

A PUBLIC
POLICY

Practice Note

US GAAP Fair Value Measurement & Fair Value Option

September 15, 2026

Developed by
the Life Generally Accepted Accounting
Principles (GAAP) Committee



AMERICAN ACADEMY
of ACTUARIES

Practice Note on US GAAP Fair Value Measurement & Fair Value Option

This practice note is not intended to establish accounting standards or provide accounting advice. None of the authors are CPAs and any accounting questions should be directed to professionals who are qualified to give accounting advice. This practice note is prepared solely for educational purposes to assist actuaries in understanding the actuarial modeling techniques commonly utilized to implement fair value measurements under U.S. GAAP.

The original version of this practice note was prepared by a Fair Value Work Group organized by the Life GAAP Reporting Committee (previously titled the Life Financial Reporting Committee) within the Life Practice Council of the American Academy of Actuaries and was released in 2009. In 2025, the Life GAAP Reporting Committee formed another work group to review, revise, and update (as it deemed warranted) this practice note. The practices presented here represent observations of actuaries working in the life insurance industry.

This practice note is not a promulgation of the Actuarial Standards Board, is not an actuarial standard of practice, is not binding upon any actuary and is not a definitive statement as to what constitutes generally accepted practice in the area under discussion. Events occurring subsequent to this publication of the practice note may make the practices described in this practice note irrelevant or obsolete.

The members of the Fair Value Work Group who are responsible for the revisions of this practice note are:

Chairperson: Leonard Reback, MAAA, FSA
Charles Chacosky, MAAA, FSA
Thomas Chamberlain, MAAA, FSA

Fair Value Measurement and Fair Value Option

Table of Contents

Practice Note on U.S. GAAP Fair Value Measurement & Fair Value Option.....	1
Fair Value Measurement.....	5
Q1. What is the source for guidance on Fair Value Measurement under U.S. GAAP?	5
Q2. How does Accounting Standards Codification (ASC) Topic 820 define fair value?	5
Q3. What are some of the life actuarial items that ASC Topic 820 applies to?.....	6
Q4. What considerations might be taken into account when defining the principal or most advantageous market?	9
Q5. What are some potential markets that may be considered for determining fair values for life insurance products?	10
Q6. How would the unit of account typically be determined for an insurance contract or market risk benefit or embedded derivative being valued under Topic 820?.....	11
Q7. Does the valuation premise need to be considered?	13
Q8. What valuation techniques may be used to determine fair value?	13
Q9. Which actuarial techniques may be used to determine fair value under the income approach?14	
Q10. What is fair value hierarchy?	17
Q11. How would inputs to the valuation of a market risk benefit typically be classified in the hierarchy?	18
Q12. Is a market-based input always an observable input?.....	19
Q13. What weight might be placed on reinsurance quotes when determining fair value assumptions?.....	19
Q14. Does ASC Topic 820 require that nonperformance risk be reflected in the fair value of a liability?	20
Q15. Can an increase in the nonperformance risk result in a decrease in GAAP liabilities recorded at fair value?	21
Q16. Some actuaries find an increase in GAAP equity resulting from an increase in nonperformance risk applicable to liabilities recorded at fair value counterintuitive. Did the Financial Accounting Standards Board (FASB) consider this potential implication when issuing the fair value measurement guidance?	21
Q17. How might nonperformance risk be reflected in the fair value of a liability?	22
Q18. What elements are considered in determining nonperformance risk?.....	24
Q19. Are guarantee fund assessments included in the ASC Topic 820 fair value calculation?	25
Q20. What sources may be used to determine company-specific credit spreads?	25
Q21. How may reinsurance be considered in determining the credit assumption for the direct contract?.....	27
Q22. How might counterparty nonperformance risk be considered for a reinsurance receivable asset or a ceded market risk benefits (MRBs) to the ceding company?	28
Q23. How might nonperformance risk be reflected in a risk neutral valuation?	28
Q24. How might discounting be handled on path dependent scenarios?	29

Q25. How may the discount rate adjustment for nonperformance be applied to the “fee leg” of a GMxB rider?	30
Q26: How may the discount rate adjustment for nonperformance be applied to the embedded derivative representing the index crediting mechanism of an annuity or life insurance policy?.....	31
Q27. Should increasing the present value of expected liability cash flows by a risk margin be considered when determining the fair value?.....	31
Q28. May a risk margin be considered for observable capital market inputs, such as market implied volatilities?.....	32
Q29. Should a risk margin be considered for actuarial inputs, such as mortality, morbidity, lapse assumptions, and/or partial withdrawal timing and utilization assumptions?	33
Q30. What methods can be used to calculate the risk margin?	33
Q31. What techniques are available to apply the cost of capital method for risk margins?	33
Q32. Do risk margins need to be explicit?.....	35
Q33. Does a separate risk margin need to be included for each assumption or is one aggregate risk margin acceptable?	35
Q34. How can risk margins be incorporated into a fair value calculation using the budget method (option budget method) for indexed products?	35
Q35. How might taxes impact risk margins?	36
Q36. How frequently might risk margins be updated?.....	37
Q37. May application of ASC Topic 820 result in a gain or loss at issue of a contract accounted for at fair value?	37
Q38. May application of ASC Topic 820 result in a gain or loss being recognized at issue of a hybrid instrument?	38
Q39. What disclosures are required?.....	39
Q40. How are transaction costs treated under ASC Topic 820?	40
Q41. How are deferred acquisition costs or previously collected loads reflected in a fair value calculation?	40
Fair Value Option	41
Q42. What is the fair value option?.....	41
Q43. When can the fair value option be elected?.....	41
Q44. What contracts are eligible for the fair value option?.....	42
Q45. If fair value option is elected for one contract, must it be elected for another contract?.....	42
Q46. Can the fair value option be elected for a rider on a contract but not for the underlying base contract itself or vice versa?	42
Q47. If the fair value option is elected for a contract and the reporting entity later changes its mind, can the fair value option election be revoked?	43
Q48. Is there a requirement for specific documentation to support a fair value option election?	43
Q49. What disclosures are required for a fair value option election?	43
Q50. When an assuming company, electing the fair value option for non-contemporaneous (or block) insurance, what measurement requirements should the assuming company consider?	44

Fair Value Measurement and Fair Value Option Q&A

Fair Value Measurement

Q1. What is the source for guidance on Fair Value Measurement under U.S. GAAP?

A1. Statement of Financial Accounting Standards (FAS) No. 157, promulgated by the Financial Accounting Standards Board (FASB) in 2006, defined fair value measurement for U.S. generally accepted accounting principles (U.S. GAAP) accounting purposes. Under FASB Accounting Standards Codification (ASC), the fair value measurement guidance was codified as ASC Topic 820, *Fair Value Measurement*. ASC Topic 820 establishes a framework for GAAP fair value calculations and expands the disclosures required for items measured at fair value. ASC Topic 820 provides concepts and principles for fair valuation, while not specifically providing prescriptive requirements for the calculations. The Financial Accounting Standards Board (FASB) codification website, asc.fasb.org, is updated regularly as FASB updates the accounting guidance.

ASC Topic 820 does not specify when to apply fair value. Guidance for when to apply fair value is provided by other accounting standards and guidance. ASC Topic 820 provides guidance on how to apply fair value when fair valuation is specified by other accounting standards.

Q2. How does ASC Topic 820 define fair value?

A2. ASC Section 820-10-20 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 at the measurement date.” ASC 820-10-35-9A expands on the fair value definition stating: “...the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction in the principal (or most advantageous) market at the measurement date under current market conditions (that is, an exit price) regardless of whether that price is directly observable or estimated using another valuation technique.” Further, the glossary of ASC Topic 820 defines the two underlined terms:

Orderly Transaction—A transaction that assumes exposure to the market for a period before the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities; it is not a forced transaction (for example, a forced liquidation or distress sale).

Market Participants—Buyers and sellers in the principal (or most advantageous) market for the asset or liability that have all of the following characteristics:

- a. They are independent of each other, that is, they are not related parties, although the price in a related-party transaction may be used as an input to a fair value measurement if the reporting entity has evidence that the transaction was entered into at market terms;

- b. They are knowledgeable, having a reasonable understanding about the asset or liability and the transaction using all available information, including information that might be obtained through due diligence efforts that are usual and customary;
- c. They are able to enter into a transaction for the asset or liability; and
- d. They are willing to enter into a transaction for the asset or liability, that is, they are motivated but not forced or otherwise compelled to do so.

ASC 820-10-05-1B and 1C clarify that “Fair value is a market-based measurement, not an entity-specific measurement” and “Because fair value is a market-based measurement, it is measured using the assumptions that market participants would use when pricing the asset or liability, including assumptions about risk.”

So, fair value is an exit price based on a hypothetical transaction between market participants. In other words, it is the price (zero, positive, or negative) a market participant would incur if it “exited” its rights from an asset or to exit its obligations under a liability.

Q3. What are some of the life actuarial items that ASC Topic 820 applies to?

A3. With certain limited exceptions, ASC Topic 820 may apply to any item that is required to be accounted for at fair value by other GAAP literature. ASC Topic 820 itself does not define particular instances in which fair value needs to be applied.

Specific instances in which ASC Topic 820 may apply to items generally calculated by actuaries include:

- Derivatives and Embedded Derivatives (ASC Topic 815)
- Market Risk Benefits (ASC 944-40-25-25C)
- Financial Instrument Fair Value Disclosures (ASC 825-10-50-10)
- Purchase GAAP and Business Combinations (ASC Topic 805)
- Impairment Testing of Intangible Assets (ASC Topics 350 and 360)
- Fair Value Option (ASC 825-10-15-4)

Derivatives and Embedded Derivatives:

ASC Topic 815 requires that certain derivatives and embedded derivatives be accounted for at fair value. ASC 815-15-25-1 states:

An embedded derivative shall be separated from the host contract and accounted for as a derivative instrument pursuant to Subtopic 815-10 if and only if all of the following criteria are met:

- a. The economic characteristics and risks of the embedded derivative are not clearly and closely related to the economic characteristics and risks of the host contract;

- b. The hybrid instrument is not remeasured at fair value under otherwise applicable GAAP with changes in fair value reported in earnings as they occur; and
- c. A separate instrument with the same terms as the embedded derivative would, pursuant to ASC Section 815-10-15, be a derivative instrument subject to the requirements of ASC Subtopic 815-10 and this subtopic. (The initial net investment for the hybrid instrument shall not be considered to be the initial net investment for the embedded derivative.)

Some common embedded derivatives found on contracts sold by insurance companies include equity index features on indexed annuities (see example 14 in ASC Topic 815) and equity-indexed life insurance contracts (see ASC 815-15-55-73 to 75). Stable value guarantees that wrap synthetic guaranteed investment contracts (see ASC 815-10-05-11) may also be derivatives or embedded derivatives. Certain reinsurance features are also considered embedded derivatives (see ASC 815-15-55-107 to 109). These include provisions under modified coinsurance (modco) and funds withheld arrangements for the ceding company to pay the reinsurer the investment return earned on the assets held under the modco or funds withheld arrangement.

