB in making this decision. If actuaries find that the primary driver of market risk isthe change in the option budget, then the method chosen would be reflective of this risk.

Below are methods that could be considered in setting projected option budgets, not to be consideredexhaustive.

Method 1

Market-observed corporate bond rates can be broadly decomposed into four main components:

i. Risk-free rate
ii. Illiquidity premium
iii. Credit spread net of expected defaults
iv. Other risk premiums

The following formula is provided to conceptualize how the option budget could be calculated at a resetunder this method:

$$Option\ budget_T = i_{RF,T,S} + Illiquidity\ Premium_{T,S} + Credit\ Spread_{T,S} - Option\ Spread_{T,S}$$

Where:

$i_{RF,T,S}$ is the risk-free interest rate of term S effective at time T;

$Illiquidity\ Premium_{T,S}$ is the liquidity premium applicable for term S effective at time T;

$Credit\ Spread_{T,S}$ is the expected credit spread; and

$Option\ Spread_{T,S}$ is the spread that management expect to deduct from general account assets when setting the option budget.

With this method, the modeled option budget along the risk-neutral scenarios is directly tied to the newmoney risk-free rates. Depending on the actuary's view, this option budget may or may not be adjusted for illiquidity premium, credit spread, and option spread.

In a risk-neutral projection, realized credit spreads are expected to be offset by defaults. This results inall assets earning the risk-free rate. However, when companies are setting rates for indexed products, they are setting those rates based on credit spreads that they *expect* to earn, not credit spreads that have been realized. There also may be consideration to competitor new business rates when setting rates, and new money competitor rates also would be based on expected credit spreads.

General explanation of illiquidity premium and its quantification is provided in Q B10 and Q B11.

Alternatively, actuaries could consider adjusting the formula provided above such as the combination ofilliquidity premium, credit spreads, and option spreads be reflective of the expected future option budgets provided to the policyholder, as typically used for the forward-starting option budgets in the embedded derivative calculation. Actuaries using this alternative methodology of method 1 could rewrite the formula above as follows:

$$Option\ budget_T = i_{RF,T,S} + Policyholder\ Participation\ Spread_{T,S}$$

Where $Policyholder\ Participation\ Spread_{T,S}$ is an adjustment to the risk-free rate $i_{RF,T,S}$ such that:

$$VED\ Option\ Budget_T = E_{RN}[Option\ budget_T]$$

Where $E_{RN}[Option\ budget_T]$ is the expected modeled option budget at time T across the risk-neutralscenarios.

Method 2

If the entity expects the existing asset portfolio or management actions to influence the option budget,the actuary may consider phasing from a management based or current option budget to the new money risk-free rate as described in method 1.

The following formula is provided to conceptualize how the option budget could be calculated at a resetunder this method:

$$Option\ Budget_T = Weight_T \cdot Management\ Based\ Option\ Budget_{T-1} + (1 - Weight_T) \cdot (Method\ 1\ Option\ budget_T)$$

Where $Weight_T$ is the weight an entity desires to assign to the management-based option budget inprojection period T.

Q E6. How is crediting determined under the risk-neutral valuation technique once the option budgethas been set?

A E6. Unless an approximation for the index performance is used as detailed in Q E4, once the option budget has been set for a given crediting term, it would be converted into actual crediting parameters using methodology consistent with the product feature and management's expectations. This would reflect the cost of the options based on all applicable market information, including the projected yieldcurve, volatility surface, etc.

The interest credited at the end of the term would reflect the crediting mechanism effective for the crediting strategy given the parameters that were solved for at the beginning of the term.

A formulaic interpretation for a reset at time T for a crediting strategy of term S and would be:

$$Option\ budget_T = E_T[PV_{RF,T}(Payoff_{T+S})]$$

Where $Option\ budget_T$ is the option budget at time T, $RF_{T,S}$ is the risk-free rate of term S effective at time T and $E_T[PV_{RF,T}\ (Payoff_{T+S})]$ is the expected present value of the crediting strategy payoff takenat the forward risk-free rates.

Black-Scholes or other closed form solutions can be used to approximate the value of the crediting strategy when converting the option budget to crediting parameters, as long as the arbitrage-free property of fair valuation is not broken.

Q E7. What are specific considerations for using closed-form solutions in solving for the crediting parameters?

A E7. As part of a fair value calculation, there is a definitional constraint that the average present valueof an instrument's payoff is equal to its price. Actuaries using closed-form solutions in solving for the crediting parameters (prices of forward starting options) would want to avoid potential undue bias in the fair valuation of market risk benefits when such closed-form solutions may not align with the short-rate and equity models used for the risk-neutral valuation.

As a classic example, the Black-Scholes formula is frequently used by actuaries when solving for the crediting parameters. However, the stochastic equity and interest rate processes for the MRB valuationmay not align with the underlying Black-Scholes model, which assumes a lognormal distribution for equities with static interest rates. Further, even if the market models used for MRB valuation align withBlack-Scholes, the process may still introduce arbitrage for forward starting options.

Actuaries may consider various methodologies to eliminate this bias if not deemed immaterial. Thereare various potential approaches to address this bias; below are two examples, not to be considered exhaustive:

1) Generate time-varying volatilities that produce Black-Scholes prices that equal the average present value of the payoff of the option structure given the market consistent equity and ratescenarios.

2) Use the volatilities used in generating the equity path and solve for a time-varying vector offactors to apply to the Black-Scholes prices such that the adjusted prices equal the average present value of the payoffs given the market-consistent equity and rate scenarios.

These are examples to help demonstrate how some actuaries might address the alignment of MRB stochastic processes with other fair value scenario generators. Other actuaries may choose a more simplified approach to demonstrate alignment between fair value scenario generation.

Q E8. What might actuaries consider when determining what market components are to be includedin the risk-neutral projection?

A E8. Actuaries might consider the projection of risk-free rates, the underlying indices, and associatedvolatility surfaces.

Risk-free rates

Generally, risk-free rates would start at the observable yield curve and be projected along each stochastic scenario under a stochastic interest rate diffusion model calibrated to assets that are activelytraded in the market such as Treasury bonds, options, futures, etc. Indexed products' option budgets orfixed crediting rates are generally tied to interest rates and as outlined in Q E2, the option budget is generally the primary driver of account value growth.

Underlying indices

Existing scenario generators used for variable annuity fair value calculations may be leveraged to model the underlying indices used for indexed products. Both nonproprietary and proprietary indices would bemodeled to the extent that they are available in the products. Generally, actuaries will model each indexwith a stochastic process and associated volatility. Actuaries may choose to generate index performanceusing stochastic volatility or constant volatility.

The random numbers generated within each stochastic process may be correlated to achieve the desired correlation between indices. Some actuaries may choose to ignore correlation of indices if products, policies, or cohorts are subject to a single index.

Volatility Surfaces

Used to generate equity paths

Both short-term and long-term volatilities would be considered in the actuarial model. Generally, short-term volatility would be based on the observable volatility surface at the valuation date and grade to a long-term volatility. Different approaches can be used to estimate the long-term volatilities.

One approach is to use actual historical long-term volatilities to estimate the projected long-term volatilities for the fair value calculations. If the average historical volatility is used, there may be a needfor a separate risk margin because the observed average historical volatility would not include any risk margin.

Another approach is to extrapolate the long-term volatilities from the observable volatilities at shorter durations. Because the observable short-duration volatilities would incorporate the market's risk margin already, it may not be necessary to add a separate risk margin to the extrapolated values, depending onhow the extrapolation is performed.

Used for Black-Scholes price projections

As discussed in Q E7 above, depending on the method used to adjust option prices to be equal to present value of payoffs implied by the rate and equity scenarios, one may use the same volatilities usedto generate the equity paths, or solve for volatilities to produce the desired option prices.

Q E9. What considerations do actuaries generally take into account in setting the valuation methodology of market risk benefits on indexed products relative to the embedded derivative for theindex-crediting feature on the same products?

A E9. While the accounting literature does not provide guidance as to how insurance entities should treat the valuation of market risk benefits in relation to the embedded derivative for the index-creditingfeature (or vice versa), one interpretation is that there should be some degree of consistency between the two given that both MRBs and embedded derivatives are accounted for at fair value.

In particular, the following aspects would generally be considered by actuaries in setting the valuation methodology for such products:

1. Single or separate valuation methodology
2. Option budget assumption
3. Assumption margins

Single or separate valuation methods

One interpretation is that a single valuation calculation may be warranted as both features (MRB and index crediting embedded derivative) are to be accounted for at fair value. This approach would entail implementing the embedded derivative calculation under the risk-neutral valuation typically used for the MRBs as implementing the MRB valuation in the budget method that is typically used for embedded derivatives would not be appropriate as detailed in Q E3. Actuaries using this methodology would typically ensure that the risk-neutral valuation framework reflects the market information needed for properly valuating both the MRB and the index crediting feature simultaneously. Such an approach would need to be able to determine separate values for the index crediting feature and for the MRB, because they are reported separately on the balance sheet. The approach would also need to provide an appropriate allocation of own credit between the MRB and the index crediting feature, because the impact of change in own credit is reported through net income for the index crediting feature and through OCI for the MRB.[3]

Another interpretation is that, although both features are accounted for under fair value, they should be valued in two separate calculations, similar to how the insurance accrual model and Topic 815 (formerly FAS 133) were separate prior to the accounting change. For example, given that guidance is not changing for the embedded derivative, the embedded derivative calculation could continue to be calculated using the current method used by the company, whereas the MRB calculation could use a separate valuation deemed appropriate by the company Assumptions (including option budget assumption and margins)

Generally, actuaries would use the same or consistent assumptions (i.e., option budget and margins) for both their MRB and embedded derivative calculations. This would be especially appropriate if using a single valuation for both the MRB and embedded derivative.

