

**Statutory Accounting Principles (E) Working Group  
Spring National Meeting  
Comment Letters Received -ALM only**

**TABLE OF CONTENTS**

<b>COMMENTS / DOCUMENT</b>	<b>PAGE REFERENCE</b>
<b>Comment Letters Received for Items Exposed for the Spring National Meeting</b>	
American Council of Life Insurers – November 4, 2024 ○ Ref #2024-15: ALM Derivatives	2-52

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November 4, 2024

**Mr. Dale Bruggeman**

Chair, Statutory Accounting Principles (E) Working Group  
National Association of Insurance Commissioners (NAIC)  
110 Walnut Street, Suite 1500  
Kansas City, MO 64106-2197

**Re: 2024-15 – ALM Derivatives**

Dear Mr. Bruggeman:

The ACLI appreciates the opportunity to comment on the exposure referred to above that was released for comment by SAPWG on August 13, 2024.

We support the development of new statutory accounting guidance for interest-rate hedging derivatives that do not qualify for hedge accounting under SSAP No. 86—Derivatives, but that are used for asset-liability management (ALM), also referred to as “ALM Hedges”. ACLI is very appreciative of the on-going dialogue with SAPWG and the IMR Ad Hoc Working Group and stands ready to continue working with the NAIC on this initiative.

Companies manage ALM programs to mitigate reinvestment, guarantee, and disintermediation risks, and to manage asset portfolios within limited ranges around a liability target duration. The new statutory accounting guidance is intended for derivative transactions that alter the interest rate characteristics of assets/liabilities under these types of risk mitigation programs. More specifically, “macro-hedging” ALM programs hedge risks that are often off-balance sheet risks given the “amortized cost” nature of statutory accounting, and therefore hedge accounting frameworks do not address this type of hedging construct. As discussed in our white paper “Derivatives and Hedging with Life Insurance” (included as Appendix I), this is because the duration and convexity of assets and liabilities may differ. When interest rates change, asset and liability durations may change by different amounts, making it nearly impossible to maintain the tight effectiveness assessment corridor requirements as the measurement criteria do not include metrics commonly used in these programs (e.g., duration). As a result, economically effective “macro-hedges” are generally considered hedges and carried at fair value, which misstates insurer solvency by causing surplus volatility or worse, can disincentivize prudent risk management. As further discussed in Appendix I, there is a critical need for developing appropriate accounting guidance.

Within the exposure, NAIC staff has identified several items for further discussion:

2) If further development / consideration of guidance is supported, the following items are noted for discussion:

- a. Determination of effectiveness that permits the derivative program to qualify for the special accounting treatment.
- b. Discussion of whether net deferred losses (reported as assets) would be admissible, and if so, any admittance limitations.
- c. Macro-limits on admissible net deferred losses (reported as assets) and other “soft” assets. (For example, capturing IMR and derivative deferred net losses, and then perhaps considering other soft assets, such as DTAs, EDP equipment and software, goodwill, etc.)
- d. Timeframes over which deferred items are amortized into income.
- e. Extent of application across the industry. (NAIC staff notes that SSAP No. 108 is only applied by 9 entities, and from a review of the derivative disclosures for INT 23-01, only 14 entities captured derivative gains/losses in the IMR balance.)

The ACLI previously provided a detailed presentation entitled “ACLI Derivative IMR Solution Proposal” (“ACLI Solution,” included as Appendix II) to the IMR Ad Hoc Working Group. Discussions of the ACLI solution at the NAIC Ad Hoc IMR WG were the impetus for this exposure. The solution addresses many of the exposure’s components and ACLI would appreciate the opportunity to present to the full SAPWG membership and any additional interested regulators.

Additionally, the ACLI would like to provide specific comments regarding the admittance limitations identified in discussion points 2b and 2c. Although one of the methods within the ACLI Solution includes accounting which does not utilize the IMR, discussion of accounting treatment revisions for ALM Hedging arose within the context of derivatives and IMR. Therefore, our comments start with the “Definition of IMR” developed by the IMR Ad Hoc Working Group:

*IMR is a valuation adjustment to maintain consistency between insurance liabilities (the assumptions for which are often unchanged from origin) and the assets needed to support them (where the assumptions can essentially be revisited any time there are fixed income realizations).*

*IMR defers and amortizes the recognition of non-economic gains or losses where investment activity, whether through fixed income investment sales or fixed income derivative hedging transactions, essentially unlock unrealized gains/losses for either assets or liabilities. IMR is not intended to defer economic gains and losses related to asset sales compelled by liquidity pressures that fund significant cash outflows (e.g., such as excess withdrawals and collateral calls).*

*Specifically, the IMR valuation adjustment more appropriately reflects the impact to statutory surplus from fluctuations in interest rates and therefore provides a more accurate representation of solvency under the NAIC’s statutory framework which often includes amortized cost valuation of fixed income investments and liability valuations with fixed assumptions in accordance with the Accounting Practices and Procedures and Valuation Manual.*

This definition is part of a broader document (see attached Appendix III) that provides foundational principles for the NAIC's statutory accounting framework.

As the document and definition of IMR states: fixed income investment assumptions can be more easily revised, that is "unlocked," when the investments are sold/purchased. Statutory reserve liability assumptions typically are not revised. Therefore, to avoid situations in which transitory interest rate related realized gains/losses caused inaccurate solvency reflections (which could disguise an insurer's true ability to pay claims), the IMR valuation adjustment was developed. Appendix III provides detailed examples in which this could occur. The IMR also remains a vital element of the statutory accounting framework and was incorporated in the methodology within other evolutions such as Principle-Based Reserving (PBR) and Asset Adequacy Testing (AAT).

The IMR is not an intangible asset, it is a valuation adjustment to reflect the company's true solvency position under statutory accounting. Therefore, equating negative IMR to an asset (tangible or intangible) with claims paying ability, is not logical or appropriate. Following this, imposing any limit on admittance would misconstrue an insurer's true solvency and would equate to a limit on unrealized losses on fixed income instruments more broadly, such as bonds where the unrealized losses are embedded within their amortized cost valuation; contrary to the purpose of the IMR and consistent valuation of assets and liabilities.

ACLI understands regulators may wish to separate ALM derivatives from IMR (both for recording unrealized during their lives and for recording any applicable realized gains/losses). However, ACLI emphasizes, in light of the previous, that:

1. Fixed income ALM hedges can be used to alter the interest rate characteristics of assets and/or liabilities, and therefore are another method of "unlocking" the fixed assumptions. Whether ALM hedge realized gains/losses are included in the IMR or a separate valuation adjustment, they will be theoretically aligned and maintain the intent of the IMR (see the definition of IMR discussed above); and
2. Any fixed income hedge unrealized gains/losses are not intangible assets. They represent the offset to the valuation of the derivative itself (the contract asset/liability) and equate to the value needed to close (settle) the derivative contract with the counterparty.