Certain types of reinsurance contracts may also contain embedded derivatives or even be derivatives in their entirety. Certain reinsurance contracts covering cost of insurance (COI) charges waived on universal life contracts with secondary guarantees if the account value runs out (as opposed to covering actual death claims) may also be considered freestanding derivatives or else may contain embedded derivatives. If they are considered derivatives under ASC Topic 815, ASC Topic 820 also applies to their valuation.

Market Risk Benefits:

ASC Topic 820 applies to the valuation of market risk benefits. ASC Topic 944, as updated for Accounting Standards Update 2018-12 (ASU 2018-12) *Targeted Improvements to the Accounting for Long-Duration Contracts*, issued in 2018, introduced the concept of market risk benefits (MRBs). ASC 944-40-25-25C defines a market risk benefit as “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.”

Some features found in contracts issued by insurance companies that may be considered market risk benefits if the capital market risk is other than normal include:

- Guaranteed Minimum Death Benefits (GMDB) on deferred annuity contracts;
- Guaranteed Minimum Income Benefits (GMIB) on variable annuity and indexed annuity contracts;
- Guaranteed Minimum Accumulation Benefits (GMAB) on variable and indexed products;
- Guaranteed Minimum Withdrawal Benefits (GMWB) on variable and indexed products;
- Stable value guarantees within a guaranteed investment contract;

- Payout annuity purchase rate guarantees within a life insurance or deferred annuity contract.

If a direct contract contains an MRB, reinsurance of that feature will generally also be an MRB.

Financial Instrument Fair Value Disclosures:

ASC Section 825-10-50 requires a footnote disclosing the fair value of many financial instruments. Although insurance contracts are explicitly excluded from this disclosure, many contracts that are sold by insurance companies are classified as investment contracts for GAAP accounting purposes and thus, may be included within the scope of these disclosures. Such contracts include deferred annuities without significant insurance risk, guaranteed investment contracts, payout annuities without life contingencies, and reinsurance contracts that do not meet the risk transfer requirements to qualify for insurance accounting. ASC Topic 820 applies to these disclosures.

Purchase GAAP and Business Combinations:

ASC Topic 805 requires that financial instruments and certain intangible assets acquired in a business combination be valued on day 1 at fair value (although after the initial acquisition date the value may diverge from fair value). This requirement applies to insurance and investment contracts acquired in a business combination as well as to intangible assets, such as the value of distribution agreements and the value of customer relationships acquired in the business combination. ASC Topic 820 applies to the day 1 fair valuation of these items in the business combination.

Impairment Testing:

ASC Topic 350 requires goodwill to be allocated to reporting units and tested for impairment at least annually. The test is passed if the fair value of a reporting unit exceeds its carrying value. ASC Topic 820 applies to the determination of fair value of such reporting units.

ASC 360-10-35-17 requires that certain intangible assets that are amortized be evaluated for impairment when certain conditions are met. Assets that may require this impairment evaluation include value of customer relationships and value of distribution agreements acquired in a business combination. The assets are impaired if the carrying amount of the asset exceeds its fair value and the carrying amount of the asset exceeds the sum of undiscounted cash flows expected to result from the use and eventual disposition of the asset.

ASC 350-30-25-18 through 350-30-35-19 require a slightly different test for intangible assets that are not being amortized. For such assets there is a qualitative evaluation as to whether it is more likely than not that the asset is impaired. If impairment is more likely than not, the asset is impaired if the carrying value of the intangible asset exceeds the fair value of the asset on the valuation date.

ASC Topic 820 applies to the fair value calculations performed for these impairment tests.

Fair Value Option:

ASC Topic 820 applies to any financial instrument for which a fair value option election is made under ASC 825-10-15-4.

In addition, ASC Topic 820 applies to measurement of fair value of securities (under ASC Topics 320 and 321), and pension and post-retirement assets (ASC Topic 715).

Q4. What considerations might be taken into account when defining the principal or most advantageous market?

A4. ASC Topic 820 defines the concepts of “principal” and “most advantageous” markets. ASC 820-10-35-5 and 820-10-35-5A require fair value to be based on the principal market and, in the event that there is not a principal market, it provides that the fair value may be based on the most advantageous market.

The glossary to ASC Topic 820 (ASC Section 820-10-20) defines the principal market as “the market with the greatest volume and level of activity for the asset or liability.” The most advantageous market is defined as “the market that maximizes the amount that would be received to sell the asset or minimizes the amount that would be paid to transfer the liability, after taking into account transaction costs and transportation costs.”

ASC 820-10-35-6A states that “the principal (or most advantageous) market (and thus, market participants) shall be considered from the perspective of the reporting entity, thereby allowing for differences between and among entities with different activities.” ASC 820-10-35-6 states “if there is a principal market for the asset or liability, the fair value measurement shall represent the price in that market (whether that price is directly observable or otherwise determined using a valuation technique), even if the price in a different market is potentially more advantageous at the measurement date.”

The ASC Topic 820 definition of “fair value” is based on a hypothetical transaction between “market participants” and represents the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction (i.e., not a forced liquidation or distress sale). Market participants are defined as “buyers and sellers in the principal (or most advantageous) market for the asset or liability that have all of the following characteristics:

- a. They are independent of each other, that is, they are not related parties, although the price in a related-party transaction may be used as an input to a fair value measurement if the reporting entity has evidence that the transaction was entered into at market terms;
- b. They are knowledgeable, having a reasonable understanding about the asset or liability and the transaction using all available information, including information that

might be obtained through due diligence efforts that are usual and customary;

- c. They are able to enter into a transaction for the asset or liability; and
- d. They are willing to enter into a transaction for the asset or liability, that is, they are motivated but not forced or otherwise compelled to do so.”

ASC 820-10-35-9 states that:

A reporting entity shall measure the fair value of an asset or a liability using the assumptions that market participants would use in pricing the asset or liability, assuming that market participants act in their economic best interest. In developing those assumptions, a reporting entity need not identify specific market participants. Rather, the reporting entity shall identify characteristics that distinguish market participants generally, considering factors specific to all of the following:

- a. The asset or liability;
- b. The principal (or most advantageous) market for the asset or liability; and
- c. Market participants with whom the reporting entity would enter into a transaction in that market.

Q5. What are some potential markets that may be considered for determining fair values for life insurance products?

A5. Based on the guidance in ASC Topic 820, described in question Q4, some examples of principal or most advantageous markets for insurance products that might be used to determine their fair values are as follows:

- The life insurance company market (or business combinations market). The fair value would be based on a price that the insurance company would have to pay another insurance company operating in the same insurance market to take on the obligations and associated revenues of the life insurance contracts.

For variable annuities with market risk benefits, since the market risk benefit alone generally cannot be transferred to another market participant, the valuation might assume that the market risk benefit would be transferred in conjunction with the host contract. However, the fair value of the market risk benefit will consider the cash flow associated with the market risk benefit only.

There are limitations to using the insurer market as a basis for fair value. Market prices are not readily observable in this market, due to the low transaction volume, the uniqueness of each company’s specific insurance liabilities, and the fact that deals may combine a basket of products and intangible items. Observed prices may cover entire contracts, whereas only the market risk benefit portions might be subject to fair value. Also, inputs into pricing are generally not market observable. Furthermore, transactions in this market might not reflect a full transfer of the

liability as required under ASC Topic 820 since, in some transactions, there may still be counterparty risk.

- The policyholder market. The fair value would be based on a price that the insurance company would charge a policyholder. However, a potentially significant issue with this market is that it is not one into which the insurer is able to transfer the liability. The price paid by the policyholder represents an entry price, not an exit price, as required under ASC Topic 820.
- The reinsurance market. The principal market would be deemed to be the market in which the insurer could potentially transfer the risks associated with the contract or contract feature in a reinsurance transaction. However, a potential issue with the reinsurance market is that reinsurance may not represent a full transfer as required by ASC Topic 820, as there is still counterparty risk. Also, reinsurance deals are generally unique, and, therefore, it might not be possible to get directly observable market prices.

Information from the reinsurance market might provide some useful market data for determining fair value. For example, reinsurance quotes, if available and reasonable, may provide information as to the fair value of a contract or contract feature. However, it may not be appropriate to use information from the reinsurance market without some consideration of these limitations.

- Capital markets. The principal market would be deemed to be the market in which the insurer could potentially transfer certain risks associated with the insurance contracts that contain capital markets risks. However, a potential limitation is that capital markets solutions available for insurance contracts do not represent a full transfer required by ASC Topic 820, as there is still counterparty risk. In addition, these transactions typically do not involve a transfer of all risks—typically, policyholder behavior risk, mortality risk, basis risk, and model risk are not transferred.

Capital markets can provide useful market data for determining fair value. However, it may not be appropriate to be used without some consideration of these limitations.

In light of the drawbacks associated with each of these markets, actuaries would typically consider the reliability of market data and the limitations described above in determining the principal market to be used as a basis for fair value.

Q6. How would the unit of account typically be determined for an insurance contract or market risk benefit or embedded derivative being valued under Topic 820?

A6. ASC 820-10-35-2B states:

A fair value measurement is for a particular asset or liability. Therefore, when measuring fair value, a reporting entity shall take into account the characteristics of the asset or liability if market participants would take those characteristics into

account when pricing the asset or liability at the measurement date. Such characteristics include, for example, the following:

- a. the condition and location of the asset;
- b. restrictions, if any, on the sale or use of the asset at the measurement date.

ASC 820-10-35-2D and 820-10-35-2E state:

The asset or liability measured at fair value might be either of the following:

- a. a standalone asset or liability (for example, a financial instrument or an operating asset); or
- b. a group of assets, a group of liabilities, or a group of assets and liabilities (for example, a reporting unit or a business).

Whether the asset or liability is a standalone asset, a liability, a group of assets, a group of liabilities, or a group of assets and liabilities for recognition or disclosure purposes, depends on its unit of account. The unit of account for the asset or liability shall be determined in accordance with the Topic that requires or permits the fair value measurement, except as provided in this Topic.

Typically, accounting for insurance contracts, for Guaranteed Minimum Benefit of type x (GMxB) market risk benefits (e.g., GMDB, GMIB, GMWB, GMAB) or for embedded derivatives, is done at the contract level. For market risk benefits and embedded derivatives, the market risk benefit or embedded derivative is bifurcated at contract inception and fair valued. Fair value calculations at the individual contract level, market risk benefit level, or the embedded derivative level would then appear appropriate for these items.

For other items, such as intangible assets or certain items subject to fair value disclosures (e.g., ASC 825-10-50-10), the unit of account may aggregate multiple contracts.

Practically, fair valuations for many products offered by life insurance companies are performed on a modeling basis and use aggregated data (i.e., model cells). The model cells are designed to produce, in aggregate, similar results to contract level calculations. For this reason, fair valuations may result in the same value, whether the unit of account is the individual contract level or block level.

It is worth noting that there are specific provisions under ASC Topic 815 and ASC Topic 944 that require the determination of compound fair values. ASC 815-15-25-7 notes, "...those embedded derivative features shall be bundled together as a single, compound embedded derivative..." and ASC 944-40-30-19D c. "...contract contains multiple market risk benefits, those market risk benefits shall be bundled together as a single compound market risk benefit."

Some actuaries believe fair value measurement can be applied to multiple product

features that occur in the same contract (MRB and embedded derivatives notably), although there is not a single reported “compound fair value” combining an embedded derivative and an MRB. To the extent that GAAP requires the balances to be reported separately, the compound fair value would be allocated to the separate components.