A key consideration, however, is whether the same margins would apply to the embedded derivative and MRB valuation.

Q E10. What fees can be included in the indexed product MRB valuation?

A E10. According to ASC 944-40-30-19C, the total attributed fees used to calculate the fair value of market risk benefits cannot be negative or exceed total contract fees and assessments collectible from the contract holder.

3 Caution may be warranted if applying this approach at transition to LDTI, because if this would result in a change to the embedded derivative valuation methodology it could call previous valuations into question.

For instance, it is not uncommon for insurance entities to attribute all or a portion of the spread on general account returns prior to funding the policyholder option budget. Such spreads would not beused as an attributed fee for the calculation of the indexed annuity fair value, as this spread is not directly collected from the account value.

Other fees directly deductible from the account value can be included in the attributed fees. This includes charges directly associated with the indexed annuity MRB and other general charges deductedfrom the account value.

Even though expected interest spreads are not used in determining the attributed fee, this might or might not create much of a difference between the results for an MRB in an indexed annuity versus a variable annuity. If there are enough spreads in an indexed product to cover the benefits, the host adjustment resulting from an option-based valuation method (see Q C1) eliminates any loss at inception and generate "funding" of the MRB liability from profits that otherwise inure to the host contract.

Q E11. Are there specific considerations if a host adjustment is established for a MRB on an indexedproduct?

A E11. As discussed in Q C1, the specific considerations for indexed product MRBs will depend on thevaluation method used under ASC 944-40-30-19D.

If using the option-based valuation method (also known as the Host Offset Method): In accordance withASC 815-15-30-6, creation of a host contract adjustment to offset the value of the MRB at policy issuance would be needed to avoid a gain or loss at issue. This new host contract adjustment would need to be amortized from policy inception to the transition date.

If using the non-option-based valuation method (i.e., Attributed Fee Method): There are generally no interactions between the host, embedded derivative, and MRB, unless the attributed fees needed at inception would exceed the total fees in the contract. As long as the attributed fees needed at inceptiondid not exceed the total contractual fees the MRB would be calculated as the present value of future MRB benefits less the present value of future attributed fees.

If the attributed fees at inception would exceed the total contract fees, then the contract fees would beused and the MRB would be calculated as the present value of future MRB benefits less the present value of future contractual fees. In that case, a host adjustment would be made to the extent of the MRB value at inception, as long as a host adjustment is possible.

Section F: Annuity Purchase Rate Guarantees

Q F1. Can an annuity purchase rate guarantee be a classified as an MRB?

A F1. Yes, depending on the provisions of the guarantee and financial market conditions at the time thecontract with the guarantee is issued. Many deferred annuities and other account balance products contain provisions that permit the account balance to be converted to a payout annuity at guaranteed payout rates. If the guaranteed payout rates are lower than rates available for purchase at the time thecontract is converted to a payout annuity, the guarantee has no value. In that circumstance, the policyholder can simply use the account balance to purchase a payout annuity at current rates.[4]

If the guaranteed payout rates are better than current payout annuity rates available for purchase at thetime the contract is converted to a payout annuity, the guarantee will be in-the-money at that time and the policyholder may use the guarantee to acquire the payout annuity. In this case, the present value of the guaranteed payout annuity cash flows may exceed the account balance.

If, when projected at contract inception, the present value of the guaranteed payout annuity cash flowsas of the time the annuitization guarantee can be exercised exceeds the account balance, the excess represents a "transfer of a … shortfall (that is, the difference between the account balance and thebenefit amount) of, the contract holder's account balance from the contact holder to the insurance entity" per ASC 944-40-25-25D (a). This in itself does not mean the annuity purchase rate guarantee isnecessarily an MRB.

In order to be an MRB, the transfer needs expose the insurer to "other-than-nominal capital market risk" as of the contract inception date. For most contracts, the contract inception date would be the issue date, but for contracts acquired in a business combination, the contract inception date would bethe date of the business combination. Per ASC 944-40-25-25D (c), a "nominal risk… is a risk of insignificant amount or a risk that has a remote probability of occurring." If this is the case the guarantee would not meet the definition of an MRB. ASC 944-40-25-25D (c) goes on to provide a rebuttable presumption that "a market risk benefit is presumed to expose the insurance entity to other than-nominal capital market risk if the benefit would vary more than an insignificant amount in response to capital market volatility." For contracts acquired in a business combination, assuming the entity's policy is to make the MRB determination as of the acquisition date (see footnote 4 below),if interest rateshad declined between the original contract issue date and the business combination date, a guarantee that may have been deemed to present nominal capital market risk when the contract was issued may be deemed to have other-than-nominal capital market risk as of the date of the business combination.

4 This example assumes that the MRB classification would be assessed by the acquiring company at the date of the business combination. As of this writing, there is lack of consensus within the accounting profession as to whether such reassessment is permitted or required, or whether the assessment is only done at the original contract issue date.

For example, assume that a contract was originally issued in a 7% interest rate environment and the annuitization guarantee had a 2% implicit interest guarantee. The feature at the original issue date may have been deemed to have nominal capital market risk and thus not be an MRB (of course, this determination depends on factors such as the assumed interest rate volatility). But if a business combination occurred in a 1% interest rate environment, the 2% interest rate implicit in the annuitization guarantee may be deemed to represent other-than-nominal capital market risk at the time of the business combination, and thus be an MRB to the acquiring company.

Furthermore, the annuity purchase rate guarantee usually depends on two factors—an interest rate assumption and a mortality/survivorship assumption. The mortality/survivorship assumption does notrepresent "capital market risk," so if the only reason the guarantee would be in-the-money by a morethan significant amount or with more than a remote possibility is due to a generous mortality/survivorship assumption, the guarantee would not meet the definition of an MRB. Lack of other-than-nominal capital market risk would typically preclude an annuity purchase rate guarantee from applying a liability with a retrospectively updated benefit ratio, often described as a Statement of Position (SOP) 03-1 liability, as a result of containing capital market risk. An SOP 03-1 liability might still be needed as a result of other risks. One such example would be if the annuity purchase rate guarantee specified that the account balance could be annuitized at guaranteed longevityrates but did not guarantee an interest rate to be applied to the annuitization.

Q F2. How is the utilization assumption considered when evaluating whether an annuity purchase rate guarantee is an MRB?

A F2. In many jurisdictions, deferred annuity policyholders do not often convert their contracts to payout annuities, taking the value of the contract through other means such as withdrawals. Thus, theutilization rate assumption for payout annuity utilization may be low.

As discussed in Q A5, actuaries generally believe that the expected utilization rate of an annuity purchase rate guarantee does not impact whether the guarantee is classified as an MRB. Further, as noted in Q A5, paragraph 120 of Appendix G to the Life & Health Audit Guide states that "FinREC believes that the likelihood of annuitization (contract holder utilization) is not relevant in the scope assessment for an annuitization guarantee contract feature." If the guarantee exposes the insurer to other-than-nominal capital market risk because the guarantee can go in the money by a more than an insignificant amount with a more than remote probability as a result ofthe interest rate component of the guarantee, the guarantee would be an MRB, even if expected utilization is low.

Even if the utilization assumption does not impact the classification of the guarantee, it may impact thevaluation of the guarantee. If the utilization rate is expected to be low, the fair value of the guarantee may be small, or may even be deemed to be immaterial.

Q F3. How is a payout annuity guarantee tested for "other-than-nominal capital market risk"?

A F3. To the extent a payout annuity purchase guarantee incorporates an implicit interest rate guarantee, it likely contains at least some capital market risk. But in order to meet the definition of an MRB, the capital market risk needs to be "other-than-nominal," which means of more than insignificant amount or more than a remote probability. One approach to testing whether the capital market risk is other-than-nominal is to project the guarantee under stochastic scenarios to determine the amount by which the guarantee can go in the money and the probability of the guarantee going in the money. Oncethe amounts and probabilities of in-the-moneyness have been calculated, judgment is required to determine whether these reach the threshold of "other than nominal." Per ASC 944-40-25-25D (c), there is a rebuttable presumption that "a market risk benefit is presumed to expose the insurance entityto other than-nominal capital market risk if the benefit would vary more than an insignificant amount in response to capital market volatility." An entity's accounting policy may define thresholds of amounts and probabilities of in-the-moneyness that would constitute other-than-nominal capital market risk.

It might not always be necessary to run stochastic scenarios to determine whether the amount and probability of in-the-moneyness reaches the threshold for other-than-nominal capital market risk. Onealternative approach would be to compare the assumed interest rate with the difference between the current market rate at issue and the interest rate implicit in the payout annuity purchase rate guarantee. If we assume that interest rate movements are reasonably close to lognormally distributed, then we can use normal distribution tables to estimate the probability that the annuity purchase rate guarantee at issue could go in-the-money. For example, assume that the relevant market interest rate atthe time the contract is issued is 6%, the interest rate incorporated into the annuity purchase rate guarantee is 2%, and interest rate volatility at the time the contract is issued is assumed to be 0.50%. We could see from a normal distribution table that a z-score of (6.00-2.00)/0.50 = 8 has extremely lowprobability, and so that even over the life of the contract the probability may be small enough to be considered nominal capital market risk.