Any limits (or potential subsequent non-admittance) on these components would in fact equate to a limit on ALM hedging programs themselves, disincentivizing insurers from engaging in vital, prudent, fixed income hedging strategies. As discussed in Appendix I and II, ALM hedges are used to mitigate reinvestment, guarantee, and disintermediation risks, as well as managing asset portfolios within limited ranges around a liability target duration, all of which are shared goals between regulators and insurers.

Further limiting hedging programs through statutory accounting guidance creates significant regulatory redundancies given other existing, effective regulatory protections:

1. From a state perspective, insurer hedging programs are limited under individual state laws and insurer DUPs, such as the type(s) of derivative programs and/or derivative contract(s). Insurers are also prohibited from speculative derivatives.

2. From a federal perspective, most standard US agreements with derivative counterparties also require derivative trades to be collateralized through margin requirements.<sup>1</sup> Collateral agreements ensure each counterparty (both the insurer and the institution on the other side of the derivative) are able to financially fulfill the derivative contract (i.e., pay the amount owed for the derivative's fair value) and/or reduce default risks incorporated in the contract for either party. In this case, any limit on the "valuation offset" is overly punitive when the insurer is legally required to post collateral to the counterparty.

Therefore, an aggregate cap for IMR and/or ALM derivatives is not appropriate, and it is not logical to call them intangible assets that cannot be used to pay claims. Rather, "negative" or "asset" valuation adjustments are simply explicitly shown on the balance sheet, whereas other unrealized losses are embedded in their amortized cost carrying values (i.e., bonds), both of which are required for consistent valuation of assets and liabilities so surplus properly reflects an insurers claims paying ability.

Turning to the macro cap on "soft assets," it is difficult to group these items as one category given their unique characteristics and purpose within the statutory accounting framework. Prudent business and risk decisions should not be disincentivized by the presence of completely unrelated economically viable assets or valuation adjustments on a company's balance sheet. To view these "soft assets" or intangibles in isolation from their broader purpose is also not appropriate. The NAIC's framework is an "amortized cost framework" with appropriate embedded conservatism, not a liquidation basis of accounting, for both assets and liabilities.

Deferred Tax Assets (DTAs) have appropriate conservatism by limiting reversals to 3-years as well as limiting carryback and carryforward potential. Further, DTAs represent real economic value to an insurer, and in fact does help pay claims by way of realizing tax benefits (i.e., reduction in tax payments).

Goodwill generally represents the difference between the cost of acquiring an entity and the reporting entity's share of the book value of the acquired entity. Within the acquisition, components of Goodwill could represent things of value such as costs acquiring a fully amortized building or an asset manager. Asset managers generally have limited balance sheet assets where its value is attributable to asset manager fees and directly proportional to assets under management (i.e., a not balance sheet metric).

Unlike US GAAP or IFRS, where Goodwill is not amortized because it is considered to have an indefinite useful life, until it is determined to be impaired, under statutory accounting Goodwill is conservatively amortized over a period not to exceed 10-years, as well as being subject to impairment testing.

DTAs and Goodwill also have percentage of surplus limitations, which serves as another layer of conservatism.

The common theme among all of these valuation adjustments and/or assets is that they either adjust values for consistent valuation of assets and liabilities to provide an accurate picture of

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<sup>1</sup> Mandated by the Dodd Frank Act and related SEC and CFTC regulatory requirements.

claims paying ability or represent real economic value that help insurers pay claims. They are also all unique, with distinct purpose in the statutory accounting framework, so an aggregate limiting cap across other completely unrelated economically viable assets or valuation adjustments on a company's balance sheet is inappropriate.

Lastly, ACLI proposes a few brief comments on exposure item 2e regarding the extent of application in industry. From conversations with our members, use of SSAP 108 is limited due to its narrow scope (variable annuity guarantees only) and the relative rigor of guardrails that must be satisfied to implement (resource intensive, so the benefit must be substantial to justify the effort). However, we understand that the population of insurers who engage in macro-hedging programs is significantly larger and using the Negative IMR disclosures to gauge the population is not truly representative for several reasons, such as:

1. The interim solution did not allow insurers to engage in new hedging programs or to include any hedging programs that did not previously include realized gains within the IMR. There could be insurers who have had to adjust or start programs as the interest rate environment evolved, which may have disqualified them from using this guidance and therefore including their programs in the disclosure.
2. There is diversity in practice in insurer's interpretation of SSAP 86; not all insurers included gains/losses from interest rate related macro-hedging programs in the IMR, which also would have precluded them from using the interim guidance and included balances in the disclosure. Ensuring clear ALM hedging guidance would reduce diversity in practice and would likely lead to more insurers clearly identifying these programs in any future required disclosures.

Once again, the ACLI appreciates the opportunity to provide comments and looks forward to continued dialogue and collaboration on new statutory guidance for ALM Hedges. If you have any questions regarding this letter, please do not hesitate to contact us.

Sincerely,



Mike Monahan  
ACLI

Cc: Julie Gann, Assistant Director - Solvency Policy, Robin Marcotte, Senior Manager II, Accounting Policy, Jake Stultz, Manager II – Accounting Policy, Jason Farr Senior SCA Valuation and Accounting Policy Advisor, and Wil Oden, Senior Technical Accounting Policy Advisor

## Appendix I

### Derivatives and Hedging Under Life Insurance and the NAIC's Statutory Framework

The intent of this document is to offer insights into why life insurance companies have derivative overlays on their investment portfolios to achieve appropriate results under prudent risk or asset liability management (ALM) practices. Strictly adhering to covering the liability with cash bonds through either buy and hold strategies or more dynamic portfolio rebalancing strategies are often insufficient to achieve these same results. It also offers insights into why existing derivative accounting and hedge accounting rules under US GAAP and US statutory accounting (which has incorporated many US GAAP concepts) fall short in appropriately addressing insurer and regulator needs in the broader US statutory framework for the life insurance sector. It further highlights how this framework gap can inadvertently incentivize increased risk-taking in the life insurance sector. This document further discusses the special and prudent ALM & hedging needs of life insurance companies, the marking to market of derivatives under the US statutory framework, and the appropriate lens for assessing effectiveness of derivative hedging programs under the life insurance sector's prudent risk and ALM practices.