Q7. Does the valuation premise need to be considered?

A7. ASC Topic 820 addresses the concept of a valuation premise for purposes of valuing non-financial assets. Although ASC Topic 820 applies this concept specifically only to non-financial asset fair values, some might consider it appropriate to consider the valuation premise to liability fair values under some circumstances.

ASC 820-10-35-10E requires use of whichever valuation premise maximizes the asset fair value (i.e., the most favorable valuation premise to the reporting entity). This requires consideration of whether the “highest and best” use of the non-financial asset involves using the asset in conjunction with other assets or liabilities or on a standalone basis.

While not explicitly required, there may be some liability fair valuation situations for which it may be helpful to consider a valuation premise. For example, when fair valuing market risk benefit on an annuity contract, it may be worth considering whether the value would be lower if it were to be transferred on its own to another market participant, as opposed to transferring it in conjunction with the underlying annuity contract. This may affect the expense allocated to the market risk benefit and the risk margins associated with it in the fair value calculation.

For example, the risk margins for a standalone market risk benefit might be higher than its allocated share of the entire annuity contract, since the standalone market risk benefit loses the benefit of diversification of risks with the host contract.

Another situation in which it may be helpful to consider the valuation premise is reinsurance. If the reinsurance contract is valued in conjunction with the underlying direct contracts, that may allow most valuation assumptions, such as expenses and risk margins, to be consistent between the reinsurance contract and the direct contract. On the other hand, if the reinsurance is valued on a standalone basis, these assumptions may need to be developed independently, based on the reinsurance market, and may differ from the direct contract assumptions.

Q8. What valuation techniques may be used to determine fair value?

A8. ASC 820-10-35-24A specifies that valuation techniques must be consistent with one or more of the *market approach*, the *income approach*, and/or the *cost approach*. Reporting entities appear to have discretion regarding use of a particular valuation technique appropriate to the circumstances and for which sufficient data are available. A brief discussion of these valuation techniques follows:

- Market approach. Per ASC 820-10-55-3A, the market approach “uses prices and

other relevant information generated by market transactions involving identical or comparable (that is, similar) assets, liabilities, or a group of assets and liabilities, such as a business.” Examples of a market approach include using market multiples derived from a set of comparables and matrix pricing techniques often used to value bonds. Given the uniqueness of many life insurance contracts and the general lack of any direct market for trading these contracts, this approach may not be available for most items valued by life actuaries. However, if a market participant recently bought a block of annuities for a certain price, this may provide insight into the price at which other similar blocks might transact.

- **Income approach.** Per ASC 820-10-55-3F, the income approach “converts future amounts (for example, cash flows or income and expenses) to a single current (that is, discounted) amount.” Such valuation techniques may include present value techniques, option pricing models (such as the Black-Scholes method¹ for calculating the fair value of certain put and call options described further in Q9 or binomial lattice) that incorporate present value techniques, and the multiperiod excess earnings method (which is sometimes used to value intangible assets). The income approach would likely be used for many items valued by life actuaries.
- **Cost approach.** ASC 820-10-55-3D, the cost approach “reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost).” This approach may not be available for most items valued by life actuaries.

Q9. Which actuarial techniques may be used to determine fair value under the income approach?

A9. Several actuarial techniques may be used as tools to determine fair value under the income approach. A few examples are as follows:

Actuarial Appraisal Method:

Under an actuarial appraisal method, cash flows and capital flows are projected using unbiased actuarial assumptions and applying observable assumptions (see Q&A10) to the extent available. The actuarial appraisal method may be more appropriate when the exit market is deemed to be other insurance companies that would be expected to price the product using an actuarial appraisal method.

¹ *Black-Scholes method:*

- The Black-Scholes method is a simplified case of risk neutral valuation that is used to estimate the fair value of market-traded put and call options. For such options, the risk neutral valuation simplifies to a closed-form expression.
- Black-Scholes has some usefulness to actuarial fair value calculations. In particular, the Black-Scholes formula may be useful for fair-valuing short-term options, such as the current period indexed crediting on indexed products. Black-Scholes may also be useful for fair-valuing longer-term options, if persistency is not an issue. Black-Scholes may also be a useful method for demonstrating the immateriality of more complex items so that building a more complex model can be avoided.

Risk-Neutral Valuation:

Risk-neutral valuation is one tool for valuing financial instruments. As with most other valuation tools, the key underlying assumption is the absence of arbitrage; that is, the impossibility of risk-free profits.

Risk-neutral valuation proceeds under the hypothesis that all asset classes, over short periods of time, reflect the risk preferences of a risk-neutral investor and have the same expected return as cash deposits. The return on cash deposits is then used as a discount factor. Any financial instrument is valued at the mean of its discounted cash flows. If a risk-neutral valuation is performed on an instrument with fixed cash flows, the value according to the risk-neutral method is equal to the present value of the fixed cash flows discounted at risk-free rates. If cash flows are dependent on interest rates or capital markets performance, stochastic scenarios may need to be generated with an average return over all scenarios consistent with risk-free rates.

Cash flows would be projected for each scenario and would be discounted at risk-free rates. Under ASC Topic 820, additional adjustments may be needed for nonperformance risk and margins for non-capital market risks.

Risk-neutral scenarios have a number of apparently unrealistic properties when compared to ‘real-world’ economic scenarios. For example, on average, equities are assumed to return the same as cash before investment expenses.²

In real markets, risk margins earned by investors in equities and long bonds may contradict these risk-neutral patterns. However, in the theory of derivative pricing, the price of an instrument that is derived from other instruments or market variables is invariant to the level of risk assumed, as long as the risk margin included is consistent with that level of risk. The level of risk in real markets and the associated real-world risk margin is generally unobservable. But under the theory of derivative pricing, the price under an assumption of zero risk is equal to the price under the real-world risk, as long as the assumed risk margin is internally consistent. And under an assumption of zero risk, the risk margin is zero, regardless of the real-world risk level and risk margin. So, under the theory of derivative pricing, the price assuming zero risk and zero-risk margin is the same as the price assuming the unobservable real-world risk and real-world risk margin.

Risk neutral valuations have the desirable property of maximizing the use of observable capital market inputs, (e.g., market observed implied volatility versus statistically observed historical volatility, or market observed credit spreads versus historical default rates). Risk-neutral valuations are commonly performed to determine fair value for

² There have been numerous actuarial articles and publications that detail the differences between the two types of scenarios. The specifics of the differences between these scenarios are beyond the scope of this practice note. Readers might consider the following SOA articles:

- Understanding the Connection between Real-World and Risk-Neutral Scenario Generators; Society of Actuaries; 2022.
- [Resources for ALM Practitioners: What Questions Should You Ask?](#); SOA Research Institute; May 2025.
- [The Opportunity of Lifetime](#); Doug Robbins, Society of Actuaries: Product Matters! February 2023.

complex financial features; for example, variable annuity guarantees such as GMDB, GMIB, GMAB, and GMWB benefits that are considered market risk benefits. Risk-neutral valuations are also sometimes performed for embedded derivatives in indexed products. Risk-neutral valuation methods may be particularly relevant when the exit market consists of financial institutions other than insurance companies, because many of those institutions typically use risk-neutral methods to price their products.

Using risk-neutral scenarios requires calibration and a determination that those are appropriately fit for use. There are several tests that can be used to validate the appropriateness of a set of risk-neutral scenarios. However, there are no standard industry approaches to utilizing these tests. Actuaries typically evaluate and document the rationale supporting the model's appropriateness and validation procedures in accordance with applicable actuarial standards of practice, such as Actuarial Standard of Practice (ASOP) No. 41 (*Actuarial Communications*) and ASOP No. 56 (*Modeling*). Ultimately it is the actuary's responsibility to document the proper evidence for determining the appropriateness of a model.

Because models that generate the risk-neutral scenarios face potential data risks during extraction, transformation, and loading, actuaries often review the governance and controls surrounding model inputs, taking into consideration the modeling guidance in ASOP 56.

Additionally, the output can be subjected to a calibration test to confirm that correlations in the model are reflected in the scenarios generated. An example of a calibration test is a martingale test, which essentially provides evidence that the overall return for the scenarios generated are arbitrage free. Another test would be the payoff test, which verifies that the scenarios generated by the model produce the prices and implied volatilities consistent with the current market. Also, some actuaries use a convergence test to judge the appropriateness of the model being used. In addition, the convergence tests will likely show the point where the impact of adding scenarios will add less-to-no additional precision to the value calculation. There are a variety of scenario reduction techniques; ultimately it is the actuary's responsibility to document the proper evidence for the final scenario count.

Budget Method:

The budget method (sometimes referred to as the option budget method) is a technique that is often used to calculate the fair value of the embedded derivative represented by the excess benefits on indexed products resulting from indexed returns credited to the contract. Under the budget method, a budget is set to provide for future, index-based returns in excess of minimum contract guarantees. The budget is often based on the products' pricing, such as the target spread. Target spreads are projected for future renewal periods and these spreads, less provisions for risk and profit, become the budgeted amounts for the cost of purchasing instruments (options) to provide the policy with indexed returns in those future periods. An assumption is made that parameters of future crediting features (such as caps and participation rates) will be set to ensure that the future option costs equal the budget. A critical assumption for using the budget

method to calculate fair value is that certain future cash flows will always offset each other in the future. For example, future changes in the cost of funding the guarantees (i.e., future changes in the value of the guarantees) could always be offset by future changes in credited rates or other pricing parameters.

The fair value of the embedded derivative beyond any guarantee currently in effect is then equal to the present value of the future budgets for providing those guarantees. The projected budgets are typically updated for each reporting period to ensure that they are consistent with the current crediting strategy.

While the budget method is often used to project the cost of future indexed credits and the benefits they fund (i.e., the future starting options) the value of the indexed credit that is projected to be applied to the account value at the next crediting date is often fair valued separately, using a method such as Black-Scholes. So, the total fair value of the embedded derivative is typically the sum of the following two components:

- The value of the indexed credit expected to be credited at the next crediting date, measured using Black-Scholes;
- The value of excess benefits projected to be funded with future indexed credits, equal to the present value of future budget amounts.

When a budget method is used, care should be taken to use observable market assumptions to the extent available, in order to be consistent with the provision in ASC 820-10-35-16A that a fair value measurement “shall maximize the use of relevant observable inputs and minimize the use of unobservable inputs.” While not necessarily an observable market assumption, a provision for risk should also be included in the fair value measurement (either by adjusting the discount rate or the underlying cash flows).

Other Methods:

Other methods for calculating fair value, distinct from the methods above, exist. Under some circumstances, the income method may reduce to a simple calculation. For example, for a short duration instrument with fixed cash flows, the book value may reasonably approximate fair value without the need for actually projecting the cash flows. Similarly, if a modified coinsurance or funds withheld embedded derivative is defined as a total return swap with a floating leg, the income approach often simplifies to the difference between the fair value and book value of the invested assets. Simplified methods may also be appropriate for immaterial items.

Q10. What is fair value hierarchy?

A10. ASC 820-10-35-26 through 35-54A address inputs to valuation techniques and define the fair value hierarchy.