Alternatively, scenarios could be run for a number of hypothetical situations. This could permit a company to determine the probability and possible magnitudes of in-the-moneyness for a variety of combinations of interest rate volatility and difference between the market interest rate and the interestrate implicit in the annuity purchase rate guarantee at contract inception. The resulting table could be used to evaluate future guarantees without having to run stochastic scenarios each reporting period.

Q F4. Which market interest rate is used to evaluate whether a payout annuity purchase rateguarantee contains other-than-nominal capital market risk?

A F4. Topic 944 of Accounting Standards Codification does not specify a reference market rate to beused for evaluating whether a payout annuity purchase rate guarantee contains other-than-nominalcapital market risk.

The payout annuity purchase rate guarantee would go in the money if its guaranteed rates are more generous than rates for newly purchased payout annuities. This suggests that the interest rates used in pricing current payout annuities would be a relevant reference rate. If the insurance entity has evidenceto support this rate being different from a risk-free rate or an upper medium grade fixed income yield, this payout annuity pricing rate could be a relevant reference rate for determining whether the guarantee has other-than-nominal capital market risk.

An alternative reference rate could be the upper medium grade (low credit risk) fixed income yield, generally interpreted as a single-A rated yield, that is used to discount liabilities for future policy benefits under ASC 944-40-30-9. Paragraph BC60 of the Basis for Conclusions to ASU 2018-12 states thatthis rate would reflect the characteristics of insurance liabilities. If a payout annuity purchase rate guarantee is exercised, the liability for future benefits for the resulting payout annuity would be discounted at this rate. So this could be a relevant reference rate against which to compare the interest rate within the annuity purchase rate guarantee for determining whether the capital market risk is otherthan nominal. The single-A rated yield would essentially be a proxy for the interest rate embedded in the annuity purchase rate guarantee.

Another alternative would be to use a risk-free rate. If the annuity purchase rate guarantee is classifiedas a market risk benefit, it would be accounted for at fair value. Fair valuation of market-related instruments is typically performed using risk-neutral valuation (see Q D4), which projects cash flows using risk-free interest rates. So risk-free rates are relevant to the calculation. On the other hand, the risk-neutral valuation uses risk-free rates not necessarily because they represent the best estimate of future rates, but because they incorporate an implicit risk margin consistent with capital market pricing.It is not clear that this risk margin necessarily needs to be included in the evaluation of whether a guarantee contains other-than-nominal capital market risk.

Regardless of the reference rate alternative used to evaluate whether the feature is an MRB, once a feature is determined to be an MRB, the interest rates used for valuation would be consistent with fair value principles. That would typically be based on risk-free rates, even if a different type of interest rate was used in the evaluation of whether the feature is an MRB.

Q F5. How is a market risk benefit for a payout annuity purchase rate guarantee valued?

A F5. If the contract containing the payout annuity purchase rate guarantee charges explicit fees to the policyholder, an attributed fee approach could be used for the payout annuity purchase rate guarantee MRB. In that case, an attributed fee is calculated as the percentage of contract fees (or a relevant subsetof contract fees) needed to fund the future benefits under the payout annuity purchase rate guarantee using fair value assumptions, including a risk margin. The value of the MRB at contract inception would be zero. In future periods, the fair value of the MRB would be the present value of future benefits, including a risk margin, using fair value assumptions, less the present value of future fees multiplied by the constant percentage determined above. An attributed fee approach may be particularly suitable to acontract that has other MRBs, such as a variable annuity with a GMDB, because that way a single compound MRB could be valued using one aggregate attributed fee.

Alternatively, an option approach may be used. An option approach may be necessary if there are no explicit fees in the contract. Under an option approach, the initial fair value of the MRB is calculated as the present value of future benefits using fair value assumptions plus a risk margin. This initial MRB fair value is subtracted from the liability that would otherwise be held for the remainder of the contract (orhost contract) at issue. This amount that is subtracted initially is amortized back into the host contract liability over the life of the contract. Subsequent measurement of the MRB would simply be the present value of the future benefits plus risk margin using fair value assumptions.

Regardless of the approach used, the valuation of the present value of future benefits would typically becalculated as an average over multiple interest rate scenarios, typically risk-neutral scenarios. Because equity prices may not be relevant to this calculation, setting up the scenarios may be simpler than it would be for valuing a GMxBin a variable or equity indexed annuity. Also, fewer scenarios may be needed. Once scenarios are generated, it may even be possible to recognize by observation that there may be many scenarios for which the MRB never goes in the money. For these scenarios, there would be no need to project future benefits, which may save runtime.

As noted in Q F2 above, a key assumption when valuing a payout annuity purchase rate guarantee is theutilization assumption. While the utilization assumption does not impact whether the guarantee is an MRB, a low utilization assumption may result in a small fair value, even in scenarios where the guarantee goes significantly in the money. It may be appropriate to use a dynamic utilization assumption, where the utilization percentage increases as the guarantee goes further into the money.

Q F6. If a payout annuity purchase rate guarantee is not an MRB, how is it valued?

A F6. If a payout annuity purchase rate guarantee is not an MRB, it may still need to be accounted for asa liability for annuitization benefits using the insurance accrual model often referred to as an SOP 03-1 liability. This may be the case if the guarantee could result in material payouts but the payouts are dueto a generous survivorship guarantee rather than to capital market variables.

Section G: Stable Value Features

Q G1. What is a stable value feature?

A G1. A stable value feature is a provision mainly in retirement products where the fund returns are based on a pool of assets, and the book value available to the policyholder is guaranteed to return noless than a specified credited rate. These products can take on a number of forms, such as:

a. Deferred annuities—the insurance company invests the funds in its own general account and often has some discretion as to how to pass on those returns in the form of a credited rate. Thecredited rate is normally guaranteed at greater than 0%.
b. Separate account guaranteed investment contracts (separate account GICs)—the insurancecompany invests the funds in a separate account, and the credited rate follows contractual terms as to how investment returns are passed on. The credited rate is guaranteed at 0% orhigher.
c. Synthetic guaranteed investment contracts (synthetic GICs, also known as "stable value wraps")—similar to a separate account GIC, but the investment provider is decoupled from theinsurance company or bank (the "wrap provider") that provides protection in the event of a shortfall. The credited rate is normally guaranteed at 0%.
d. Stable value company-/bank-owned life insurance (stable value COLI/BOLI)—a company or bankpurchases a universal life insurance policy on an employee, and the policy includes an investment option similar to a separate account GIC. The primary purpose of this construct is often not for the actual protection against a shortfall in the underlying assets, but rather, as a means of obtaining desirable accounting treatment for the underlying assets.

Separate account GICs and synthetic GICs have two ways that the insurer could be exposed to a risk of ashortfall:

a. A large number of individuals withdraw money from the plan at book value at a time when the market value of the asset is significantly below the book value in the contract. The insurer may be unable to recoup these funds before the entire fund is depleted. There are normally restrictions in place to prevent an employer from directing employees to withdraw money fromthe fund.
b. A plan sponsor elects to terminate the contract and withdraw all funds at book value, for deposit with another insurance company. There are normally restrictions in place, including awaiting period, that substantially mitigate this risk.

Stable value COLI/BOLI is exposed to the risk that a policyholder can withdraw their funds at book value.There are normally extensive provisions in place to dissuade or prevent a company from utilizing the stable value feature effectively.

Q G2. Why might a stable value feature be a market risk benefit?

A G2. With the exception of synthetic GICs, these contracts are typically classified as either insurance orinvestment contracts that fall within the scope of Topic 944 of Accounting Standards Codification. As a result, the guarantees need to be checked against the definition of an MRB. Because a stable value feature provides a guarantee against the separate account value declining due to changes in interest rates or other capital market variables, it provides protection to the policyholder against capital marketrisk. If the capital market risk is other-than-nominal, this would meet the definition of an MRB.

The stable value feature of a deferred annuity might not be deemed an MRB because the individual hasno contractual link to the underlying assets. While the insurance company might be exposed to capital market risk, the guarantee impacts the account balance itself and is typically not paid in addition to the account balance. Thus there is no shortfall relative to the account balance, as is required for a feature tobe deemed an MRB.

The guarantee on a separate account GIC or stable value COLI/BOLI is typically paid in addition to the market value account balance if the guarantee is in the money. Thus these features often are classifiedas MRBs.

The stable value wrap feature of a synthetic GIC that is sold as a separate contract might not be deemedan MRB because the standalone contract might not meet the Topic 944 definition of an insurance or investment contract because it generally doesn't contain insurance risk and thus it would be out of scope of Topic 944. MRB guidance only applies to contracts in scope of Topic 944. In that case, the stable value feature would still be checked for whether it is a derivative, in which case the feature would still be accounted for at fair value (although changes in fair value due to changes in "own credit" would be reported in net income rather than other comprehensive income). ASC 815-10-55-63 provides guidance relating to treating synthetic GICs as derivatives. ASC 815-10-05-8 through ASC 815-10-05-15 provides further background on synthetic GICs and ASC 815-10-55-170 provides an example.