To fully understand the proper context of this document, it should be read in conjunction with the "Definition and Purpose of the Interest Maintenance Reserve (IMR)" document which provides grounding in core concepts of the US statutory framework, which includes the IMR. That context provides a basis for understanding Appendix 3 of that document (IMR in the context of Derivatives Hedging Transactions), while this document substantially expands upon those concepts. For convenience, that example is included here as Appendix I.

A Glossary of terms commonly used when discussing these strategies and/or used throughout this document is included in Appendix II. Glossary terms used throughout the document are in *italics*.

### Background

As detailed in the aforementioned "Definition and Purpose of the Interest Maintenance Reserve (IMR)" document, the US statutory framework is generally an "amortized cost framework," where most fixed income investments and insurance liabilities are valued at amortized cost or with assumptions locked at their inception, respectively. The US GAAP framework, on the other hand, largely defaults to a market value or market consistent framework. The US statutory accounting framework is built on a modified US GAAP foundation. However, in the case of the derivative accounting guidance, the default market value carrying value was not modified, creating a mismatch in the accounting recognition of derivatives compared to the assets and liabilities they hedge.

Most life insurance and annuity products have complex ALM profiles that do not lend themselves to simple cash-flow-matching format of ALM using traditional fixed income instruments. Our liabilities are often very long dated (often for 40+ years), and frequently have embedded optionality for policyholders to withdraw their cash values at book or minimum crediting rate guarantees. These long-dated cash flows and embedded options create complex *duration* and *convexity* profiles. At the same time, the universe of fixed income assets is concentrated in maturities of 10 years or less, with very limited availability beyond the 30-year horizon or beyond.

A subset of the overall derivative accounting guidance, hedge accounting allows the derivatives to be accounted for in the same manner as the hedged item(s), however, there are additional concerns with the US GAAP based hedge accounting regime for certain unique life insurance sector derivative hedging programs as well. Current guidance makes it extremely difficult to achieve hedge accounting for *duration* portfolio hedging. This creates significant problems for those responsibly trying to limit *duration* and *convexity* risks:

1. While replication rules can be used to correct some of the *duration* issues, there is significant burden and cost associated with each replication derivative transaction. This makes the activity inefficient and, in some cases, cost prohibitive and/or limited under state law.
2. There is no capacity under these rules to include options or dynamic replication strategies necessary to manage the net *convexity* profile of the portfolios.
3. There are some allowances for “portfolio” or cash flow hedges or certain instances of anticipatory bond hedging. But there is often burden and difficulty in achieving this treatment in many cases, differing audit firm opinions on qualifying strategies, and these strategies are not always available for liability hedging.

If alignment of the interest rate derivatives used for ALM with the investments and liabilities they support is not upheld, the framework creates disincentives for insurers to engage in prudent and comprehensive ALM and risk management. Consistent accounting through the balance sheet and income statements would create a much more appropriate view of insurers’ surplus and solvency.

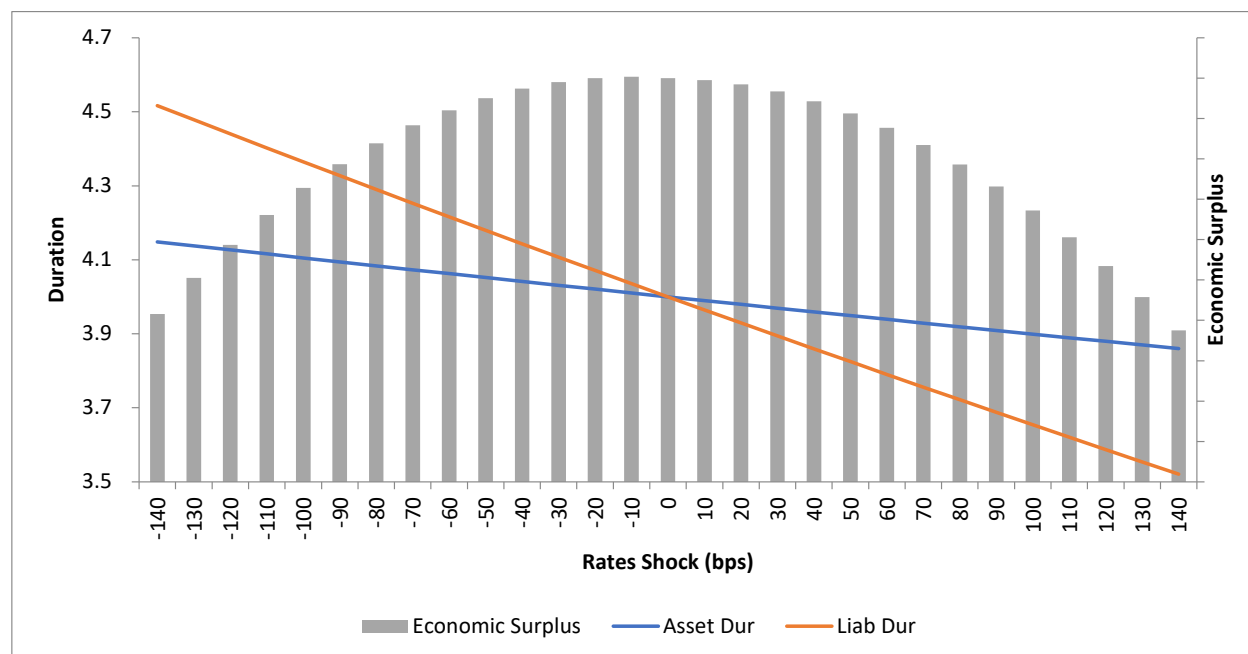
The US GAAP hedge accounting framework (and as a result the US Statutory hedge accounting framework) is largely focused on hedges of identified current or future balance sheet and income statement items (i.e., bonds, cash flows, raw materials, etc.), however, the life insurance industry has additional considerations that must be addressed. The long *duration* nature of our products leads to additional risks, such as those from interest rates, which must be addressed and do not align with the existing hedge accounting frameworks. However, the ability to hedge these risks and amortize resultant realized gains and losses through the IMR will allow insurers to manage the risk in a manner consistent with the statutory framework.

Further, if hedge accounting rules are aligned to appropriately allow for the hedged item to be not limited to hedges of an asset or portfolio of assets, but rather the economic profile of the cash assets net of liabilities (*duration*), this would allow for effectiveness testing used in any economic framework where one can illustrate that the hedges move in a way that is offsetting the movement of the economic value of the rest of the hedged item.



## Duration Risk Management of Life Insurance Companies

Let's first look at the following hypothetical example that life insurers face with regards to asset *duration* risk and how they manage that risk through asset liability management.