ASC 820-10-35-36 directs that valuation techniques maximize the use of relevant observable inputs and minimize the use of unobservable inputs. The glossary to ASC Topic 820 defines observable inputs as “inputs that are developed using market data, such as publicly available information about actual events or transactions, and that reflect the assumptions that market participants would use when pricing the asset or liability.” As described in Q8, there may be limited observable inputs from the insurance market.

There are, however, observable inputs from capital markets for some of the assumptions required to value embedded derivatives within variable annuity contracts. Use of a risk-neutral approach or other market consistent approach may maximize the use of these observable inputs, since a risk-neutral approach necessarily uses observable capital market inputs, such as current swap curves and market implied volatilities, in estimating the fair value of an asset or liability.

Inputs into the valuation are categorized as follows:

- Level 1 inputs are defined in the ASC Topic 820 glossary as “quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the reporting date.”
- Level 2 inputs are defined as “inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.” They include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly (e.g., observable yield curves, volatilities, and default spreads).
- Level 3 inputs are defined as “unobservable inputs for the asset or liability.”

Q11. How would inputs to the valuation of a market risk benefit typically be classified in the hierarchy?

A11. Examples of some of the inputs to a typical valuation of an embedded derivative in a variable annuity contract, and their potential classification and significance,³ are as follows:

³ The typical level and usual significance in the table is based on typical sources and uses of these assumptions at the time this practice note was written. Subsequent developments may cause the level or significance to change.

Input	General Observability	Typical Level	Usual Significance
Swap curve	Observable	2	High
Company or instrument specific credit and illiquidity adjustment	Non-observable	3	High
Short-term volatility	Observable	2	High
Long-term volatility	Generally, not observable, depending on tenor	3	High
Short-term correlations	Observable	2	High
Long-term equity indices correlations	Not observable	3	High
Lapse	Not observable	3	High
Withdrawal	Not observable	3	High
Mortality	Generally, not observable, but may be limited market for some applications	3	Low
Fund mapping	Not observable	3	Moderate
Expenses	Not observable	3	Low

As mentioned in Q10, the measurement of fair value should maximize the use of observable inputs. Since there is generally no active market for identical assets or liabilities, there will be no level 1 inputs to the valuation described above.

Some of the valuation inputs are observable, and the valuation technique will maximize the use of such observable inputs. For example, swap curves are typically directly observable, and short-term equity volatilities are typically observable indirectly through option prices.

Many significant inputs to the valuation will be level 3 inputs, including items such as mortality and policyholder behavior. ASC 820-10-35-54J states that “the reporting entity shall not ignore information that is reasonably available.” Therefore, any available data (such as from reinsurance transactions, capital markets solutions, etc.) that is reasonably available is considered in determining these inputs. ASC 820-10-35-53 states that “unobservable inputs shall reflect the assumptions that market participants would use in pricing the asset or liability, including assumptions about risk.” Therefore, assumptions consider both the best estimate assumption that would be used by a market participant as well as an additional margin that market participants would add to the valuation as compensation for the risks associated with that assumption.

If any significant input is level 3, then the fair value estimate is considered a level 3 estimate.

Q12. Is a market-based input always an observable input?

A12. A market-based input may not always be observable. For example, a broker quote for the price or interest rate on a thinly traded security may be market-based. But it is not observable to market participants other than the entity receiving the quote. Thus, it may not be an observable input as defined in ASC Topic 820 and, therefore, is a level 3 input.

Q13. What weight might be placed on reinsurance quotes when determining fair value assumptions?

A13. As described above, ASC 820-10-35-54J states that “the reporting entity shall not ignore information that is reasonably available.” Therefore, any available data from reinsurance transactions and reinsurance quotes that are reasonably available may need to be considered in determining these inputs. Note that, although reinsurance quotes may be reasonably available, there is no obligation to go out and obtain such quotes simply to maximize the information available on which to base fair value estimates.

However, available data regarding reinsurance transactions and quotes may not be sufficient on their own to serve as representative market prices. The following questions may be helpful to consider in determining how relevant reinsurance quotes and transactions may be in determining a fair value:

- Does the reinsurance transaction represent a full transfer of the liability (or asset), or does some obligation (or right) remain with the ceding company, which would make reinsurance a less-than-complete exit market?
- Reinsurance transactions tend to involve different blocks of business and are for specific points in time, as opposed to current prices. Is the reinsurance transaction truly representative of the specific item being fair valued?
- Does a single (or even a few) price(s) or quote(s) represent an active trading market?

In light of these questions, it is possible that a combination of an actuarial model and consideration of reinsurance quotes and prices may be considered in determining fair value. Actuaries determining fair values may wish to consider differences between modeling results and reinsurance prices/quotes to ensure that the differences are explainable and, to the extent reasonable, may want to consider revisions to actuarial models to account for market participant views that can be observed from reinsurance market participant data.

Q14. Does ASC Topic 820 require that nonperformance risk be reflected in the fair value of a liability?

A14. Nonperformance risk is defined as “the risk that an entity will not fulfill an obligation. Nonperformance risk includes, but may not be limited to, the reporting entity’s own credit risk.”

ASC 820-10-35-17 states that “The fair value of a liability reflects the effect of nonperformance risk.” Therefore, nonperformance risk needs to be incorporated in the fair value of a liability. In general, it would appear that the higher the nonperformance

risk, the lower the fair value of the liability.

Although nonperformance risk needs to be included in the fair value of a liability, there may be circumstances in which it can be demonstrated that the nonperformance risk can approach zero. An example might be if the liability is fully collateralized (such as reinsurance protected by a trust account with highly rated assets in amounts above the statutory reserve).

Some actuaries believe that nonperformance risk can be reduced objectively by evaluating cash flows via asset adequacy analysis. The initial collateral is often expressed as a $100\% + X\%$ of the starting U.S. statutory reserves. By running a sufficient number of economic scenarios and the supporting collateral portfolio, an actuary can identify how often the statutory surplus becomes a deficiency (failure %) based on the starting collateral portfolio. These scenarios will provide clarity on the probability of nonperformance and $1 - (\text{failure } \%) = \text{nonperformance shave}$. For example, a funds-withheld deposit of 103% of the statutory reserves multiplied by the quota share percent is used as the starting portfolio for the ceded benefits and starting statutory reserve. If 10 out of 100 scenarios generate a negative surplus, there is a 10% chance that the trust will fail. Indicating, the 30-basis points nonperformance spread is reduced to $30 \text{ bps} * 10\% = 3 \text{ bps}$, which is added to the risk-free discount rates.

Q15. Can an increase in the nonperformance risk result in a decrease in GAAP liabilities recorded at fair value?

A15. Absent any other changes, an increase in the nonperformance risk reflected in a calculation of the liabilities that are recorded at fair value will generally decrease the fair value of the liabilities because either the liability cash flows would be discounted at a higher rate or the liability cash flows would be reduced. This decrease occurs whether the increased nonperformance risk is due to a downgrade of the company's credit standing or an increase in observable market credit spreads given the same credit standing. This impact may or may not be offset by changes to asset values or changes to other liability assumptions or risk margins that may be related to the increased nonperformance risk.

Q16. Some actuaries find an increase in GAAP equity resulting from an increase in nonperformance risk applicable to liabilities recorded at fair value to be counterintuitive. Did the FASB consider this potential implication when issuing its fair value measurement guidance?

A16. The FASB was well aware of the fact that a decline in a company's own credit standing may increase GAAP equity to the extent it is reflected in the nonperformance risk. Paragraph C46 of the Basis for Conclusions of FAS 157 acknowledged that:

respondents' concerns (with the exposure draft of FAS 157) focused on the counterintuitive and potentially confusing reporting that could result from including the effect of changes in the reporting entity's credit standing in liability remeasurements at fair value ("gains" for credit deterioration and "losses" for credit improvements).

Paragraphs C47 to C49 of the Basis for Conclusions of FAS 157 went on to support the reflection of a company's own credit risk and nonperformance risk despite these concerns, pointing to previous GAAP accounting pronouncements (such as Concepts Statement No. 7) and IFRS as well as other justifications to support the conclusion.

There are at least two consequences to the inclusion of nonperformance risk. One is the counterintuitive result of a change in credit quality of the insurer having an impact on GAAP equity, either through net income or other comprehensive income. This is the issue that concerns most actuaries who object to the inclusion of nonperformance risk in the measurement of liabilities.

The second consequence results from the impact of changes in credit spreads in the market, which is more common. If credit spreads in the market widen, then the fair value of assets will decline, all other things being equal. If liabilities do not decline as well, a company's financial statements may give an erroneous perception about the degree to which assets and liabilities are matched. To the extent that assets are marked-to-market, it is reasonable for liabilities to also be affected by changes in the credit spreads. By including nonperformance risk, assets and liabilities are treated consistently when there has been no change in the credit quality of the firm issuing the liabilities.

There may still be differences in the amount the liabilities and assets change as a result of changes in credit spreads, since the asset credit spread and liability credit spread may not change by identical amounts. But including the liability credit spread will generally result in a closer match with the asset performance than excluding the liability credit spread.

Q17. How might nonperformance risk be reflected in the fair value of a liability?

A17. ASC Topic 820 does not prescribe methods for reflecting nonperformance risk in the fair value of a liability. In practice, many different approaches have emerged. Several methods currently observed reflect nonperformance risk as an adjustment to the discount rate applied against projected cash flows in calculating fair values. Other methods involve adjusting cash flows to reflect nonperformance risks. The cost of capital method for setting risk margins may reflect nonperformance risk and credit risk in the cost of capital rate assumed to be demanded by investors.

The following is a non-exhaustive list of methods observed in practice as well as some considerations both supporting and contradicting the points of view presented:

- A. Discount all projected cash flows using risk-free rates (e.g., treasury rates), effectively reflecting that there is no risk of nonperformance for that particular liability.

One rationale presented to support this view is that, given the primacy of policyholder benefit obligations in the event of insolvency, and the protection afforded by guaranty funds and other regulatory safeguards, the risk of default on

such obligations is *de minimis*. This may be appropriate if the liability is fully collateralized (and the collateralization is considered an attribute of the liability) such that there is essentially no chance that the counterparty will receive less than the amount owed.

- B. Discount all projected cash flows using the interest rate swap curve.

Rationales supporting this view include recognition that:

- a. the swap curve has some nonperformance risk embedded within it, reflective of the credit quality of the AA-rated banks that are active in the swap market and that this reasonably approximates the nonperformance risk associated with policyholder obligations of many insurance companies; and
- b. the swap curve is widely used as the basis for determining the fair value of most derivative instruments that are actively traded in the market.

Perhaps the most common objection to this view is that the swap curve does not reflect the credit quality of the company that has the obligation to perform and, consequently, there is no reflection in the movement in the credit quality of a company, either in absolute terms or in relation to its peers.

- C. Discount all projected cash flows (or just projected cash flows related to claims; see questions Q25 and Q26 below) using either the interest rate swap curve or risk-free rates as a base and adjusting for company-specific credit spreads over the base, as evidenced by company-specific information such as
- yields on corporate debt;
 - the price of credit default swaps on the company's bonds;
 - observable prices of institutional products (e.g., guaranteed investment contracts or term notes) offered by the company; or
 - the company's claims-paying rating.