The following table illustrates common outcomes for different types of stable value features. While theoutcomes shown in the table are common, the outcome for any particular feature will depend on the specific relevant facts and circumstances:

Type of minimum interest rate guarantee	Covered ininsurance accounting	Has account balance shortfall	Other than life insurance DB	Other than nominal	Outcome (MRB or not)
Individual deferred annuity during accumulation phase	Yes	**No**	Yes	Yes	**No**
Group deferred annuity	Yes	**No**	Yes	Yes	**No**
Guaranteed separate account / GIC	Yes	Yes	Yes	Maybe	Maybe
Synthetic GIC (third-party wrap)	**No**	Yes	Yes	Yes	**No**— Derivative
COLI/BOLI stable value	Yes	Yes	Yes	Maybe	Maybe

Q G3. How can the fair value of a stable value MRB be calculated?

A G3. The fair value of stable value features is often calculated based on a risk-neutral valuation (see Q D4) that may include stochastic interest rates, credit spread, and equity returns. Along each stochastic path, the behavior of individuals and/or the plan sponsor is modeled. The final vector of fees charged and claims paid is discounted to produce the fair value. The valuation normally requires a large numberof scenarios, as the potential shortfall normally only occurs far into the tail of the distribution.

Q G4. Can a product with a stable value feature contain a compound MRB?

A G4. Some products include annuity purchase rate guarantees. As discussed in section F, such a featurecan be an MRB if it exposes the insurer to other-than-nominal capital market risk (see Q A4 for discussion of nominal and other-than-nominal capital market risks). If a product has both an annuity purchase rate guarantee and a stable value feature, and both are deemed to be MRBs, the combined guarantee is a compound MRB. In some cases, even if an annuity purchase rate guarantee is classified asan MRB, it may be deemed to be immaterial—for example, if the assumed usage rate is extremely low. If both features are deemed to be MRBs and are material, then the fair value of the features would be calculated jointly as a compound MRB. Practically, the calculation of a joint fair value may not be very different from the sum of the fair values of the individual features, although it is possible that the risk margin may be increased or decreased due to interaction between the two features (for example, if use of the annuity purchase rate guarantee results in a higher likelihood of a shortfall in the stable value feature).

Section H: Issues Specific to Instrument-Specific Non-Performance Risk/Own Credit Risk

Q H1. What are some possible sources of information on own credit or non-performance spreads?

A H1. Several sources may be available to determine the appropriate spreads. All have advantages and disadvantages. In determining which source to use, in accordance with Topic 820 of Accounting Standards Codification (Fair Value), the principal market that the instrument being fair valued would be transferred to should be considered. The glossary to Topic 820 defines the principal market as "the market with the greatest volume and level of activity for the asset or liability. In the absence of a principal market, the most advantageous market should be considered. The glossary to Topic 820 defines the most advantageous market as "the market that maximizes the amount that would be received for the asset or minimizes the amount that would be paid to transfer the liability after takinginto account transaction costs and transportation costs."

Possible sources of information on the credit rating impact to be used might be a company's debt, or credit default swaps, or institutional products, such as GICs, retail notes, and term notes that are tradedin secondary markets. If credit spreads from company debt, credit default swaps, or institutional products are not available or deemed not to be appropriate, it may be possible to estimate credit spreads from other market sources. For example, a company could base a credit spread estimate on credit default swaps or debt of similar companies or industry averages. Another potential method is to base credit spreads on historical data on rates of claim payment default for similarly rated companies.

Some considerations in using company debt, credit default swaps, or institutional products as a source for the credit rating impact are that claims on the MRB being valued may have a higher priority than the company debt, which is also the basis for the credit default swap price. The MRB may also have credit enhancements not reflected in the prices for debt, credit default swaps, or institutional products. Also, the debt or institutional products may be issued from a different legal entity, with different credit standing, than the MRB. A consideration in using historical data on rates of claim payment default is thatthese rates may not reflect current market prices.

The Academy's *Practice Note on FAS 157 & FAS 159* contains additional considerations on practices beingused to incorporate own credit risk into fair value calculations, including:

- How is own credit risk estimated?
- Won't the own credit decrease a liability when a company's credit deteriorates, and isn't that counterintuitive?
- How could own credit risk be incorporated if the instrument is recorded as an asset?
- Is there an own credit risk component of fair values for reinsurance ceded? If yes, how could that be measured and how could the reinsurer's credit risk be reflected?
- How is own credit incorporated into a risk-neutral valuation?

Q H2. Does the attributed fee, or similar adjustment such as the host adjustment, incorporate theimpact of own credit risk?

A H2. Yes. Own credit risk is taken into account when calculating the attributed fee or host adjustment. Historically, actuaries have calculated the attributed fee including the impact of own credit, inorder to ensure the impact on the balance sheet at point of sale is zero. Other actuaries may have used the host adjustment approach, rather than an attributed fee, to achieve this objective and the own credit is used to calculate the MRB value in that case as well, ultimately impacting the value ascribed to the host adjustment.

Q H3. What are the requirements for quantifying the impact of own credit risk in MRBs?

A H3. The ASU requires that fair value changes resulting from changes in instrument-specific credit riskon MRBs that are in a liability position be recognized in other comprehensive income. In particular, an insurer's own credit risk is included as instrument-specific credit risk when the MRB is in a liability position and counterparty credit risk is included when the MRB is in an asset position. As discussed in QH5, even though the standard specifies incorporating own credit to MRBs in a "liability" position, that does not necessarily preclude own credit from being applied to an insurer's MRBs even if they are in anasset position.

As described in Q B9, there are at least three approaches that can be used to quantify the own credit risk. One approach would consider that the rate used to determine own credit risk will be a good estimator to use in calculating the impact on the fair value of instrument-specific non-performance riskwhen the MRB is in an asset position.

Under this approach, a company's accounting policy would determine what portion of changes in instrument-specific non-performance risk would be reflected in OCI for these MRBs in an asset position. This may differ from the process to capture the impact of instrument-specific credit risk only on the instruments in a liability position.

Another approach would be not to reflect instrument-specific non-performance risk when the MRB is in an asset position because the account value collateralizes the fee leg of the MRB, making the probabilityof non-performance by the policyholder close to nil. Under this approach, there will not be any instrument-specific credit spread included in MRBs in an asset position, so it is unambiguous that all of the instrument-specific credit spread in MRBs will be included in OCI.

A third approach would apply own credit only to the benefit leg of the MRB and never to the fee leg ofthe MRB. This would be applied regardless of whether the MRB is in an asset or liability position. Because the benefit leg of the MRB would typically always be a liability to the insurer, under this approach there would likely be no ambiguity that all of the instrument-specific credit spread in MRBswill be included in OCI.

These requirements apply to both contracts written with a policyholder and to reinsured MRBs. In the case of reinsurance contracts, the natural position for a reinsurance ceded contract would be an asset position, such that counterparty credit risk (that of the reinsurer) would go to net income and not to OCI. This will be in contrast to the treatment of the instrument-specific credit risk in the underlying MRB,assuming it is in a liability position, where the own credit risk of the insurer embedded in its valuation will be included in OCI.

Further, the FAS 157 practice notes state that the non-performance risk for the reinsurance receivable asset may be based on the credit standing of the assuming reinsurance company rather than on the direct company's own credit standing. The credit standing of the assuming company may be different from that of the ceding company. However, if the credit standing of the two companies is similar, it maybe appropriate to use the ceding company's own non-performance adjustment as an estimate of the assuming company's non-performance adjustment.

It is mathematically possible for certain MRBs to be in an asset position when own credit risk is reflectedand a liability position when it is not, and vice versa. For these special cases, if the actuary is using an approach where own credit risk is not reflected when the MRB is an asset position, the actuary will typically develop a rule for addressing this situation. Such rules or approaches may involve applying the own credit adjustment to the benefit leg only, defaulting to zero own credit risk when an asset emerges,or similar adjustment such that no rules under the guidance are violated.

Q H4. How is the impact of own credit quantified when splitting it out for purposes of OCI reporting?

A H4. There are a number of approaches that have been considered. For example, some actuaries will approach the problem of quantifying the impact of own credit in a liability balance MRB by performing two calculations—one including non-performance risk and one without. On its surface, this seems straightforward, but there are calculation complexities that will complicate this approach. The complexity comes from the fact that attributed fees (typically including non-performance risk) are typically calculated such that the MRB is equal to zero at inception. Using this approach, and one attributed fee, the direct calculation of the own credit will be non-zero at inception and so an adjustment is required. If we assume that the MRB balance continues to be in a liability position throughout its life, then there are several approaches that may remedy the calculation. Approaches (a), (b), and (c) will produce non-zero amounts in OCI even if own credit spreads remain unchanged. That is because the own credit spread will be applied to a different amount of future cash flows in each period.These approaches include:

a. Calculate two attributed fees at issue, one with own credit and one without. Under this approach, the Accumulated Other Comprehensive Income (AOCI) amount would be thedifference between the MRB with own credit and the own credit attributed fee and theMRB without own credit and the no-own credit attributed fee that emerges subsequentto contract inception. The OCI in any period would be the change in the AOCI.

b. Calculate an own credit opening adjustment balance (dollar amount) that can be amortized over time, similar to a host adjustment calculation. Under this approach, the AOCI amount would be the difference between the MRB with own credit and the MRB without own credit less the remaining balance in the own credit opening adjustment.
c. Calculate an own credit opening adjustment balance (dollar amount) as in approach (b),but retain this value as long as each contract remains in force and remove this value only upon termination of each contract. Under this approach, the AOCI amount would be the difference between the MRB with own credit and the MRB without own credit, less the amount of the opening own credit adjustment.