This chart shows where the asset *duration* (blue line) equals the liability *duration* (orange line) of approximately 4 at today's interest rate (0 on the horizontal axis). The sensitivity of *duration* to interest rates is referred to as *convexity* and the different slopes of the asset *duration* and liability *duration* lines show that the asset and liability convexities differ. Liability *convexity* is greater than asset *convexity*, which is often the case with life insurance and annuity products. In this example, if interest rates go up by 100 bps, liability *duration* is approximately 3.7 while asset *duration* is approximately 4.0. Likewise, if interest rates go down by 100 bps, liability *duration* is approximately 4.4, while asset *duration* is approximately 4.1. It is virtually impossible, and therefore impractical, for insurers to attempt to be perfectly cash flow matched in any particular interest rate scenario. Managing *convexity* is thus necessary to address this potential change in exposure as interest rates move.

As noted in the 2002 report to E-Committee, there are instances where the statutory framework (for which IMR was developed) gave rise to inappropriate results. The following is pertinent here:

*Changes in values due to interest rate swings were recognized inconsistently on the asset and liability sides of the balance sheet. Liabilities are valued using interest rates fixed at issue while some assets may be valued using current interest rates through trading activity.*

*When the assets are poorly matched to the liabilities, a significant adverse swing in the interest rates will reduce financial strength and could lead to insolvency even though the balance sheet value of the assets exceeds the balance sheet value of the liabilities. Using long term assets to back demand liabilities is dangerous if there is a significant upswing in interest rates. In addition, individual insurance premiums are received and invested for many years after the*

*issue date on which the reserve interest rate is determined, creating a potential for inadequate yields that is not reflected in standard accounting procedures.*

What the above example shows is an increase or decrease in interest rates can turn *duration* matched investments and liabilities into a scenario with other concerns that do not show up timely or appropriately under statutory accounting.

An insurance company, in these instances, could certainly address the 100 bp increases (decreases) by selling (buying) long *duration* securities and buying (selling) short *duration* securities, to match the *duration* of liabilities. In such a situation, the investment gains and losses would appropriately be IMR eligible, as liabilities are valued using interest rates fixed at issue while some assets are now valued using current interest rates through trading activity. However, it is not always practical to buy and sell securities to achieve this impact (e.g., availability, tax costs, bid/ask spread, etc.). More practically, the *duration* of the portfolio can be changed via more liquid derivatives instruments to protect against these same risks, in a more efficient way. This is why we believe the following was noted in the 2002 Report to E-Committee.

*Realized gains and losses on derivatives investments, which alter the interest rate characteristics of assets/liabilities, also are allocated to the IMR and are to be amortized into income over the life of the associated assets/liabilities.*

The E-Committee report only specifies hedging (derivatives which alter the interest rate characteristics of assets/liabilities) but does not distinguish that IMR eligibility is appropriate solely for derivatives that are hedge effective under accounting standards. This is also why we believe the 2002 Report to E-Committee called for symmetrical treatment for losses as well as gains.

Let's explore the implications of interest rate shocks upward and downward, respectively.

Due to the differences in *convexity* of assets and liabilities, the example shows how an interest rate spike can change a perfectly *duration* matched investment portfolio into one that is longer than the liabilities. As the E-Committee report's authors noted, it can be dangerous to back demand liabilities with long assets during an upswing in interest rates, as liabilities can become shorter in *duration* and more prone to disintermediation risk.

Similarly, the example shows how a downward interest rate move can also change a *duration* matched investment portfolio into one that is shorter than the liabilities. Individual insurance premiums can be received and invested for many years after the issue date on which the reserve interest rate is determined, creating a potential for investing in inadequate yields – a risk which is not reflected in standard accounting procedures. This same phenomenon also occurs when the insurance liabilities extend beyond 30 years, typically beyond US investable asset maturities.

Therefore, this example and subsequent discussion is intended to highlight several things:

- 1) The *duration* mismatch created by an interest rate shock creates increased risk, whether through reinvestment risk or disintermediation risk.
- 2) Why life insurance companies have developed sophisticated ALM practices to manage *duration* risk to ensure policyowner contractual obligations can be fulfilled.

- 3) Why it is important for the balance sheet to properly reflect these risk mitigation strategies and why not reflecting realizations from these risk management strategies in IMR, including for bond and derivative losses, can work to disincentivize prudent risk management practices, and increase life insurer risk, by requiring their immediate recognition.

### **Hedging *Duration* Risk and Hedge Accounting**

The US statutory framework is fundamentally different than the US GAAP framework. US GAAP tends to focus more on earnings and market valuations, while US Statutory focuses on long-term solvency and utilizes amortized cost. US statutory accounting adopted much of US GAAP's derivative accounting framework, which is not aligned with and does not fully reflect the inherent nature of the life insurance industry and its policyholder liabilities. Therefore, the gap of what is needed from a regulatory accounting context is still significant considering the sophisticated ALM practices life insurance companies employ to manage *duration* risk so that they can fulfil policy contract liabilities.

To illustrate the difference between a company utilizing US GAAP to hedge risk, let's first walk through an example.

In some instances, the hedge accounting rules work well under US GAAP. Let's look at an example of ABC Company which makes widgets for the automotive industry. The widgets are each molded from 8 grams of 100% copper. ABC company's warehouse can only hold one month's supply of copper.

ABC Company recently signed a contract with XYZ Automotive to provide 100 widgets at \$10 each for each of the next 12 months. ABC Company will therefore need to purchase 80 grams of copper on the 1<sup>st</sup> of each month for the next 12 months at the prevailing spot rate (price). At today's price of \$1 per gram, ABC's expected profit margin is 20% or \$200 per month. However, if the price of copper goes up, the company's resulting profit would be different than expected (the target profit). If the price went up high enough the company might not even be able to fulfil their obligation to XYZ Automotive.

ABC Company's management is aware that the market for copper can be highly volatile, and their risk management committee decided to lock in the price of copper over the next 12 months to hedge against the risk that the price of copper increases and they will be making widgets at a loss. As such, ABC Company entered into forward/future derivative contracts for the 1<sup>st</sup> of each month for the next 12 months that lock in today's price of copper at \$1 per gram over the next 12 months for their anticipated copper needs.

With these derivative hedging transactions, ABC has guaranteed a 20% profit margin on the contract with XYZ Automotive over the next 12 months. If copper prices double or fall by half, ABC Company's profit margin is not impacted. Any gain (loss) on the derivative contracts is offset by an equal economic loss (gain) on the copper purchase price.

Additionally, because ABC Company does not want to have non-economic and volatile earnings over the course of the next 12 months (i.e., by marking the derivatives to market through income each month), it follows the documentation requirements of US GAAP to prove hedge

effectiveness (i.e., the terms match 100%). Any increase or decrease of the price of copper is offset by their derivative hedges.