This approach produces results consistent with the credit standing of the company. However, the discount rates derived in this manner may still not perfectly reflect the credit standing of the specific liability being measured. For example, information on credit default swap prices or prices on institutional products may not always be available.

Also, credit default swap rates may reflect the credit standing with respect to debt, rather than claims liabilities. In that case, it may be possible to use other information to adjust the credit default swap spread to a level consistent with claim liability credit standing.

- D. Adjust cash flows to reflect the potential for nonperformance. Under this approach, the cash flows are adjusted to certainty-equivalent cash flows that can be discounted at a risk-free rate.

The rationale most commonly used to support this view is that it maximizes the

use of observable information and generates a fair value that reflects the company's own credit as uniquely associated with that particular company.

On the other hand, critics of these methods argue that no one observable measure is entirely relevant for policyholder obligations because of their unique standing in the priority chain of obligations within a company and the existence of various safeguards to protect policyholders. Adjustments for elements such as lack of full liquidity or the timing of payment of claims may require adjustments that some would argue are arbitrary and may lend undesirable subjectivity to the valuation.

Within the non-exhaustive list of methods outlined above, there may be differences in application that lead to materially different results from company to company.

Q18. What elements are considered in determining nonperformance risk?

A18. ASC 820-10-35-17 discusses fair value and nonperformance risk, stating: "The fair value of a liability reflects the effect of nonperformance risk. Nonperformance risk includes, but may not be limited to, a reporting entity's own credit risk. Nonperformance risk is assumed to be the same before and after the transfer of the liability." In addition to the own credit risk (i.e., the risk of default) required by ASC 820-10-35-17, actuaries may consider including (or not) in nonperformance risk various components in credit spread such as illiquidity risk (risk of the asset holder being unable to quickly access its funds in an orderly transaction) as well as other risk factors, including regulatory, operational, and commercial risks. ASC 820-10-55-59b provides an example in which general credit spreads widen (thus impacting fair value) without any change to the reporting entity's own credit risk.

ASC 820-10-55-59 states:

On January 1, 20X7, Entity A, an investment bank with an AA credit rating, issues a five-year fixed rate note to Entity B. The contractual principal amount to be paid by Entity A at maturity is linked to the Standard and Poor's S&P 500 index. No credit enhancements are issued in conjunction with or otherwise related to the contract (that is, no collateral is posted and there is no third-party guarantee). Entity A elects to account for the entire note at fair value in accordance with paragraph 815-15-25-4. The fair value of the note (that is, the obligation of Entity A) during 20X7 is measured using an expected present value technique. Changes in fair value are as follows:

- a. Fair value at January 1, 20X7. The expected cash flows used in the expected present value technique are discounted at the risk-free rate using the treasury yield curve at January 1, 20X7, plus the current market observable AA corporate bond spread to treasuries, if nonperformance risk is not already reflected in the cash flows, adjusted (either up or down) for Entity A's specific credit risk (that is, resulting in a credit-adjusted risk-free rate). Therefore, the fair value of Entity A's obligation at initial recognition takes into account nonperformance risk, including that reporting entity's credit risk, which presumably is reflected in the proceeds.

- b. Fair value at March 31, 20X7. During March 20X7, the credit spread for AA corporate bonds widens, with no changes to the specific credit risk of Entity A. The expected cash flows used in the expected present value technique are discounted at the risk-free rate using the treasury yield curve at March 31, 20X7, plus the current market observable AA corporate bond spread to treasuries if nonperformance risk is not already reflected in the cash flows, adjusted for Entity A's specific credit risk (that is, resulting in a credit-adjusted risk-free rate). Entity A's specific credit risk is unchanged from initial recognition. Therefore, the fair value of Entity A's obligation changes as a result of changes in credit spreads generally. Changes in credit spreads reflect current market participant assumptions about changes in nonperformance risk generally, changes in liquidity risk, and the compensation required for assuming those risks.

When analyzing credit risk, ASC 820-10-35-18 and 820-10-35-18A state that the impact of credit enhancements should be considered as long as including the credit enhancement is consistent with the unit of account being fair valued. Examples of credit enhancements include collateral, netting agreements, and funds withheld arrangements on reinsurance contracts. For example, under a funds withheld reinsurance treaty, the ceding company holds the invested assets. So, even if the assuming company were to default, the ceding company has recourse to the underlying assets, potentially minimizing or eliminating its loss upon the default.

Some actuaries also consider state guarantee funds to be a credit enhancement on insurance liabilities. These actuaries consider the guarantee funds to be attributes of the liability, since the policyholder would get paid even if the insurance company defaults. This reduces the credit spread or cash flow adjustment needed in the interest rate used for discounting cash flows.

Other actuaries do not consider state guarantee funds to be a credit enhancement to reduce the credit spread. These actuaries consider the guarantee fund payment to be an obligation of a third party (the state) rather than an obligation of the insurance company. These actuaries do not believe that the exit price that would need to be paid to another market participant to assume the obligation would reflect the impact of the guarantee fund since, again, the guarantee fund payment would not be an obligation of the transferee.

There are particular issues to consider if guarantee funds are considered to be credit enhancements under ASC Topic 820. Guarantee funds may not cover all benefits and may be subject to limits. These exclusions and limits may vary by state. Also, even when a guarantee fund makes payments, the policyholder may suffer delays in receiving the payment. This delay may be considered a component of credit risk.

Q19. Are guarantee fund assessments included in the ASC Topic 820 fair value calculation?

A19. The question of whether guarantee fund assessments are included in cash flows

used to calculate fair value is a separate decision from whether the presence of a guarantee fund is considered in determining the credit spread. The decision as to whether guarantee fund assessments are included in the cash flows is similar to any other decision as to whether an element of cash flows is to be included—would another market participant include those cash flows in pricing the liability if the liability were being transferred to it? The decision on whether to include guarantee fund assessment cash flows in the calculation may be different from the decision on whether the presence of guarantee funds affects the discount rate used to discount cash flows.

Q20. What sources may be used to determine company-specific credit spreads?

A20. If it is decided to use company-specific credit spreads to reflect nonperformance risk (i.e., option C in question Q17 above), several sources may be available to determine the appropriate spreads. All have advantages and disadvantages. In determining which source to use, the principal market in which the instrument being fair valued would be transferred is considered. Some options are:

Company Debt—Company debt may be traded in active markets, providing an observable source for credit spreads. However, trades may be less active than credit default swaps. And the unadjusted credit spread on company debt may not be appropriate for claims liabilities, since claims have higher priority (and, therefore, possibly a lower credit spread) than debt. Also, the particular liability being valued may have credit enhancements that may need to be considered in determining the appropriate credit spread for that liability. And if the debt is issued by a holding company, the unadjusted credit spread on that debt may not be appropriate for liabilities of an insurance subsidiary, which may have a different credit standing from the holding company.

Credit Default Swaps—Credit default swaps may be traded in active markets, providing an observable source for credit spreads. These may be traded more actively than debt, providing a more reliable measure of credit spreads than debt. However, credit default swaps are typically more liquid than debt and other company liabilities, so that the liquidity premium inherent in credit default swap rates may be lower than that appropriate for valuing claims liabilities. And the unadjusted credit spread on credit default swaps, which is typically related to company debt, may not be appropriate for claims liabilities, since claims have higher priority (and therefore possibly a lower credit spread) than debt. Also, the particular liability being valued may have credit enhancements that may need to be considered in determining the appropriate credit spread for that liability. And if the credit default swap related to debt is issued by a holding company, the unadjusted credit spread may not be appropriate for liabilities of an insurance subsidiary, which may have a different credit standing than the holding company.

Institutional Products—Some institutional products, such as guaranteed investment contracts (GICs), retail notes and term notes, are traded in secondary markets and thus have observable prices. These products may be more similar to the liabilities being fair valued than debt or credit default swaps in terms of being claims liabilities of an insurance company with limited liquidity, making the resulting credit spreads more relevant. However, while these products may have observable secondary market prices,

trading in such products is often limited, reducing the reliability and availability of associated credit spreads. And the particular liability being valued may have credit enhancements that may need to be considered in determining the appropriate credit spread for that liability. There may also be issues with the term of the available institutional products, since such products generally are sold with maturities up to 10 years, and the liabilities being fair valued may have cash flows beyond 10 years.

To the extent that observable spreads, such as debt and credit default swaps, are deemed to be inconsistent with the nonperformance risk on claim liabilities, it may be possible to adjust the spreads to a level consistent with claim liabilities. One approach might be to look at the ratio of the loss given default on insurance claim liabilities compared to the loss given default assumed in the observable spread.

If credit spreads from company debt, credit default swaps or institutional products are not available or deemed inappropriate, it may be possible to estimate credit spreads from other market sources. For example, a company may 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. An advantage of this approach is that it reflects the risk of default on policyholder claim payments associated with the entity issuing the policy, whereas the other methods described above typically reflect the risk of default on debt, which has a lower priority of payment and may reflect default risk at a holding company level. A disadvantage of this approach is that it may not appropriately reflect current market prices.

Q21. How may reinsurance be considered in determining the credit assumption for the direct contract?

A21. Reinsurance is a legal contract between two insurers (referred to here as the "insurer" and "reinsurer"). Under GAAP, in general, contracts are valued gross of reinsurance with a separate value determined for reinsurance recoverables. In general, reinsurance ceded would then be ignored in fair valuing the business gross of reinsurance and considered in fair valuing the reinsurance credit.

The presence of reinsurance may change the nature of credit protection for the underlying policyholders by, for example, providing an extra layer of protection from the reinsurer in the event of the insurer's insolvency. In valuing the direct business, however, the insurer would look to its own credit rating and generally not consider the additional protection offered by reinsurance. An exception might be where the business was issued with the requirement it be reinsured; for example, this might be required in assumption reinsurance where the buyer needs its parent's backing as a condition of sale. Also, the presence of reinsurance may be a factor in determining the insurer's own credit rating; for example, if an insurer had a large portion of its business reinsured with a low rated or impaired reinsurer.

Reinsurance assumed reflects the credit rating of the reinsurer with regard to its likelihood of paying benefits to the ceding company. A key consideration is the extent to

which assets held for the assumed business are protected; for example, by modco or funds withheld, bank letter of credit, parent guarantee or assets held in trust.

Finally, a reinsurance deal or current quote might be a consideration in determining the fair value of a block. A consideration, however, is the extent to which an adjustment might be needed to account for the difference in credit protection provided by the insurer to policyholders versus the protection provided by the reinsurer to the insurer. A reinsurer might, as a practical matter, want to use fair value results provided by the insurer (and vice versa depending on who administers the business). In many cases, a reinsurer might use the insurer's values unadjusted where the reinsurer and insurer are about equally rated, and where the likelihood of a credit loss from either party is small.

Q22. How might counterparty nonperformance risk be considered for a reinsurance receivable asset or a ceded MRB to the ceding company?

A22. The nonperformance risk for the reinsurance receivable asset or a ceded MRB 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 may be appropriate to use the ceding company's own nonperformance adjustment as an approximation of the assuming company's nonperformance adjustment.

Q23. How might nonperformance risk be reflected in a risk neutral valuation?

A23. A risk-neutral valuation is generally performed by discounting cash flows at the risk-free rate. Therefore, incorporating an element of nonperformance risk into the discount rate may not comply with risk neutral principles. However, incorporating a nonperformance element into the valuation does not violate risk neutral principles as long as the nonperformance risk incorporated is the risk neutral assumption.