Approach (c) produces a net income impact upon termination of an MRB. Upon termination of a contract, the original own credit impact needs to be reversed, generating a loss through net income. If the contract is held until the MRB matures, the loss will equal the amount of the at-inception own creditimpact. By explicitly amortizing the original own credit impact, approach (b) effectively neutralizes theseeffects, at least on an approximate basis. On the other hand, under some hedging strategies, approach may produce a more consistent match between the MRB changes and hedging instrument changesrecorded in net income.

Other actuaries interpret the OCI requirement for MRBs to pertain solely to the change in own credit spread since the contract origination date. That is, if own credit was 50 bps on the contract origination date but 100 bps on the valuation date, for MRBs in a liability position, the AOCI would be calculated asthe difference between the liability using 100 bps own credit spread and 50 bps own credit spread. In this way, you would have a locked-in own credit spread that would be tracked for purposes of own credit OCI calculations on MRBs. There are at least two ways this interpretation can be implemented. Approaches (d) and (e) will produce zero OCI in periods when the own credit spread does not change.

d. At each period subsequent to inception, calculate the MRB value twice—once using theown credit spread at the valuation date and once using the own credit spread at contract inception. Under this approach, the AOCI amount would be the difference between the two valuations, capturing as own credit the impact of the cumulative change in own credit spread.
e. At each period subsequent to inception, calculate the MRB value twice—once using the own credit spread at the valuation date and once using the own credit spread at the prior valuation date. Under this approach, the AOCI amount would change each period by difference between the two valuations. As with approach (c), the AOCI would captureas own credit the impact of the cumulative change in own credit spread, although the amount would depend on the path of the own credit spread over time. Under this approach, there will be a need to track the own credit impact for each contract so that amount can be removed as contracts terminate.

Approach (e) produces a net income impact upon termination of an MRB. This is similar to the loss under approach (c), but may be on a smaller scale and it could be a loss or a gain because the unreleased AOCI balance develops over time rather than reflecting the full initial own credit amount.The magnitude and whether it's a gain or a loss is path-dependent.

Some actuaries interpret ASC 944-40-35-8A as requiring that MRBs in an asset position as of the valuation date be excluded from the above calculation of AOCI and any AOCI previously contributed bythese MRBs in the prior period would be reversed out of AOCI through OCI and into income in the current period, but see Q H5.

Q H5. ASC 944-40-35-8A states that the portion of a fair value change attributable to a change in the instrument-specific credit risk of MRBs in a liability position shall be recognized in OCI. Does this meanthat a reporting entity cannot include the portion of its change in fair value relating to its own credit risk in OCI if the MRB fair value is in an asset position?

A H5. Actuaries and accountants generally believe that FASB included the word "liability" to emphasize that the only changes due to instrument-specific credit risk recorded in OCI should be that ofthe reporting entity on MRBs issued by the reporting entity and would exclude non-performance risk of a reinsurance entity or other counterparty to an MRB. As a result, changes in instrument-specific credit risk of the reporting entity included in the fair value of its MRB would be recorded in OCI. An asset position generally refers to market risk benefits where the entity under consideration will be receiving cash flows subject to the MRB contract feature definition, such as reinsurance on a direct written variable annuity MRB. It is possible for each of these types of MRBs to have the opposite position in cases where the guarantees move out of the money, so actuaries would want mechanisms to track the position of all MRBs at each valuation date.

For some companies, accounting policy will dictate that MRBs in an asset position do not contain an owncredit (see Q H4). In those situations, this issue would only apply when own credit is written down to zero because the MRB value changed from an asset to a liability, or vice versa.

Q H6. Is own credit included in the attributed fee calculations for contracts that incepted prior to theeffective date of FAS 157, and if yes, how is own credit estimated for those periods?

A H6. Upon adoption of FASB ASU 2018-12, entities are required to apply the recognition and measurement guidance for market risk benefits on a retrospective basis to the earliest period presentedin the financial statements. FASB ASC 944-40-30-19C states "a market risk benefit shall be measured at fair value." Fair value is defined in FASB ASC 820-10-20 and FASB ASC 944-20-20 glossaries as "the pricethat would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." To comply with this definition, entities should apply the FASB ASC 820 fair value framework to the initial and subsequent measurement of market risk benefits atfair value.

In some cases, a company may have sold contracts that contained features which were classified as embedded derivatives prior to the adoption of FAS 157 (now ASC 820), which codified the GAAP accounting standards for fair value measurement. These embedded derivatives may not have incorporated an own credit adjustment in the attributed fee calculation. Because of the definition mentioned above, if these features are defined as MRBs under ASU 2018-12, the attributed fee may need to be recalculated to incorporate own credit, which could result in a change to the fair value of the feature.

In these cases, retrospective application of own credit estimation techniques would typically be used, using observable inputs that existed as of those prior dates in order to estimate own credit spreads as ofhistorical periods.

Q H7. At what point in the valuation period is the impact of own credit valued (beginning of period,end of period, other)?

A H7. Actuaries generally will calculate the own credit (or counterparty credit) as of the valuation datefor balance sheet purposes. For purposes of establishing attributed fees or host adjustments, existing valuation techniques for embedded derivatives as to unit of account and monthly vs. quarterly vs. annual cohorts would likely be used to determine beginning-, middle-, or end-of-period inputs. This isintended to approximate the result of using the own credit risk at the point of sale.

Q H8. What complications are there when modeling multiple MRB components as a compound MRBalong with the account value cash flows?

A H8. A non-performance risk adjustment to OCI would only apply to cash flows subject to credit risk, i.e., excess over account value, in cases where cash flows for the entire contract are modeled together.

Q H9. How will the changes in instrument-specific credit risk of MRB reinsurance assets manifest?

A H9. There could be GAAP net income volatility caused by the fact that the direct liability instrument-specific credit is reported through OCI, but impact of instrument-specific credit risk on the reinsurance asset is reported through net income. This mismatch will likely prove to be a challenge when communicating results to stakeholders, so actuaries may want analytics to support the explanations.

Q H10. How is the OCI impact shown in the enhanced disclosures (tables included at the end of thissection)?

A H10. Actuaries generally will use the valuation approaches discussed above in Q H3 to separate outthe AOCI impact on each valuation date, with the OCI being set equal to the change in the AOCI amounts. The aggregate MRB rollforward includes a line to show the impact of instrument-specificcredit risk in aggregate, and actuaries may wish to show the own credit risk separate from the counterparty credit risk in an effort to reconcile more directly with the income statement and OCI.

Additionally, the enhanced disclosures require a table showing MRBs in an asset and liability position tobe shown separately, which will aid in the OCI presentation, which differs based on whether the MRB iseither an asset or a liability.

Q H11. How is the own credit reflected in the rollforward disclosures for MRBs?

A H11. The example below from ASC 944-40-55-29G illustrates how own credit might be reflected in theMRB rollforward.

Sample MRB Rollforward from ASU (Example 5):

	December 31, 20X2		December 31, 20X1	
	Variable Annuities	Indexed Annuities	Variable Annuities	Indexed Annuities
Balance, beginning of year	$ AAA	$ FFF	$ XXX	$ XXX
Balance, beginning of year, before effect of changes in the instrument-specific credit risk	XXX	XXX	XXX	XXX
Issuances	XXX	XXX	XXX	XXX
Interest accrual	XXX	XXX	XXX	XXX
Attributed fees collected	XXX	XXX	XXX	XXX
Benefit payments	(XXX)	(XXX)	(XXX)	(XXX)
Effect of changes in interest rates	XXX	XXX	XXX	XXX
Effect of changes in equity markets	XXX	XXX	XXX	XXX
Effect of changes in equity index volatility	XXX	XXX	XXX	XXX
Actual policyholder behavior different from expected behavior	XXX	XXX	XXX	XXX
Effect of changes in future expected policyholder behavior	XXX	XXX	XXX	XXX
Effect of changes in other future expected assumptions	XXX	XXX	XXX	XXX
Balance, end of year, before effect of changes in the instrument-specific credit risk	XXX	XXX	XXX	XXX
Effect of changes in the instrument-specific credit risk	XXX	XXX	XXX	XXX
Balance, end of year	$ GGG	$ LLL	$ AAA	$ FFF
Reinsurance recoverable, end of year	$ XXX	$ XXX	$ XXX	$ XXX
Balance, end of year, net of reinsurance	$ XXX	$ XXX	$ XXX	$ XXX

The reconciliation of market risk benefits by amounts in an asset position and in a liability position to the market risk benefits amount in the consolidated statement of financial position follows.

	December 31, 20X2			December 31, 20X1		
	Asset	Liability	Net	Asset	Liability	Net
Variable annuities	$ XXX	$ XXX	$ GGG	$ XXX	$ XXX	$ AAA
Indexed annuities	XXX	XXX	LLL	XXX	XXX	FFF
	$ XXX	$ XXX	$ NNN	$ XXX	$ XXX	$ MMM

Section I: Reinsurance

Q I1. Is the definition of an MRB the same for a reinsurance contract as it is for a direct contract?