While the derivatives are still required to be marked to market under US GAAP, any gain (loss) is recognized in other comprehensive income (OCI), not earnings, until the 1<sup>st</sup> of each month, which then offsets any economic loss (gain) on the copper purchases since the initial spot rate when the contract with XYZ Automotive was affected.

While the copper widget example is one example of hedge accounting under US GAAP, and by partial extrapolation to US Statutory Accounting, US GAAP only touches on the fringes of dynamic and portfolio hedging strategies. Let's explore some of the differences in the *duration* management insurance companies employ when compared to the copper widget example.

- 1) In life insurance, a change in interest rates can change the *duration* target being hedged. In the copper widget example, a change in copper prices does not change the target (i.e., the copper requirement is determined independently from the price) whereas in life insurance, any change in interest rates can change the risk that needs to be hedged due to the difference in *convexity* of the assets and liabilities. There can be less *duration* to hedge if interest rates rise and more reinvestment risk to hedge if interest rates decline.
- 2) In the copper widget example, it is easy to match the critical terms for each linear transaction, even if 100% of the transactions are not hedged, and prove 100% hedge effectiveness. Hedging programs which manage *duration* risk may relate to significantly large portfolio(s) of assets supporting large portfolio(s) of insurance contract liabilities, and often the same one-to-one relation of the hedging derivative and the hedged item does not exist. Often, the components of each portfolio are not static, occasionally beyond the control of the insurer, and many times they require ongoing balancing and adjustments. Therefore, these hedging programs must be dynamic.
- 3) In the copper widget example, under US GAAP, it may be appropriate to meet the required of 80-125% fair value change assessment requirement to keep the derivative fair value changes from impacting earnings. US GAAP is primarily an earnings-based accounting regime, and there is less focus on solvency. The statutory framework, on the other hand, focuses on solvency and the proper reflection of the balance sheet includes the utilization of IMR. As derivatives can be efficient substitutes for the selling and buying of bonds (which are themselves IMR eligible), dynamic interest rate hedging strategies that mitigate ALM risks in the service of meeting policyholder obligations needs to be a component of the framework.

That focus that assesses effectiveness in the context of life insurance makes more sense in the following examples, which illustrate simplified common life insurer hedging programs and further detail why these programs are vital.

### Example: *Duration* gap risk reduction

Consider a product such as long-term care insurance or life insurance, where a company expects fixed premium payments each year of a given contract, and in return agrees to pay benefits in the future, contingent on realization of underwritten risk, upon which premium payments cease. Most investable assets in the US mature well within 30 years of issuance, while insurance liability benefits can extend significantly beyond that time horizon, which can create reinvestment risk for both coupons and principal payments. The premium dollars and bond coupons in future years will be reinvested at then prevailing yields. This can result in more interest rate (or *duration*) risk in the portfolio backing such a liability than what the insurer can cover with a portfolio of cash bonds alone. This is typically referred to as a *duration* gap between the assets and liabilities. The use of interest rate derivatives can help to hedge or reduce this risk.

For simplicity, in the below example, the book value of assets is set equal to the reserve for a block of liabilities. Assume the company invests in a long *duration* bond portfolio with a *duration* of 12.0 to back liabilities with a *duration* of 20.0. *DV01* is a measure of the mark-to-market sensitivity for a 1 basis point (0.01% or 1 bp) change in interest rates. Using this bond only investment example, there remains an unhedged *DV01* risk of -\$80,000 for every 1 bp move in rates. Ignoring *convexity* impacts, a 1% decline in interest rates could result in losing surplus equal to nearly 8% of the reserves.

However, the insurance company can hedge or reduce its *duration* gap using derivatives. For instance, it could use Treasury bond futures, interest rate swaps, or Treasury bond forwards to synthetically add *duration* to the bond portfolio. In this example, let's assume the company hedges some of the risk and adds \$60,000 of *DV01* sensitivity to the portfolio. If interest rates rise or fall, the total value of the assets will move much more closely to the liabilities, and surplus volatility is significantly reduced. The below chart illustrates the various outcomes of these scenarios.

Unhedged initial position (t=0):										
	(A) Assets SV (Stat BS)	(B) Asset MV	(C) Asset Duration	(D) Asset DV01	(E) Liability SV (Reserves, Stat BS)	(F) Liability MV (Reserves)	(G) Liability Duration	(H) Liability DV01	(I=D-H) Surplus DV01	
Bonds	\$100mm	\$100mm	12.0	\$120,000	\$100mm	\$100mm	20.0	\$200,000	-\$80,000	
Hedged initial position (t=0):										
	(A) Assets SV (Stat BS)	(B) Asset MV	(C) Asset Duration	(D) Asset DV01	(E) Liability SV (Reserves, Stat BS)	(F) Liability MV (Reserves)	(G) Liability Duration	(H) Liability DV01	(I=D-H) Surplus DV01	
Bonds	\$100mm	\$100mm	12.0	\$120,000	\$100mm	\$100mm	20.0	\$200,000		
Hedges	\$0mm	\$0mm	6.0*	\$60,000						
Total	\$100mm	\$100mm	18.0	\$180,000	\$100mm	\$100mm	20.0	\$200,000	-\$20,000	
Note: Example ignores convexity for simplicity. Bond duration is consistent with that of the Bloomberg Agg Long Corporate Index as of 10/31/2023. Even if considering only 25 year and longer maturities in this index, the duration would only get to about 14.5 units.										
* Hedge duration included based on a \$100mm notional for ease of understanding.										

Potential scenarios (t=1) at MV (Economic view):				
		Rates -1%	Rates unch.	Rates +1%
	Bonds	\$112mm	\$100mm	\$88mm
	Hedges	\$6mm	\$0mm	-\$6mm
	Total Assets**	\$118mm	\$100mm	\$82mm
	Reserves	\$120mm	\$100mm	\$80mm
	Surplus Change (No Hedge)	-\$8mm	\$0mm	\$8mm
	Surplus Change (With Hedge)	-\$2mm	\$0mm	\$2mm
Potential scenarios (t=1) at SV (Statutory view):				
		Rates -1%	Rates unch.	Rates +1%
	Bonds	\$100mm	\$100mm	\$100mm
	Hedges	\$6mm	\$0mm	-\$6mm
	Total Assets**	\$106mm	\$100mm	\$94mm
	Reserves	\$100mm	\$100mm	\$100mm
	URCGL (Surplus)	\$6mm	\$0mm	-\$6mm
** For simplicity, hedges are considered part of Assets regardless of gain or loss position.				

In this approach, the company is reducing the mismatches between identified assets and liabilities. There is not a requirement to offset all mismatch risk, just that some of the risk is offset on a net basis. Derivatives for a given strategy would be considered on a net basis in terms of the *duration* metric that is offset.