The risk-neutral assumption for nonperformance risk is simply reflected by the credit spread on the instrument being valued relative to risk-free rates. Therefore, one approach to incorporating nonperformance risk in the risk-neutral valuation may be to discount at the risk-free rate (r) plus the appropriate credit spread (y), rather than discounting at the risk-free rate. The credit spread being reflected in the discounting represents the risk-neutral market-consistent nonperformance assumption.

In order to see this assumption, assume the following:

- Risk-free rate (r) = 5%
- Rate including nonperformance risk/credit spread (y) = 6% Initial investment = \$100

If one invests the initial investment at the risk-free rate, one is guaranteed to receive \$105 on the investment after one year. If one invests in the risky security, one receives \$106 on the investment after one year, assuming the contract performs (i.e., does not default). But under the risk-neutral valuation paradigm there is no compensation for bearing risk, so the extra \$1 of potential return for investing in the risky security must be

exactly offset by the market perception of the nonperformance probability of the security.

The nonperformance probability can be reflected in the risk-neutral valuation through an adjustment to cash flows as well. Assume no recovery on default and:

r = the risk-free rate of a T-year risk-free zero-coupon bond

y = the yield on a T-year instrument including the risk neutral credit spread

Q = the probability of default between time zero and time T

Then the cumulative risk-neutral default probability between time zero and time T is equal to:

$$Q = 1 - (1+r)^T / (1+y)^T$$

In our example above, which is for $T = 1$ year, we can calculate Q ;

$$Q = 1 - [(1.05)/(1.06)] = 1 - 0.99056604 = .00943396.$$

If we assume the risky security does not default and apply the risk-neutral default probability to the risk-neutral present value of the risky security pay off, we get $[106/105] * (1 - Q) = 1$.

Risk-neutral default probabilities for each period can then be determined from the cumulative probabilities. The cash flows can then be reduced by the appropriate risk-neutral default probabilities in each period, and those cash flows can be discounted at risk-free rates.

Q24. How might discounting be handled on path dependent scenarios?

A24. ASC 820-10-55-17 through ASC 820-55-19 provides a specific example where the expected cash flows (\$780) represent the probability-weighted average of the three possible outcomes. ASC 820-10-55-18 clarifies that “In more realistic situations, there could be many possible outcomes. However, to apply the expected present value technique, it is not always necessary to take into account distributions of all possible cash flows using complex models and techniques. Rather, it might be possible to develop a limited number of discrete scenarios and probabilities that capture the array of possible cash flows.”

Some actuaries develop different scenarios with consistent cash flows, discounting them with the applicable yield curve relative to each scenario and weighting the results to determine the mean.

Other actuaries weight the cash flows in each scenario by their probabilities and then apply a single current yield curve to the average cash flows. Care is needed to ensure that aggregate market-consistent yield rates are used. Some actuaries believe that this approach is only appropriate if the cash flows for each scenario are dependent only on equity returns with no material interest sensitivity.

Regardless of the approach used, assumptions are calibrated to assets in the market that are actively traded, such as Treasury bonds, options, and futures.

Q25. How may the discount rate adjustment for nonperformance be applied to the “fee leg” of a GMxB rider?

A25. Some actuaries consider GMxB MRB to be similar to a swap contract which comprises a “pay leg” (e.g., the claims payments to the policyholders) and a “fee leg” (e.g., the ascribed fees collected from the policyholders). The fair value is then calculated as the present value of the pay leg less the present value of the fee leg. ASC 820-10-35-17 states that “the fair value of a liability reflects the effect of nonperformance risk.” There is no specific mention of nonperformance risk in the discussion of fair valuation of assets.

Based on the lack of specific guidance related to nonperformance risk on assets, and the fact that the fee leg is a payment from the policyholder, not the insurer (and, therefore, not subject to the claims paying ability of the insurer), there are a number of approaches used in practice. Examples are:

Method 1: Apply the adjustment for nonperformance risk to the claim leg of the MRB only.

Method 2: The nonperformance discount rate adjustment is applied to both the claim leg and the fee leg, but only if the resulting fair value is in a liability position. This is based on the premise that policyholders would no longer pay fees if the insurer were to default on the claim payments, but that nonperformance should not be applied to an asset balance.

Under this method, it is possible in some circumstances that the fair value balance without nonperformance could be in a liability position but the balance with nonperformance could be in an asset position. An accounting policy must be established by management to resolve how the nonperformance discount rate adjustment should be applied in this inverted expectation situation. One approach to address this inverted expectation situation could be to default to a fair value of zero under this circumstance.

Method 3: The adjustment is applied to both the claim leg and fee leg regardless of whether the fair value 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. And since the MRB is naturally a liability, nonperformance can be applied regardless of whether the balance is currently in an asset or liability position.

Table 1 presents the nonperformance spread discounting variations to the MRB cash flows noted above.

Table 1: Nonperformance (NP) spread discounting adjustments MRB variations

Methods	Fair Value Position	PV Pay Leg (Claims)	PV Fee Leg PV (Ascribed Fees)
Method 1	Liability	Include NP spread	Exclude NP spread
	Asset	Include NP spread	Exclude NP spread
Method 2	Liability	Include NP spread	Include NP spread
	Asset	Exclude NP spread	Exclude NP spread
	Inverted Expectation	Accounting Policy	Accounting Policy
Method 3	Liability	Include NP spread	Include NP spread
	Asset	Include NP spread	Include NP spread

Q26: How may the discount rate adjustment for nonperformance be applied to the embedded derivative representing the index crediting mechanism of an annuity or life insurance policy?

A26: Embedded derivatives in some insurance products or annuity products, such as the equity indexed credits in an indexed universal life policy (IUL), a fixed indexed annuity (FIA) contract, or a registered index linked annuity (RILA) contract are often valued using the option budget method. The fair value of the embedded derivative for these products includes the value of the current option (up until the next crediting date) and the fair value of the forward starting options (value of excess benefits funded by indexed credits applied in future periods) after the end of the current crediting period. Some actuaries apply the nonperformance spread adjustment to the forward starting options only while using a Black-Scholes fair value for the current option fair value as an approximation and often due to the immateriality of the nonperformance adjustment on the current option value. Other actuaries apply the nonperformance spread to all discounted cash flows. Table 2 presents the nonperformance spread discounting variations for the embedded derivatives noted above.

Table 2: Nonperformance (NP) spread discounting embedded derivatives variations

Methods	Fair Value Position	Current Option	Forward Starting Options
Method A	Liability	Exclude NP spread	Include NP spread
Method B	Liability	Include NP spread	Include NP spread

Q27. Should increasing the present value of expected liability cash flows by a risk margin be considered when determining the fair value?

A27. Yes. ASC 820-10-55-5 notes that “A fair value measurement of an asset or a liability using a present value technique **captures all of the following elements** from the perspective of market participants at the measurement date.” [emphasis added] The list of elements included in a fair value calculation using present value techniques is “the price for bearing the uncertainty inherent in the cash flows (risk premium).” Risk premium or risk margin is defined as “compensation sought by risk-averse market participants for bearing the uncertainty inherent in the cash flows of an asset or a

liability.” Thus, if there is uncertainty from the perspective of a market participant in the cash flows, a risk premium, or risk margin, should be considered. This risk margin would not be a “provision for adverse deviation” to introduce conservatism into the fair value calculation but would represent the best estimate of the price a market participant would require for bearing such risk.

Q28. May a risk margin be considered for observable capital market inputs, such as market implied volatilities?

A28. Many actuaries believe that reliably observable capital market inputs, such as risk-free interest rates, observable credit spreads, and short-term implied volatilities do not require a separate risk margin. They believe that the observable inputs already reflect the market price for bearing the risk inherent in those values. For example, implied volatilities typically are higher than historical volatilities and credit spreads typically are higher than actual default rates on similar instruments. Since the observable market inputs already reflect the market price for bearing the risk associated with those inputs, no additional risk margin is necessary.

One capital market input for which a separate risk margin may be appropriate is long-term stock price volatility. Equity volatilities up to about 5 to 10 years are generally available⁴ and considered reliable, as they are based on substantial volumes of trades of options that extend for such periods. But trades in options longer than 5 or 10 years tend to be very thin, and thus the resulting volatilities can be unreliable or even unavailable.

Different approaches can be used to estimate the long-term volatilities. In determining the approach to use, the one a market participant would use should 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 is to use actual historical, long-term volatilities in estimating the projected long-term volatilities to perform the fair value calculations. If the average historical volatility is used, there may be a need for a separate risk margin since 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. Since 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 on how the extrapolation is performed.

The option budget method, commonly used for index interest features, uses an estimated cost derived from either the current market or historical expenses related to company hedging activities. These projected future hedge costs can be offset by management by the setting of future non-guaranteed elements. As such, capital market volatilities are not seen as additional risks by market participants, but pricing parameters, and no additional risk margin is applied for market volatilities.

⁴ Volatilities up to five to 10 years were generally available at the time this practice note was written. Subsequent events may cause additional or fewer durations to become available.

Q29. Should a risk margin be considered for actuarial inputs, such as mortality, morbidity, lapse assumptions, and/or partial withdrawal timing and utilization assumptions?

A29. Since most actuarial inputs cannot be calibrated to observable market prices, a risk margin should be considered for these items if they could-affect the present value of cash flows from the perspective of a market participant.

Q30. What methods can be used to calculate the risk margin?

A30. ASC 820-10-35-53 states that “unobservable inputs shall reflect the assumptions that market participants would use when pricing the asset or liability, including assumptions about risk.” Beyond this, ASC Topic 820 provides very little specific guidance on how a risk margin is determined.

The application of risk margin to insurance contract fair value has generated considerable interest, research, and discussion. The International Actuarial Association (IAA) Risk Margin Working Group (RMWG) has done extensive research resulting in the document, *Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins*⁵. In addition to discussing objectives of risk margins and desirable characteristics, the research paper discusses a number of risk margin approaches, which include: quantile approaches, methods that use confidence limits, including the conditional tail expectation (CTE) (e.g., if a reserve is derived for each stochastic scenario, the CTE60 reserve is the average of the highest 40% of the resulting reserves, the CTE99, the average of the highest 1%); cost of capital method; discount-related risk margins, which include risk-adjusted returns and deflators; and explicit assumptions similar to margin for adverse deviations (MfAD) and provisions for adverse deviation (PADs).

In addition, to the extent observable market data exists (for example, data regarding reinsurance prices/quotes or prices/quotes associated with capital markets risk transfer), such prices might also be taken into account in determining the overall fair value. To the degree that the measuring entity is a participant in the market, the company-specific pricing practices may incorporate risk margins which may also be applicable to setting risk margins for measuring fair values. Therefore, it may be appropriate to consider these market prices/quotes in determining the level of risk margin.

Q31. What techniques are available to apply the cost of capital method for risk margins?