A I1. Yes, with one modification for reinsurers. The definition of an MRB for reinsurance contracts is "a contract or contract feature that both provides protection to the contract holder from other-than-nominal capital market risk and exposes the insurance entity to other-than-nominal capital market risk,"just as it is for direct contracts. But in the determination of an MRB, the reinsurer is not required to havean account value or host and would look through to the direct writer for the corresponding account value. ASC 944-40-25-40 states that:

Both the ceding entity and the reinsurer shall first determine whether such a reinsurance contract should be accounted for under the market risk benefit provisions of ASC 944-40-25-25C. For reinsurers, the reference to the account balance in ASC 944-40-25-25D refers to theunderlying contract between the direct writer and the contract holder.

Q I2. If a reinsurance contract reinsured a feature that is an MRB in the direct contract, is the featurean MRB in the reinsurance contract?

A I2. Often yes. Both the ceding entity and reinsurer would determine whether such a reinsurance contract would be accounted for under the MRB provision of ASC 944-40-25-25C. For reinsurers, the reference to the account balance in ASC 944-40-25-25D refers to the underlying contract between the direct writer and the contract holder. If a feature meets the MRB criteria in the direct contract and if a reinsurance contract reinsures the feature without modification, then many of the criteria would likely be met in the reinsurance contract. For example, if the feature in the direct contract is subject to other-than-nominal capital market risk, the same feature in the reinsurance contract would likely be subject toother-than-nominal capital market risk, especially if reinsured contemporaneously.

One aspect of an MRB that may be present in the direct contract but not in the reinsurance contract is an account balance, because the direct account balance may not be reinsured. However, as noted in Q I1, a reinsurer would look through to the direct contract to determine whether there is an account balance. So even if the reinsurance contract does not cover the account balance, the account balance inthe direct contract is sufficient to meet the requirement in ASC 944-40-25-25D that in order to be an MRB, a feature must result in a "transfer of a loss in, or shortfall (that is, the difference between the account balance and the benefit amount) of, the contract holder's account balance from the contract holder to the insurance entity."

If the reinsurance contract is not accounted for under the market risk benefit provisions of ASC 944-40-25-25C, then per ASC 944-40-25-25B both the ceding entity and the reinsurer should then determine whether such a reinsurance contract should be accounted for as an embedded derivative under Topic 815 of Accounting Standards Codification and if not as a death benefit or other insurance benefit feature or annuitization benefit under ASC 944-40, consistent with direct contracts.

Q I3. Can a reinsurance contract contain an MRB if the direct contract being ceded does not contain anMRB?

A I3. While not a typical situation, it can happen. For example, assume that an account balance productcontains an annuitization guarantee and is sold at a time when interest rates are relatively high. When the annuitization guarantee is assessed at contract inception for whether it is an MRB, the capital market risk is deemed to be nominal. Now assume that a few years later interest rates have fallen significantly and the issuing company decides to reinsure the contract under a coinsurance agreement. When the annuitization guarantee in the reinsurance contract is assessed for whether it is an MRB, thelower interest rates at the time the reinsurance contract is entered into may cause the capital market risk to be deemed "other-than-nominal." If all the other criteria for MRB are met, the annuitization guarantee in the reinsurance contract can be an MRB even though the underlying direct contract doesnot contain an MRB.

Q I4. Does the MRB of a reinsurance contract need to produce a value of zero at contract inception?

A I4. Reinsurance companies are subject to the same MRB measurement requirements as direct companies. There is no explicit requirement to use a valuation methodology that results in zero inception value for MRBs. Generally, in accordance with ASC 944-40-30-19D, for MRBs classified as a non-option-based, the contract value at inception is zero. For MRBs classified as a freestanding or option-based, typically a zero inception value is not required.

Q I5. How does a ceding company value ceded MRBs?

A I5. The ceding company's MRBs would typically be valued gross of reinsurance with a separate credit determined for reinsurance recoverables. Generally, the reinsurance ceded cash flows would be ignoredin the fair value of the MRB in the direct business. The reinsurance ceded cash flows would be considered in the fair value of the reinsurance credit and if an attributed fee approach is used the attributed fees would be capped at the amount of reinsurance premiums. The determination of the reinsurance fair value would typically use an approach consistent with that used to determine the fair value of the MRB on the direct contract. The impact of non-performance (own credit) risk may differ between the direct and ceded MRB, as discussed in Q I6.

Q I6. Can the impact of non-performance/own credit risk result in a valuation difference between anMRB liability and the related reinsurance recoverable?

A I6. Yes, non-performance or own credit risk can result in a valuation difference between an MRB liability and the related reinsurance recoverable. Per Topic 820 (Fair Value Measurement), fair valuemeasurements should incorporate non-performance risk. This requirement is not dependent on whether the contract is direct or reinsurance.

For the direct contract, the gross MRB would generally be valued based upon the instrument-specific credit risk of the insurer looking at its own credit rating and would generally not consider the additional protection offered by reinsurance. In some circumstances, actuaries may consider that the own credit risk on the direct contracts may be indirectly impacted by the credit standing of the reinsurer if there is a requirementthat

the business be reinsured; this may occur if an insurer had a large portion of its business reinsured with a low-rated or impaired reinsurer, such that a default by the reinsurer could causethe ceding company to default on its direct obligations.

The reinsurance offset for the ceded business would use the counterparty credit risk of the reinsurerin the determination of the fair value. In some circumstances, actuaries may use the same credit standing for both the direct writer and the reinsurer as an approximation if the credit standing for both companies is similar.

As such, the fair values on the direct and ceded side could be different with the difference attributed tothe direct writer instrument-specific credit risk versus the reinsurer counterparty credit risk.

Per ASC 944-40-35-8A, change in instrument-specific credit risk of the MRBs on the direct contract will be recognized in OCI. The change in counterparty credit risk of the reinsurer would be recognized in netincome.

Q I7. Can other factors besides non-performance risk cause a difference between an MRB liability andthe related reinsurance recoverable?

A I7. Yes. For example, if the reinsurance treaty was initiated on a different date than the direct contract, the economic environment or other assumptions may differ between the direct contract andthe reinsurance contract as of their respective issue dates. That would cause a difference in the attributed fee (for a non-option-based valuation) for each of the contracts, which would result in different valuations for their respective MRBs at all subsequent valuation dates.

Other factors, such as different units of account, may also cause a difference between the direct MRBliability and the reinsurance recoverable.

Q I8. How might a reinsurance company value assumed MRBs?

A I8. The guidance for valuing assumed MRBs is no different than that for valuing direct MRBs. For reinsurance transactions where the both the host contract and MRBs are reinsured together (e.g., a variable annuity including both account balance and GMxBs), the reinsurer would calculate an assumedMRB. The GMxB would need to be bifurcated from the newly assumed host contract, just as with a direct variable annuity with GMxBs.

For reinsurance transactions where only the MRBs are reinsured (for example, only the GMxBs on a variable annuity are assumed), these would be considered freestanding MRBs and the premiums or feesused in the fair value calculation would be the reinsurance premium paid in the reinsurance transaction.If the reinsurance premiums are not sufficient to cover future MRB benefits, the
fair value calculation ofthe MRB may result in liability fair value at inception of the reinsurance contract.

Alternatively, if the reinsurance premiums are sufficient to cover future MRB benefits, the calculated fairvalue may be an asset, which may result in a gain at inception of the contract. However, if the reinsurance treaty was an arm's-length transaction, then the expected claims would typically be expected to equal the expected premium and the initial MRB value would be zero. If the contract valueat inception is nonzero, one might consider adjusting the risk margin to obtain a zero value. Two common approaches to adjust the risk margin to achieve a zero value at inception are to 1) adjust thediscount rate or 2) adjust the assumptions.

One key difference for assumed MRBs compared to direct MRBs is the unit of account. From a reinsurerperspective, an entire treaty could be considered to be the unit of account. The treaty may consist of multiple underlying contracts ceded by the direct company. (There may be future accounting interpretations coming out clarifying the valuation of assumed MRB reinsurance further.)

Section J: Transition

Q J1. What are the transition requirements for MRBs under Accounting Standards Update (ASU) 2018- 2 (Targeted Improvements to the Accounting for Long-Duration Contracts)?

A J1. ASU 2018-12 was issued in 2018 and, after being amended by ASU 2019-09 and ASU 2020-11, hasan effective date of January 1, 2023, for large public companies and January 1, 2025, for other insurers.Early adoption is permitted. ASU 2018-12 defined the concept of an MRB.

Transition requirements for MRBs can be broken down into the following broad requirements:

(A) Measurement of an MRB at fair value at the transition date through a retrospective applicationto all prior periods and resulting recognition of differences between the carrying value of the feature under pre-ASU 2018-12 accounting and fair value of the MRB at the transition date. In addition, reclassification of the cumulative effect of changes in the entity's own credit risk fromretained earnings to AOCI. Unless early adoption is elected, the transition date is the earliest period presented in the financial statements as of the effective date. If early adoption is elected, the entity has the option of making the transition date either
    a. earliest period presented in the financial statements at the adoption date, or
    b. the beginning of the previous reporting period as of the adoption date

(B) Development of terms and assumptions of each MRB not previously measured at fair value or not previously measured as part of any compound market risk benefit. This will entail determining how to maximize observable data and minimize unobservable information as of contract issuance and the restricted use of hindsight to the extent necessary that inputs are notobservable.