#### Example: Pension Risk Transfer (PRT) Repositioning

Consider a PRT transaction where an up-front asset portfolio is received from the client on 1/1 consisting of \$1B of cash and short-term bonds (portfolio asset *duration* = 1, average interest rate = 5%). The liabilities have a *duration* of 10 (average effective interest rate = 4%), so the asset portfolio must be repositioned. The liability *duration* calculation has been simplified for the purposes of this example. It will take ~12 months to reposition the asset portfolio for various reasons (e.g., availability of desired bond issuers, maturities, credit qualities, etc.). For simplicity, the example assumes the initial asset portfolio is sold on day-365 (12/31).

On 1/1 (and throughout the following 12 months), significant bond reinvestment risk exists. For example, if (on 12/31) market interest rates for planned bond purchases drop to 1%, then eventually there will be insufficient assets to pay all policyholder liabilities. However, this risk can be hedged with 12-month forwards; so, when interest rates drop, the derivative increases in value thereby eliminating the yield and *duration* deficit of the assets vs. liabilities (which essentially locks in the positive yield difference of assets vs. liabilities on 1/1). Alternatively, if interest rates rise, the derivatives would generate a loss, but that loss would be offset by the ability to invest in higher yielding assets.

In combination, the bonds and derivatives are intended to earn the yield needed to support the liabilities. Without these transactions, the total yield on assets would not be aligned with the

presumed yield required to meet product obligations over the entire life of the product. See examples below:

### Duration View (1% Change)

Unhedged initial position (t=0):										
	(A) Assets SV (Stat BS)	(B) Asset MV	(C) Asset Duration	(D) Asset DV01	(E) Liability SV (Reserves, Stat BS)	(F) Liability MV (Reserves)	(G) Liability Duration	(H) Liability DV01	(I=D-H) Surplus DV01	
Bonds	\$1B	\$1B	1.0	\$100K	\$1B	\$1B	10.0	\$1M	-\$900K	
Hedged initial position (t=0):										
	(A) Assets SV (Stat BS)	(B) Asset MV	(C) Asset Duration	(D) Asset DV01	(E) Liability SV (Reserves, Stat BS)	(F) Liability MV (Reserves)	(G) Liability Duration	(H) Liability DV01	(I=D-H) Surplus DV01	
Bonds	\$1B	\$1B	1.0	\$100K	\$1B	\$1B	10.0	\$1M		
Hedges	\$0	\$0	9.0*	\$900K						
Total	\$1B	\$1B	10.0	\$1M	\$1B	\$1B	10.0	\$1M	\$0	
* Hedge duration included based on a \$1B notional for ease of understanding.										

Potential scenarios (t=1) at MV (Economic view):				
	Rates -1%	Rates unch.	Rates +1%	
Bonds	\$1,010M	\$1B	\$990M	
Hedges	\$90M	\$0	-\$90M	
Total Assets**	\$1,100M	\$1B	\$900M	
Reserves	\$1,100M	\$1B	\$900M	
Surplus Change (No Hedge)	-\$90M	\$0	+\$90M	
Surplus Change (With Hedge)	\$0	\$0	\$0	
Potential scenarios (t=1) at SV (Statutory view):				
	Rates -1%	Rates unch.	Rates +1%	
Bonds	\$1B	\$1B	\$1B	
Hedges	\$90M	\$0M	-\$90M	
Total Assets**	\$1,190M	\$1,100M	\$1,010M	
Reserves	\$1B	\$1B	\$1B	
URCGL (Surplus)	\$90M	\$0M	-\$90M	
** For simplicity, hedges are considered part of Assets regardless of gain or loss position.				

## Statutory &amp; Yield View (1% Change)

Company will receive \$1B premium in short-term bonds												
After year 1, Company invests \$1B in longer term bonds to support the liabilities												
Short-term bond yields and to be purchased longer term bonds' current interest rates are 5% (i.e., flat yield curve)												
Liability effective rate (crediting) is 4%												
Company wants to hedge reinvestment risk on future bond purchases to economically lock in 5% yield												
Company enters into 1 year bond forwards												
Company will realize gain/loss at end of t=1 if rates change												
Calculation of derivative G/L has been simplified to make example intuitive												
Rates Unchanged		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	5%	Interest Income		50	50	50	50	50	50	50	50	50
Deriv G/L at t=1 (EOP)	0	IMR Amort (start BOY2)		-	-	-	-	-	-	-	-	-
		Total Income		50	50	50	50	50	50	50	50	50
		Asset Yield		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		10	10	10	10	10	10	10	10	10
		Net Yield		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Balance Sheet												
		IMR		-	-	-	-	-	-	-	-	-
		Surplus (Retained earnings)		10	20	30	40	50	60	70	80	90
Rates -1%		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	4%	Interest Income		40	40	40	40	40	40	40	40	40
Deriv G/L at t=1 (EOP)	90	IMR Amort (start BOY2)		10	10	10	10	10	10	10	10	10
		Total Income		50	50	50	50	50	50	50	50	50
		Asset Yield		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		10	10	10	10	10	10	10	10	10
		Net Yield		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Balance Sheet												
		IMR		80	70	60	50	40	30	20	10	-
		Surplus (Retained earnings)		10	20	30	40	50	60	70	80	90
Rates +1%		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	6%	Interest Income		60	60	60	60	60	60	60	60	60
Deriv G/L at t=1 (EOP)	(90)	IMR Amort (start BOY2)		(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
		Total Income		50	50	50	50	50	50	50	50	50
		Asset Yield		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		10	10	10	10	10	10	10	10	10
		Net Yield		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Balance Sheet												
		IMR		(80)	(70)	(60)	(50)	(40)	(30)	(20)	(10)	-
		Surplus (Retained earnings)		10	20	30	40	50	60	70	80	90



Assume the same situation as above, and Company hedged their reinvestment risk, but was not able to defer any resulting hedge realized gains or losses to the IMR. The resulting statutory statements would appear as follows, giving a distorted view of the Company's financial position and solvency:

Rates Unchanged		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	5%	Interest Income		50	50	50	50	50	50	50	50	50
Deriv G/L at t=1 (EOP)	0	Realized G/L		-	-	-	-	-	-	-	-	-
		Total Income		50	50	50	50	50	50	50	50	50
		Asset Yield		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		10	10	10	10	10	10	10	10	10
		Net Yield		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<u>Balance Sheet</u>												
IMR				-	-	-	-	-	-	-	-	-
Surplus (Retained earnings)				10	20	30	40	50	60	70	80	90
Rates -1%		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	4%	Interest Income		40	40	40	40	40	40	40	40	40
Deriv G/L at t=1 (EOP)	90	Realized G/L		90	-	-	-	-	-	-	-	-
		Total Income		130	40	40	40	40	40	40	40	40
		Asset Yield		13.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		90	-	-	-	-	-	-	-	-
		Net Yield		9.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<u>Balance Sheet</u>												
IMR				-	-	-	-	-	-	-	-	-
Surplus (Retained earnings)				90	90	90	90	90	90	90	90	90
Rates +1%		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	6%	Interest Income		60	60	60	60	60	60	60	60	60
Deriv G/L at t=1 (EOP)	(90)	Realized G/L		(90)	-	-	-	-	-	-	-	-
		Total Income		(30)	60	60	60	60	60	60	60	60
		Asset Yield		-3.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		(70)	20	20	20	20	20	20	20	20
		Net Yield		-7.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<u>Balance Sheet</u>												
IMR				-	-	-	-	-	-	-	-	-
Surplus (Retained earnings)				(70)	(50)	(30)	(10)	10	30	50	70	90

Now let's assume the same situation, but the Company did not exercise prudent risk management and did not hedge their reinvestment risk. If rates decreased 2%, the resulting statutory statements would appear as follows, and the Company may not be able to meet their policyholder obligations:

Rates -2%		End of Year	1	2	3	4	5	6	7	8	9	10
Bond Yield at t=1 (EOP)	3%	Interest Income		30	30	30	30	30	30	30	30	30
Deriv G/L at t=1 (EOP)	0	Realized G/L		-	-	-	-	-	-	-	-	-
		Total Income		30	30	30	30	30	30	30	30	30
		Asset Yield		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
		Crediting		40	40	40	40	40	40	40	40	40
		Liability Yield		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
		Net Income		(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
		Net Yield		-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
<b>Balance Sheet</b>												
IMR				-	-	-	-	-	-	-	-	-
Surplus (Retained earnings)				(10)	(20)	(30)	(40)	(50)	(60)	(70)	(80)	(90)

### Example: Single Premium Fixed Deferred Annuity (FDA)

Options and swaps are frequently used to hedge potential dis-intermediation and extension risk in insurance products. These examples are focused on the disintermediation risk in Fixed Deferred Annuities (FDA), which have an uncertain timing of potential realization of both derivative side and liability side gains or losses.

We start with a single 7-year single premium FDA product with \$1,000 of initial premium and a surrender charge of 7% in the first 4-years, then grading down to 3% from years 5-7. We issue policy when the 7-year treasury rate is 4.5%, and assume a credit spread of 1%. The fixed crediting rate for the guarantee period is 4.5%.

We invest our cash in a 7-year zero coupon bond to match to maturity of the contract. To manage the embedded option inside the product, we need an out-of-the-money, American exercise, 7-year put option on a 7-year bond (with declining maturity). Because these are not readily available instruments, we instead purchase two payer swaptions: one with a 2-year maturity on 5-year swap, and one with a 5-year options on a 2-year swap to cover majority of the exposure to potential losses due to early surrenders if rates were to spike up. Because of surrender charges, we need protection that is 100-200 basis points out of the money, so we purchase options with a 6% Strike. These options cost \$~14, the remaining \$986 is invested in bonds.

In all the cases below, where we illustrate amortization of the IMR, we conservatively amortize it from the time of realization to contract maturity ( year 8 of the projection). Also, for simplicity purposes we did not amortize the upfront cost of the option and excluded taxes and expenses.

We start by looking at what happens in the scenario where interest rates don't move – Table 1. Here the options are expected to mature worthless, and we expect to realize the loss of premium in years 2 and 5.

The point of these simplified examples is to show that timing of realization of derivatives gains and losses (even when utilizing a buy-and-hold investment strategy) varies significantly from bonds and can introduce unintentional accounting volatility if the derivatives are not IMR eligible. This example is abstracted from real life practice, as it focuses on a single issuance cohort to

illustrate how the hedges, assets and liabilities could interact and therefore overstates the ease with which one may identify excess vs expected surrenders and what assets and derivatives are related to particular liabilities (i.e. the examples assume that the surrenders do not meet the excess withdrawal rules as they focus on just a single cohort that is part of a much broader mix of cohorts). We also use a static hedge portfolio for clarity of illustration. However, in reality, an evolving going concern book of business, with a mix of issuance cohorts is managed dynamically using a variety of instruments and strategies, where the realization of the derivatives gains and losses can be even more time-mismatched than this illustration. The purpose of these examples is to illustrate the appropriateness of IMR eligibility for derivatives consistently with bonds. Separately, excess withdrawals can be addressed in the future (e.g., consistently for derivatives and bonds).

The following examples will demonstrate that it is imperative (1) to use derivatives to hedge interest rate risk (which should be a shared goal of regulators and insurers); (2) to treat derivative gains/losses in a manner consistent with gains/losses on bonds; (3) to have accounting policies that do not disincentivize hedging or risk reduction practices by introducing non-economic income and surplus volatility.

### Scenario 1. Interest rates stay the same as they were at issue, no excess surrenders.

Projection Year	T=0	1	2	3	4	5	6	7	8
Treasury Rate	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Asset Yield	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Surrender Value	930	972	1,016	1,061	1,121	1,184	1,250	1,320	1,422
Bond at Fair Value	986	1,041	1,098	1,158	1,222	1,289	1,360	1,435	92
<b>Assets</b>									
1 Bond Book Value	986	1,041	1,098	1,158	1,222	1,289	1,360	1,435	92
2 Market Value of derivative	14	8	4	3	1	-	-	-	-
3 Total Asset Book Value	1,000	1,049	1,102	1,161	1,223	1,289	1,360	1,435	92
<b>Liabilities</b>									
4 Account Value/Reserve	1,000	1,045	1,092	1,141	1,193	1,246	1,302	1,361	0
5 IMR Liability	-	-	(6)	(5)	(4)	(8)	(5)	(3)	-
<b>Surplus</b>	-	4	16	25	35	51	63	77	92
<b>Net Income</b>									
6 Interest Income	-	54	57	60	64	67	71	75	79
7 IMR Amortization (Derivatives)	-	-	(1)	(1)	(1)	(3)	(3)	(3)	(3)
8 IMR Amortization (Bond)	-	-	-	-	-	-	-	-	-
9 Premium (Claim)	1,000	-	-	-	-	-	-	-	(1,422)
10 Change in Liability Reserve	(1,000)	(45)	(47)	(49)	(51)	(54)	(56)	(59)	1,361
11 G/L on Liquidated Bonds	-	-	-	-	-	-	-	-	-
12 Derivative Loss	-	0	(7)	0	0	(6)	0	0	0
13 Net Income (held FV no IMR)	-	9	3	11	12	7	15	16	18
14 Net Income (held FV transfer to IMR)	-	9	9	10	11	11	12	14	15
15 Net Income (held amt cost transfer to IMR)	-	9	9	10	11	11	12	14	15
16 Chg in Surplus (held FV no IMR)	-	4	6	10	11	12	15	16	18
17 Chg in Surplus (held FV transfer to IMR)	-	4	12	9	10	16	12	14	15
18 Chg in Surplus (held amt cost transfer to IMR)	-	9	9	10	11	11	12	14	15
19 Surplus (held FV no IMR)	-	4	10	20	31	43	58	74	92
20 Surplus (held FV transfer to IMR)	-	4	16	25	35	51	63	77	92
21 Surplus (held amt cost transfer to IMR)	-	9	18	29	40	51	63	77	92