A31. Generally speaking, the cost of capital method involves determining the required capital associated with the contract being fair valued by projecting future capital needs and determining the cost associated with holding that future capital, rather than being able to invest that capital back into the business at a higher return. This requires determination of those future capital needs at multiple future points in time within the fair value projection period (typically annual timesteps) as well as determination of the

⁵ International Actuarial Association Ad hoc Risk Margin Working Group April 15, 2009, download at: https://actuaries.org/app/uploads/2025/04/IAA_Measurement_of_Liabilities_2009-public.pdf.

cost of capital rate (i.e., the difference between the rate that could be earned from investing the capital and the rate that will be earned on capital held to support the contract).

Determination of future capital needs may be based on regulatory capital requirements, ratings capital (i.e., the amount needed to maintain a specified rating), or economic capital (or, in some cases, the greater of two or all three). Methods for determining current and projected future economic and/or regulatory capital vary, and a discussion of these methods is outside the scope of this practice note. According to ASC Topic 820, the method used should be consistent with that a market participant would use.

The cost-of-capital rate is a key assumption that is challenging to determine. The IAA RMWG's 2009 paper illustrated 4% and 6% for cost-of-capital rates and clarified that those rates were suggested toward the end of the bull market that ended in 2008. Some actuaries believe 4%–6% before tax is a reasonable range, but actual rates will vary depending on the individual company's rating, internal risk tolerance, return targets, and the current market environment.⁶

If a risk-neutral valuation is used, the underlying cost-of-capital calculation would only consider capital requirements associated with non-hedgeable risks, since risk margins associated with hedgeable risks will already be incorporated in the fair valuation through the use of observable inputs. For example, if the risk-neutral valuation uses observed market implied volatility through duration x , those implied volatility inputs already incorporate the market's price for risk, so no additional risk margin associated with implied volatility through duration x is included through a cost-of-capital approach.

There are different ways of applying the cost-of-capital method for calculating risk margins. One possibility is to directly calculate the cost at the time the valuation is performed, based on the methodology described in the prior paragraphs. The resulting cost of capital may then be used as the risk margin. The challenge of this method is posed by the complexity of the calculation and the computing time required for most cost-of-capital approaches.

Another method is to associate a point-in-time, cost-of-capital method with a specific metric or ratio and use that metric or ratio to determine the risk margin at the financial reporting date. Under this approach, care must be taken to ensure that:

1. the underlying cost-of-capital calculations have been updated recently enough that the metric or ratio continues to be appropriate; and
2. that the metric or ratio used will adequately represent the underlying changes in the market's view of risk from period to period.

Examples of ratios or metrics that might be used as a proxy for the underlying cost of capital include the Wang Transform or Sharpe Ratio (described in detail in the December

⁶ These ranges are cited solely for historical illustrative purposes from external literature; the Academy does not recommend or endorse any specific cost-of-capital rate or range of rates for fair value calculations.

2007 issue of the *Financial Reporter*⁷); CTE or percentiles of real-world distributions; factors applied to key risk metrics such as in the money-ness, account value, and/or level of guarantee; and provisions for adverse deviation applied to key valuation assumptions.

Q32. Do risk margins need to be explicit?

A32. There is no requirement for risk margins to be explicit. Both explicit and implicit risk margins are currently used in practice.

Q33. Does a separate risk margin need to be included for each assumption or is one aggregate risk margin acceptable?

A33. There is no requirement to include a separate risk margin for each assumption. Some actuaries believe it is more appropriate to include a separate risk margin for each assumption while other actuaries believe one aggregate risk margin is acceptable. Given that many actuarial inputs have overlapping impacts that can offset or compound the impact of a risk margin, actuaries carefully consider the application and determination of risk margins, especially in the case of compound MRBs or compound embedded derivatives.

Q34. How can risk margins be incorporated into a fair value calculation using the budget method (option budget method) for indexed products?

A34. As discussed in Q9, the budget method is a common approach under U.S. GAAP for valuing future options embedded in products that include indexed interest returns. Some actuaries believe that this approach continues to be appropriate within the guidance of ASC Topic 820.

The budget approach, which is also referred to as the option budget method, generally involves a deterministic projection to calculate an option “budget,” or the amount to be allocated to a budget account to cover the cost of future option purchases. At contract inception, the initial premium is allocated between the host contract and the embedded derivative, the latter of which is comprised of the market value of the current option (often valued using a Black-Scholes type approach) and the budget account for future option purchases.

If the budget approach is used, a risk margin could be added to the budget account valuation to reflect the risks associated with non-hedgeable risks consistent with a market participants’ view. Such risks would include policyholder behavior risks associated with all of the features of a product, and possibly market volatility. These risk margins tend to be particularly impactful to the value for forward starting options for IUL, FIA, and RILA products.

The cost-of-capital approach, described in Q31, is one approach to incorporating risk

⁷ Zinkovsky, “Risk margins to the Non-Market Risks under FAS 157: Suggested Approach”, *Financial Reporter* (December 2007), pp. 11-16.

margin into the budget method. Another approach would be to use a range of scenarios for the budget method, as opposed to a single deterministic approach, and set the budget account based on a conservative result from this range that is representative of the market's price for the inherent risk. Yet another approach is to apply explicit provisions for adverse deviation to non-observable valuation inputs (for example, lapse and mortality) to take into account the market's view of risk.

Q35. How might taxes impact risk margins?

A35. Most accounting standards, such as U.S. GAAP, U.S. Statutory, and International Financial Reporting Standards (IFRS), require actuarial liabilities to be pre-tax. Separate liabilities are recognized for amounts owed to tax authorities (a true current tax liability) and deferred tax liabilities on assets and liabilities (per ASC Topic 740 and its international counterpart, IAS 12). Based on the current positions of the FASB and International Accounting Standards Board (IASB), it is unlikely that risk margins are allowed to reflect taxes. In valuing a liability, there is a difference between valuing the elements that are intrinsic to the liability and those that are intrinsic to the company. The tax attributes are not intrinsic to the liability, as they differ based on jurisdiction and are not based on the cash flow characteristics of the contract. GAAP and IFRS do not ignore differences due to taxes; rather they separate them out as deferred tax assets and deferred tax liabilities, which are liabilities based on company characteristics (where the company is domiciled), not based on contractual cash flow characteristics.

Nevertheless, a number of actuarial papers discuss methods that incorporate taxes to determine fair value, such as the actuarial appraisal method (AAM), which is based on the present value of after-tax distributable earnings. Cost-of-capital risk margins that are linked to the AAM and derived from assumed cost of equity capital demanded by investors, which is an after-tax rate of return from the reporting entity's perspective, typically have a deferred tax component. For example, the required profit (a type of risk margin) defined by Girard (2000 and 2002) and used by Duran and others can take the form:

$$RP_t = \left[\frac{k}{(1-T)} - i_t \right] \times (FVA_{t-1} - FVL_{t-1}) - \frac{k \times T}{(1-T)} \times [(FVA_{t-1} - TVA_{t-1}) - (FVL_{t-1} - TVL_{t-1})]$$

Where k is the cost of capital, ' i ' is the assumed rate of return on invested assets backing required capital, T is the tax rate, FVA and FVL represent fair values of assets and liabilities, respectively, and TVA and TVL are their respective tax values. Hence, the last term is the net deferred tax liability (DTL) multiplied by a pre-tax k . Assuming a positive net DTL, the last term is a reduction in required profit.

An alternative form that is more common can be derived by combining FVA - FVL terms, leading to:

$$RP_t = (k - i_t) \times (FVA_{t-1} - FVL_{t-1}) + \frac{k \times T}{(1-T)} \times (TVA_{t-1} - TVL_{t-1}) \quad ,$$

⁸ Luke N. Girard, F.S.A., F.C.I.A. (2000) Market Value of Insurance Liabilities, *North American Actuarial Journal*, 4:1, 31-49, DOI: 10.1080/10920277.2000.10595871.

⁹ Ibid.

In this form, the last term, which is likely to be positive, is an increase in required profit.

In summary, while the above formulae may be theoretically correct, the current positions of the FASB and IASB would likely require risk margins to be devoid of tax effects. Consequently, this might lead to the use of a more concise form of risk margin, such as the above formulae (with the last terms, which include tax effects, simply dropped). .

Q36. How frequently might risk margins be updated?

A36. As described above, ASC Topic 820 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 at the measurement date.” This appears to indicate that the risk margins be updated every time measurement is performed to reflect the then-current margin that a market participant would require if selling an asset or transferring a liability.

Practically speaking, review of market data and market participant assumptions may indicate that no update to the risk margin is required. However, ASC Topic 820 appears to require that market information be reviewed on every measurement date, and that any decision not to update risk margins be supportable.

In particular, changes in observable market data related to non-hedgeable risks since the last measurement date (such as acquisitions of blocks of insurance, reinsurance transactions or quotes, and capital markets transactions, quotes, and related market implied data) are considered every time risk margins are updated.

Although the fair value requirement is that the assumptions be current (i.e., reflect current market conditions) at each measurement date, as a practical matter, companies generally only do extensive studies to support assumptions, such as risk margins, periodically, and only update them more frequently if market conditions or information suggest the need for an off-cycle revision.

Q37. May application of ASC Topic 820 result in a gain or loss at issue of a contract accounted for at fair value?

A37. ASC 820-10-30-3A recognizes that, under some circumstances, the exit price used as the fair value of a contract at issue may not be equal to the transaction price. Under those circumstances a gain or loss at issue may result. Examples listed include:

- Transactions between related parties.
- Transactions occurring under duress.
- The unit of account represented by the transaction price is different than the unit of account for the asset or liability being measured under fair value. For example, the transaction may include other elements that are measured separately, or it may include transaction costs.

- The market in which the transaction occurs is different than the market in which the reporting entity would sell the asset or transfer the liability.

However, for contracts traded in an active market or for products offered in a competitive market, the expectation is that a significant gain or loss at issue is unlikely given the requirement to maximize the use of observable inputs.

Q38. May application of ASC Topic 820 result in a gain or loss being recognized at issue of a hybrid instrument?

A38. ASC Topic 820 is applicable to items that are measured at fair value. It does not affect the accounting for items not recorded at fair value. In the accounting guidance for embedded derivatives, ASC 815-15-35-3 states that if a host contract is reported at fair value, the sum of the fair values of the host and embedded derivative “shall not exceed the overall fair value of the hybrid instrument.” This suggests that there can be a gain or loss when a hybrid instrument is issued, if the fair value of the overall hybrid instrument is different from the transaction price. The treatment of an instrument containing a market risk benefit would likely be analogous.

However, if the host contract is not recognized at fair value (which is commonly the case for fixed-index annuities, variable annuities, and other hybrid contracts commonly offered by insurance companies) ASC 815-15-30-2 may preclude recognition of a gain or loss at contract issue. Rather, the host contract may be recorded at issue at a value that forces the hybrid contract to “break even” at issue (i.e., a host adjustment). ASC 815-15-30-2 states:

The allocation method that records the embedded derivative at fair value and determines the initial carrying value assigned to the host contract as the difference between the basis of the hybrid instrument and the fair value of the embedded derivative shall be used to determine the carrying values of the host contract component and the embedded derivative component of a hybrid instrument if separate accounting for the embedded derivative is required by this subtopic.

Some companies use alternatives to simply adjusting the host contract value. For example, some companies record a separate asset, similar to deferred acquisition costs (DAC) or a deferred sales inducement asset, to offset the loss, and amortize that asset over time. In other cases, this separate amount approximates the host offset and the unamortized amount is booked as a negative host balance in lieu of adjusting the internal rate of return on the host.