Q J2. What is meant by retrospective application?

A J2. This means that for MRBs not previously reported at fair value, insurers will need to determine thevaluation model (i.e., option or non-option) and the amount of attributed fees associated with the market risk benefit at contract inception as the initial steps required to measure the market risk benefit at fair value at the transition date. Additionally, if there are multiple market risk benefits combined in a single contract (some of which may have previously been carried at fair value), the interaction between those contracts will need to be considered and amount of attributed fees associated with the market risk benefit estimated at contract inception.

The transition requirements raise questions with respect to their application to MRBs. In particular, thetransition requirements could pose the following issues:

- In some cases, transition requirements may lead to setting assumptions or reconstructing assumptions that would have applied at issue.
- If at-issue calculations are required, this in turn may lead to permitted uses of "hindsight" or expedients/approximations to organize calculations. Hindsight is only permitted after an entity makes reasonable efforts to determine whether retrospective information is available from anynumber of other sources, such as market sources, pricing, other models (e.g., previous embedded derivative valuations or enterprise risk management), or other projections (e.g., regulatory capital calculations) to the extent they represent market participant assumptions. According to the Life & Health Audit Guide, "If entities are unable to obtain the necessary information through reasonable efforts, or the information would require assumptions about management's intent at contract inception (i.e., unable to be independently substantiated without contemporaneous documentation), entities would then be permitted to use hindsight in determining the assumptions."

The following questions seek to explore some of these issues further.

Q J3. What are the measurement requirements and what additional calculations or assumptions dothe transition requirements trigger?

A J3. For each market risk benefit, items to consider in determining modeling requirements for the remeasurements depend on: 1) whether the benefit was previously valued as a derivative or other insurance benefit; 2) if valued previously as a derivative, whether the attributed fee or host adjustmentmethod was used; and 3) whether there are other features that meet the market risk benefit definitionon the same contract. Two cases for transition can be distinguished:

Case #1: If a market risk benefit has been valued at fair value in prior periods (e.g., it was classified as aderivative or embedded derivative) and the contract contains no other market risk benefits, it may notbe necessary to reconsider the terms of the market risk benefit, assuming that the benefit had been using the post-FAS 157 definition of fair value to determine the attributed fee. The transition requirements could be satisfied by splitting out the impact of own credit risk for inclusion in AOCI.

In this case, the at-issue attributed fee or host adjustment that the company has been using in valuingthe MRB would in theory not change; the requirement in ASC 944-40-65-2(f) to use retrospective application to all prior periods in determining fair values does not add any additional requirements. Note however that in order to reclass the accumulated impact of own credit risk from retained earningsto AOCI, it will be necessary to retrieve at-issue own credit risk assumptions. If the original embedded derivative did not apply own credit (e.g., many guarantees issued prior to the effective date of FAS 157),it would likely be necessary to recalculate the at-issue attributed fee or host adjustment in order to account for own credit (see Q H6).

Case #2: If the market risk benefit had been valued under the insurance accrual model often referred toas SOP 03-1 or is part of a compound embedded derivative with components that are not MRBs, then the terms of the market risk benefit would be set as described in Q J1(B). The requirement in ASC 944-40-65-2(f) to use retrospective application to all prior periods in determining fair values requires calculating the at-issue attributed fee or host adjustment for the compound market risk benefit. The entity may face data, assumption, and modeling challenges in doing so.

For example, if the market risk benefit had been valued under the insurance accrual model, then thecalculations, data, and models used at issue will be different from those required for a fair value estimate, as illustrated in the following table:

Basic Differences Between Fair Value and Insurance Accrual Model

Element	Insurance Accrual Model	Fair value	Issues
Benefits	Benefit in excess of account value*	Benefit in excess ofaccount value*	Insurance accrual model projectionsof excess benefitsare on different basis*
Funding	FAS 97 Revenues	Fees	Explicit fees maynot have been identified or may be insufficient
Calculation method	Retrospective with unlocking benefit ratio	Prospective with locked-in attributed fee factoror host adjustment	Insurance accrual model may not be readily adaptable
Granularity ofcalculation	Cohort	Seriatim, with possible practical expedient of using policy grouping if grouping does not cause a material impact	Calculation needsto be specific to policies in force
Economic Assumptions	Real-world scenarios	Risk-neutral scenariosand own credit risk	Risk-neutral scenarios may not be available if FV not previously calculated
Insurance Assumptions	Best estimate	Market participant assumptions, which are typically approximated by best estimate assumptions with risk margins; best estimate assumptions are appropriate if they approximate the assumptions a market participant would use	Margins may not have been set forthese features in the past*

* Note that though the definition of excess benefits may be the same in the two accounting models, assumptionsused to project and discount those benefits will be quite different.

For many companies, the differences in accounting methods and the prevalence of multiple MRBs included in a single contract increases the likelihood that assumptions and modeling will need to bedeveloped for historical periods.

If the market risk benefit is part of a compound market risk benefit, there is in addition the need to consider any impact of correlation among benefits in determining the best estimate cash flows and therisk margins.

Q J4. How might use of hindsight be interpreted in handling missing assumptions or data forcalculating at-issue attributed fees or host adjustments?

A J4. To the extent at-issue calculations are required, FASB recognized (see BC103 of the Basis for Conclusions to ASU 2018-12) that recalibrating balances at issue, including generating economic scenarios and modeling policyholder behavior in an objective manner that avoids hindsight, could be a difficult standard to meet. ASC 944-40-65-2(f) allows hindsight, but only after the insurance entity hasmade use of all observable data in determining assumptions:

> "An insurance entity shall maximize the use of relevant observable information as of contract inception and minimize the use of unobservable information in determining the market risk benefits balance at the transition date. If retrospective application requires assumptions in theprior period that are unobservable or otherwise unavailable and cannot be independently substantiated, the insurance entity may use hindsight in determining those assumptions."

It would seem then that the intent is for at-issue calculations to be constructed in such a way as to avoid"repricing" to take advantage of actual events after issue date, if observable and substantiated data is available.

The extent to which hindsight might be used, if applicable, is not specified and different interpretationshave emerged, primarily around the burden of proof required to confirm that observable and independently substantiated information is unavailable. One interpretation would suggest that use of hindsight is a safe harbor to the extent that actual information is not available. The actuary typically would apply best efforts to recover assumptions and inputs that would have applied when the market risk benefit was issued but would not be challenged on the basis that some hindsight was used for elements that are no longer available, observable, or otherwise independently substantiated. Another interpretation would suggest use of perfect hindsight in some situations. Under this interpretation, for assumptions that are either unobservable or unattainable and that cannot be independently substantiated, the actuary could replace an assumption with the actual experience that emerged between when the market risk benefit was issued and the transition date. This would typically be mostapplicable to non-market variables because market variables are typically observable or inferable from available information.

Below are some examples that indicate more fully what the restrictions on hindsight might be.

Example 1: Economic scenarios are intended in some way to reflect observed environments after theissue date (e.g., weighting of scenarios, forward rates, volatility assumptions).

Analysis: Under either interpretation of hindsight, it would not be appropriate to substitute economicassumptions based on observations post-issue if contradicted by observable parameters applicable tothe issue date. Even if related to a parameter in which available data is scarce, the fact that economicrather than non-economic assumptions are involved would suggest using every effort to avoid taking account of post-issue economies.

Example 2: Pricing lapse assumptions documented at issue are thought to have been aggressive and came to be viewed as mispricing due to lack of experience with certain markets. Lapse assumptions informed by later thinking and experience are used instead.

Analysis: Some would say that the documented insurance assumptions should in all cases be used, as they are observable. It might also be argued, however, that the assumed lapse rates are not observations but subjective judgments based on other data available at the time and may have not beenproperly calibrated. If evidence shows that the assumptions were unreasonable given what was known at the time, a different conclusion might be reached.

Example 3: The entity has a block of policies with a living benefit (such as a GMWB) formerly valued using the attributed fee approach. The contracts also have an ROP death benefit, which has been valuedunder the insurance accrual model. We assume in this case that the ROP benefit is of less value than compared to the GMWB.

The attributed fees used in valuing the GMWB prior to the transition date of ASU 2018-12 (Long Duration Targeted Improvements) would now be replaced by an attributed fee taking account of a compound benefit. The company seeks a way to leverage the information inherent in the attributed feeswith the single dominant benefit to avoid attempting full-blown at-issue calculations.

Analysis: In the answer to Q J5 below, we a discuss a method that might be applicable to this situation.

Q J5. What are some possible simplifying assumptions or practical considerations in meetingtransition requirements?

A J5. Practical expedients are only permitted to the extent they would achieve results consistent withrequired accounting under the ASU.

The discussion below concerns market risk benefits for which the attributed fee method is used for estimating the fair value, as opposed to the option method. Because host adjustment calculations resultin dollar adjustments that are then amortized into income in the future rather than ratios applied to valuation date populations, the ability to use practical expedients for that method seem to be limited, ifnot nonexistent.

As discussed in Q J2, in cases where a contract has more than one MRB, or an MRB has not been measured at fair value in the past, it will be necessary to determine an attributed fee based on at-issueassumptions and methods.