It is common for MRB fair values to be in a liability position, at inception. For more guidance on determining whether this liability position constitutes a loss at inception, see the white paper prepared by the Market Risk Benefits Work Group of the American Academy of Actuaries Life Practice Council’s Life Financial Reporting Committee titled [*Considerations in Market Risk Benefits*](#) published in December 2022. Questions C1, E10 and E11 of the [*Considerations in Market Risk Benefits*](#) white paper cover common industry evaluations of the facts and circumstances across various products related to the determination of an MRB loss at inception.

Q39. What disclosures are required?

A39. ASC 820-10-50-2 requires a number of items to be disclosed for recurring fair value measurements. A summarized list is below but more detail is provided in the ASC:

- The fair value measurement
- Classification level (Level 1, level 2, or level 3)
- For level 2 and level 3 items,
 - Description of the valuation technique and inputs
 - Description of any change to valuation approach or technique, and the reason for the change
- For level 3 items, quantitative information about unobservable inputs (if reasonably available)
 - This includes the range and weighted average of significant unobservable inputs (the weighted average can be replaced by the median or arithmetic average “if such information would be a more reasonable and rational method to reflect the distribution of unobservable inputs”)
- For recurring level 3 items, a roll forward including:
 - Gains and losses recognized in net income, and the line item of the income statement in which the gain or loss is reported
 - Gains and losses recognized in other comprehensive income, and the line item in other comprehensive income where the gain or loss is reported
 - Purchases, sales, issuances, settlements
 - Transfers in/out of level 3
- For recurring level 3 items, “the amount of the total gains or losses for the period... that is attributable to the change in unrealized gains or losses relating to those assets and liabilities held at the end of the reporting period, and the line item(s) in the statement(s) of comprehensive income (or activities) in which those unrealized gains or losses are recognized.”
- For recurring level 3 items, “a narrative description of the uncertainty of the fair value measurement from the use of significant unobservable inputs if those inputs reasonably could have been different at the reporting date.”

ASC 820-10-55-100 through 820-10-55-106 provide examples of the required disclosures, including the required roll forward for level 3 measurements, as well as the table showing ranges and weighted averages of inputs and a narrative description of the uncertainty of the measurement from the use of unobservable inputs.

An item that may present particular challenges for market risk benefits is determining the value of "settlements" during the reporting period, since many companies do not perform a fair valuation of contracts on the day they are settled (or lapsed). In practice, it may be necessary to use approximate values (for example, nearest month end) for the impact of settlements during the accounting period.

Q40. How are transaction costs treated under ASC Topic 820?

A40. ASC 820-10-35-9B states that “the price...used to measure the fair value of the

asset or liability shall not be adjusted for transaction costs.”

This does not necessarily mean that there would be a loss upon issue of a liability measured at fair value. Assuming that the fair value is measured using the income method, to the extent that there are future margins in the product to recover transaction costs, those margins would reduce the liability fair value amount. To the extent that the present value of these margins equates to the amount of transaction costs expensed, there would not be a gain or loss at issue.

Q41. How are deferred acquisition costs or previously collected loads reflected in a fair value calculation?

A41. Deferred acquisition costs or loads represent expenses or revenues that have been incurred in the past that have not yet been amortized. An exit value would typically only look to future expected cash flows and the expected variability in those future cash flows. Thus, it would appear inappropriate to include deferred acquisition costs or previously collected loads in a fair value calculation.

Under the Fair Value Option (discussed in more detail in the next section) the GAAP guidance is specifically clear stating in ASC 825-10-25-3 that “Upfront costs and fees related to items for which the fair value option is elected shall be recognized in earnings as incurred and not deferred.”

Fair Value Option

Q42. What is the Fair Value Option?

A42. Statement of Financial Accounting Standards (FAS) No. 159, The Fair Value Option for Financial Assets and Financial Liabilities, was promulgated by FASB in 2007. FAS 159 created a fair value option under which a company may irrevocably elect fair value as the initial and subsequent measurement attribute for certain financial assets and financial liabilities on a contract-by-contract basis. The objective was to improve financial reporting by giving entities an opportunity to mitigate volatility in reported earnings caused by measuring related assets and liabilities differently without having to apply complex hedge accounting provisions. Under Accounting Standards Codification (ASC), most of the provisions of FAS 159 were codified within ASC Topic 825 (Financial Instruments).

When FAS 159 was first adopted, changes in fair value of an instrument for which fair value option was elected were reported in net income. Accounting Standards Update (ASU) 2016-01 amended this, so that changes in fair value resulting from a change in the instrument-specific credit risk on contracts for which the fair value option was elected are reported in other comprehensive income. All other changes in fair value are reported in net income.

Reflecting the amendment from 2016-01, ASC 825-10-45-5 states:

If an entity has designated a financial liability under the fair value option in accordance with this Subtopic, the entity shall measure the financial liability at fair value with qualifying changes in fair value recognized in net income. The entity shall present separately in other comprehensive income the portion of the total change in the fair value of the liability that results from a change in the instrument-specific credit risk.

Q43. When can the fair value option be elected?

A43. FAS 159 was effective for most companies as of the beginning of the first fiscal year after November 15, 2007. For contracts that are in force as of the effective date of FAS 159, any fair value election had to be made on the effective date of FAS 159.

Other than contracts that were in force at the effective date of FAS 159, ASC 825-10-25-4 sets the eligibility requirements for the fair value option. For insurance contracts and financial instruments, the effective date would generally be when “the entity first recognizes the eligible item.” Areas where this election is observed include the new sales of most insurance contracts, a new reinsurance treaty, or a business combination. ASC 825-10-25-4 describes some other situations upon which a fair value election may be made, but these situations do not appear to affect the liabilities actuaries are typically

responsible for valuing except in rare circumstances.

Q44. What contracts are eligible for the fair value option?

A44. ASC 825-10-15-4 describes the contracts for which the fair value option may be elected, and ASC 825-10-15-5 describes certain exceptions. The fair value option is available for most insurance contracts, whether or not regarded as financial instruments, as well as most investment contracts issued by insurance companies.

Q45. If fair value option is elected for one contract, must it be elected for another contract?

A45. ASC 825-10-25-7 states that the fair value option may be elected for a single eligible item without electing it for other identical items. There are some clarifications, for example paragraph 825-10-25-7 (c), dealing with reinsurance:

If the fair value option is applied to an eligible insurance or reinsurance contract, it shall be applied to all claims and obligations under the contract.

In addition, according to ASC 825-10-25-10, “the fair value option need not be applied to all instruments issued or acquired in a single transaction.”

If the fair value option is elected for a single eligible item but not for other identical items, ASC 825-10-50-28 (b) requires a disclosure of the reason for partial election.

Q46. Can the fair value option be elected for a rider on a contract but not for the underlying base contract itself or vice versa?

A46. No. ASC 825-10-25-7 (d) requires the election to be made contract-by-contract but does not allow the election to be made for part of an insurance or reinsurance contract, such as for a particular benefit feature. The paragraph explicitly calls out riders, stating “If the fair value option is elected for an insurance contract (base contract) for which integrated or nonintegrated contract features or coverages (some of which are called riders) are issued either concurrently or subsequently, the fair value option also must be applied to those features or coverages.”

The paragraph explicitly states that this is the case, even for a part of the contract or rider is accounted for separately from the base contract, stating “The fair value option cannot be elected for only the nonintegrated contract features or coverages, even though those features or coverages are accounted for separately.” For example, even if an additional liability is held for a universal life secondary guarantee, the fair value option cannot be applied to the secondary guarantee without being applied to the entire universal life contract.

Q47. If the fair value option is elected for a contract and the reporting entity later changes its mind, can the fair value option election be revoked?

A47. No. The fair value option election is irrevocable. But for sales of similar contracts at a later date, the reporting entity may elect not to apply the fair value option.

Q48. Is there a requirement for specific documentation to support a fair value option election?

A48. The fair value option guidance does not mandate any documentation requirements to support a fair value election. Paragraph A22 of the basis for conclusions of FAS 159 recognizes that the documentation to support a fair value election is a matter of internal control and should not be prescribed by the statement.

A company may establish a policy of automatically applying the fair value option to certain newly issued or acquired contracts without making an explicit specific election for each individual contract. In that case, the company would generally document the election criteria with sufficient detail to identify the items for which the fair value election is to be automatically elected in order to support such election upon subsequent audit or review.

A company may also document the reasons for fair value election for all contracts or groups of contracts for which a fair value election is made.

Q49. What disclosures are required for a fair value option election?

A49. ASC 825-10-50-27 through 825-10-50-32 describe the disclosure requirements for items for which a fair value election is made. The required disclosures include but are not limited to:

- Management's reasons for electing a fair value option
- A description of the reasons for electing the fair value option for certain items but not for other similar items, if applicable
- Additional information on each line item in the balance sheet that includes an item for which a fair value election was made
- The amount of gains and losses from fair value changes and in which income statement line those gains and losses are reflected for each line item in the balance sheet that includes an item for which a fair value election was made
- For liabilities with fair value changes that have been significantly affected by changes in instrument-specific credit risk during the reporting period:
 - The estimated amount of gains and losses attributable to instrument-specific credit risk, both for the current period and cumulatively
 - How those gains and losses were determined
 - The amount that had been recognized in other comprehensive income that is recognized in net income in the current period due to settlement of the liability

In annual periods only, the methods and significant assumptions used to estimate fair value of items for which fair value option has been elected must be disclosed.

Q50. For an assuming company electing the fair value option for non-contemporaneous (or block) insurance, what measurement requirements should the assuming company consider?

A50. The fair value measurement of an assumed block of insurance is typically the actual transaction price of the reinsurance contract. When this is a U.S. treaty, the fair value of the assumed business is typically based on the “premium” exchanged or deposited into a funds withheld or trust for the block. When measuring this fair value and calibrating to the reinsurance treaty price, ASC 820-10-35-24C has some specific guidance to consider:

If the transaction price is fair value at initial recognition and a valuation technique that uses unobservable inputs will be used to measure fair value in subsequent periods, the valuation technique shall be calibrated so that at initial recognition the result of the valuation technique equals the transaction price. Calibration ensures that the valuation technique reflects current market conditions, and it helps a reporting entity to determine whether an adjustment to the valuation technique is necessary (for example, there might be a characteristic of the asset or liability that is not captured by the valuation technique). After initial recognition, when measuring fair value using a valuation technique or techniques that use unobservable inputs, a reporting entity shall ensure that those valuation techniques reflect observable market data (for example, the price for a similar asset or liability) at the measurement date.

There is no guarantee that a future observable market event over an asset or a liability will be observable in the market beyond the initial treaty event. Even a similar treaty will be bound by the economics of the current market environment and will likely not be a 100% match. Practically, the assuming company calibrates to the transaction price through a detailed evaluation of the underlying actuarial cash flow assumptions and the final elected risk margin at inception. The assumptions and risk margins are then used to measure the initial fair value with immaterial or no difference between the fair value and the initial price. The discounted cash flows, using the best estimate cash flows and risk-free interest rates and nonperformance provisions layer in the inception risk margins to calibrate to the transaction price. This is a practical solution for the calibration of the initial fair value.