Pricing model approach

Broadly, this method relies on data grouping to reduce the amount of work in applying an otherwise "brute force" recalculation of attributed fees when it is required. The attributed fees are calculated forintelligently selected cells.

The method also relies on the fact that the contract inception calculations in the transition requirementsdo not require accounting for in force that has lapsed or matured before transition date or any results prior to transition date, even if these policies were analyzed as part of the same cohort in the past (either by data grouping for attributed fees, or because they were part of the same insurance accrual model cohort.)

Although the method may result in some reduction of effort, it still may require tweaking or developingmodels (calculation code) to perform issue-date projections of cash flows suitable for fair value measurement for any features for which there is no extant coding, or only coding for the insurance accrual model. Also, assumption sets need to be developed for every relevant issue date of the representative cells.

The major steps are as follows:

1. Select representative policies (cells) spanning age, gender, benefit type, and expected investment mix at time of sale (e.g., 55-year-old male, 5% ratchet GMDB only, 60/40 equity/bond mix).
2. Back-date the inforce records to the issue date (this will typically be issue quarter or issue year).

3. Associate issue date economic and insurance assumptions with each record (e.g., relevant risk-free scenarios, risk margins including correlations). The issue date will typically be issue year orissue quarter.
4. Determine the attributed fee and/or host adjustment for each representative policy.
5. Apply these attributed fees to the appropriate inforce policies and interpolate between representative policies for other issues ages or similar benefits. For example, the attributed fee for a 53-year-old male can be estimated by interpolating between a 50-year-old male and a 55-year-old male. A 4% ratchet can be estimated by interpolating between a 3% ratchet and a 5% ratchet.

Validation Considerations

In judging whether enough cells have been selected to "cover" the in force requiring recalculated in force, the orientation would be on the covering the issue date statistics, not transition date statistics such as in-the-moneyness. If the cell selections miss an issue year or contract feature combination common in the transition in force, then none of the attributed fees associated in the cell selections maybe relevant to that part of the transition in force.

On the other hand, there may not be much value in trying to represent the in-the-moneyness distribution at transition, because this is a function of specifically what happened since issue date, andpossibly nothing to do with the at-issue exposure.

The quality of the coverage might be judged, for example, by adding additional cells to see whether attributed fees are relatively stable.

Ratio Approach

This approximation, described in more detail in the December 2018 edition of *The Financial Reporter*,may be practical in a specialized, but common situation:

- The contracts contain a living benefit already valued using the standard fair value technique.
- The contracts also contain a GMDB or GMIB, currently valued under the insurance accrual model (i.e., SOP 03-1), using real-world scenarios. These benefits are classified as MRBs under theAccounting Standards Update (ASU).
- The dominant benefit in terms of value in the contracts are the living benefits.

The method leverages the information inherent in the attributed fee for the living benefit calculated at issue and the current relationship at transition between living and compound benefits. For example, assume that a variable annuity was issued in 2010 that contained both a GMDB accounted for under theinsurance accrual model and a guaranteed minimum withdrawal benefit (GMWB) accounted for as an embedded derivative at fair value. Because the GMWB attributed fee was locked in at inception, that attributed fee would contain much of the information about the assumptions that had been used at inception. Accordingly, it may be possible to estimate the attributed fee for the new compound MRB as follows:

$$a = \frac{PV\ at\ transition\ of\ future\ GMDB + GMWB\ claim\ at\ fair\ value\ including\ risk\ margins}{PV\ at\ transition\ of\ future\ GMDB + GMWB\ fees}$$

$$b = \frac{PV\ at\ transition\ of\ future\ GMWB\ claims\ at\ fair\ value\ including\ risk\ margins}{PV\ at\ transition\ of\ future\ GMWB\ fees}$$

$$Attribued\ Fee^{Compound\ MRB} = Attributed\ Fee^{GMWB} \times \frac{a}{b}$$

Where:
$Attributed\ Fee^{Compound\ MRB}$ represents the estimated attributed fee for the compound market risk benefit upon transition, and

$Attributed\ Fee^{GMWB}$ represents the attributed fee for the GMWB embedded derivative at inception. Note that a company may conclude that the risk margin in the calculation in "a" may be less than thatused for "b."

Because the ratio method is an expedient to explicit at-issue calculations, it is advisable to assess whether it adequately reflects the intentions of the explicit at-issue calculations. The ratio method implicitly assumes that the ratio relationship between the compound and single benefit is reasonablystable between issue date and transition. The actuary would consider, for example, the effects of changes in policyholder behavior assumptions over time, or changes in economic assumptions.

To maximize the use of observable information from the time the market risk benefits were issued, the present values might be based on the yield curves from when the market risk benefits were issued, rather than the yield curve at the transition date. The attributed fee for the compound market risk benefit combining the GMDB and GMWB determined in this manner would capture the information about economic and demographic assumptions from the GMWB-attributed premium but would assumethat the relative levels of benefits and fees remained reasonably stable during the period between issueand transition.

Q J6. Does retrospective transition of a market risk benefit affect DAC balance at transition?

A J6. There are two interpretations.

One interpretation is that the change to the value of a guarantee due to retrospective transition of the market risk benefit does not affect the carrying value of the DAC at the transition date. In this case, DAC will be transitioned based on existing carrying amounts. If the entity elects this approach, and if there is no remaining account balance as of the transition date, the entity would amortize this DAC balance in the first period subsequent to the transition date.

The other interpretation is that the historical estimated gross profits (EGPs) that were used to amortize DAC are impacted by the change to the retrospective change to the value of the MRB. If the entity elects this approach, any DAC balances are adjusted by amortizing the historical acquisition costs using revised EGPs that reflect the retrospective change to the MRB. The revised EGPs would reflect the revised guidance on the contract period in ASC 944-40-35-8B—i.e., the amortization period would reflect that "on the date of annuitization (for annuitization benefits) or upon extinguishment of the account balance (for withdrawal benefits) the balance related to the market risk benefit shall be derecognized." The DAC would be transitioned based on the revised balance, and the difference between the original DAC balance and this revised DAC balance (excluding any shadow DAC) at transition would be recorded through retained earnings.

Q J7. Is own credit included in the attributed fee calculations for cohorts that incepted prior to theeffective date of FAS 157, and, if yes, how would own credit be estimated for those periods?

A J7. See Q H6.

Q J8. Assume a feature meeting the definition of an MRB had been acquired in a business combinationand a value of business acquired (VOBA) asset, also known as PVFP asset (for present value of future profits), had been established relating to the contract containing the feature. If, upon retrospective transition of the MRB, the value changes, would the VOBA asset also be adjusted to the value it would have been had this accounting been applicable since the time of thebusiness combination?

A J8. Yes. Paragraph 36 of Appendix G of the Life & Health Audit Guide states that:

Adoption of ASU 2018-12 guidance does not impact the acquisition date fair values of the insurance and reinsurance contracts at the purchase date of the business combination. However, FinREC believes that application of the provisions of ASU 2018-12 to market risk benefits on a retrospective basis will require entities to adjust the allocation of the acquisition date fair value of the contracts to their related components (e.g., the allocation among PVFP, host contract account values, additional liabilities, and MRBs) to reflect changes in the measurement of the contracts in accordance with ASC 944-805-30-1(a). That is, acquiring entities should retrospectively adjust carrying amounts of the acquired contracts (i.e. contracts or contracts features that now meet the definition of market risk benefits) and redetermine the initial measurement of the components of the contracts acquired in the business combination but it should not change the fair value of the group of contracts.

Thus, as part of a business combination, one would determine whether the retrospective change to the MRB value would have generated a change to the initial VOBA (or PVFP) balance.

If there was a change to the initial VOBA balance, then that would impact the transition balance of the VOBA. Paragraph 37 of Appendix G of the Life & Health Audit Guide states that:

FinREC believes that if an entity adjusts the PVFP in accordance with paragraph 36, the entity should use an amortization method for any revised PVFP amount consistent with the entity's accounting policy before adoption of ASU 2018-12 to determine amortization from the date of the business combination through the transition date.

Thus the revised initial VOBA (or PVFP) balance would be updated through the transition date by redoing the amortization since the acquisition date in accordance with the entity's pre-transition VOBA amortization policy. This seems to permit at least two options.

The first option is the adjust the transition VOBA balance based on the ratio of the previous initial VOBA and the updated initial VOBA to reflect MRBs. For example, if the original VOBA was 100 but reflecting MRBs, it increases by 10% to 110. Then if the current transition date VOBA was 50, then would also be increased by 10% to 55.

The second option is more complex and requires more data. One would reflect the initial VOBA difference as well as the impact of the subsequent amortization due to the revaluation of the MRB. Forexample, assume VOBA was amortized with EGPs. Also assume the impact in the example above was due to converting an SOP 03-1 reserve to a MRB with the following balances.

	Original balance	Transition balance	Difference
Pre-LDTI SOP 03-1 Reserve	20	40	20
Post- LDTI MRB	30	55	25
Difference	10	15	5

In this case, the initial VOBA would change from 100 to 110. But the subsequent VOBA amortization would also reflect the differences in gross profits. Assuming nothing else changed, the increase in theMRB during the period is 5 greater than the increase in the SOP 03-1 reserve. This would lower gross profits and would affect the VOBA amortization. Depending on the timing of the differences and the amortization factor, the resultant VOBA would likely be slightly larger than the 55 in the first option.

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