We can see in line 13, option losses introduce income volatility in years 2 and 5 and the change in surplus on lines 16-17 show non-economic surplus volatility due to expiry (early years lower surplus) If everything else happens as expected the cost of managing the “unrealized” risk should have been amortized over the life of the product, showing a smoother emergence of surplus in line 18 and consistent with Net Income in line 15. Sections highlighted in yellow illustrate inconsistency of accounting through the balance sheet and income statement from inconsistent treatment of derivatives from the rest of the block of business, which creates confusing views of either income or surplus/solvency. Meanwhile, when derivatives are treated on a consistent basis, as highlighted in green, surplus and income emerge in the same way that is more aligned to the block’s decay of risk, and emergence of profits. We see that divergence go away after year 5, in all the measures once the derivatives are off the books.

**Scenario 2. Interest Rates stay as they were at issue, but we have an unexpected \$500 surrender in year 4.**

Projection Year	T=0	1	2	3	4	5	6	7	8
Treasury Rate	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Asset Yield	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Surrender Value	930	972	1,016	1,061	1,121	656	693	731	788
Bond at Fair Value	986	1,041	1,098	1,158	722	762	804	848	107
<b>Assets</b>									
1 Bond Book Value	986	1,041	1,098	1,158	722	762	804	848	107
2 Market Value of derivative	14	8	4	3	1	-	-	-	-
3 Total Asset Book Value	1,000	1,049	1,102	1,161	723	762	804	848	107
<b>Liabilities</b>									
4 Account Value/Reserve	1,000	1,045	1,092	1,141	661	690	721	754	0
5 IMR Liability	-	-	(6)	(5)	(4)	(8)	(5)	(3)	-
<b>Surplus</b>	-	4	16	25	67	79	87	97	107
<b>Net Income</b>									
6 Interest Income	-	54	57	60	64	40	42	44	47
7 IMR Amortization (Derivatives)	-	-	(1)	(1)	(1)	(3)	(3)	(3)	(3)
8 IMR Amortization (Bond)	-	-	-	-	-	-	-	-	-
9 Premium (Claim)	1,000	-	-	-	(500)	-	-	-	(788)
10 Change in Liability Reserve	(1,000)	(45)	(47)	(49)	481	(30)	(31)	(32)	754
11 G/L on Liquidated Bonds	-	-	-	-	-	-	-	-	-
12 Derivative Loss		0	(7)	0	0	(6)	0	0	0
13 Net Income (held FV no IMR)		9	3	11	44	3	11	12	13
14 Net Income (held FV transfer to IMR)		9	9	10	43	7	8	9	10
15 Net Income (held amt cost transfer to IMR)		9	9	10	43	7	8	9	10
16 Chg in Surplus (held FV no IMR)		4	6	10	43	9	11	12	13
17 Chg in Surplus (held FV transfer to IMR)		4	12	9	42	12	8	9	10
18 Chg in Surplus (held amt cost transfer to IMR)		9	9	10	43	7	8	9	10
19 Surplus (held FV no IMR)		4	10	20	63	71	82	94	107
20 Surplus (held FV transfer to IMR)	-	4	16	25	67	79	87	97	107
21 Surplus (held amt cost transfer to IMR)		9	18	29	72	79	87	97	107

In this scenario there is no gain or loss on the bonds, and the surrender charges create a windfall in year 4. But derivatives, cause unexpected income volatility in years 2 & 5, if not amortized through IMR, as illustrated in net income lines 13 (without IMR). Years 1-5, highlighted in yellow, show uneconomic volatility and divergence between net income (lines 13 & 14) and change in surplus (on lines 16 & 17) due to the inconsistent treatment of the derivatives.

### Scenario 3 interest rates jump 300 bps to 7.5% in year 2, but no excess surrenders are seen

Projection Year	T=0	1	2	3	4	5	6	7	8
Treasury Rate	4.50%	4.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%
Asset Yield	5.50%	5.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%
Surrender Value	930	972	1,016	1,061	1,121	1,184	1,250	1,320	1,463
Bond at Fair Value	986	1,041	1,006	1,092	1,185	1,310	1,421	1,542	210
<b>Assets</b>									
1 Bond Book Value	986	1,041	1,150	1,215	1,283	1,380	1,459	1,542	210
2 Market Value of derivative	14	8	24	24	24	-	-	-	-
3 Total Asset Book Value	1,000	1,049	1,174	1,239	1,308	1,380	1,459	1,542	210
<b>Liabilities</b>									
4 Account Value/Reserve	1,000	1,045	1,092	1,141	1,193	1,246	1,302	1,361	0
5 IMR Liability	-	-	38	32	26	33	22	11	-
<b>Surplus</b>	-	4	43	66	89	101	135	170	210
<b>Net Income</b>									
6 Interest Income	-	54	57	65	68	72	79	83	131
7 IMR Amortization (Derivatives)	-	-	6	6	6	11	11	11	11
8 IMR Amortization (Bond)	-	-	-	-	-	-	-	-	-
9 Premium (Claim)	1,000	-	-	-	-	-	-	-	(1,463)
10 Change in Liability Reserve	(1,000)	(45)	(47)	(49)	(51)	(54)	(56)	(59)	1,361
11 G/L on Liquidated Bonds	-	-	-	-	-	-	-	-	-
12 Derivative Gain		0	45	0	0	18	0	0	0
13 Net Income (held FV no IMR)		9	55	16	17	37	23	25	29
14 Net Income (held FV transfer to IMR)		9	17	22	24	30	33	36	40
15 Net Income (held amt cost transfer to IMR)		9	17	22	24	30	33	36	40
16 Chg in Surplus (held FV no IMR)		4	78	16	17	19	23	25	29
17 Chg in Surplus (held FV transfer to IMR)		4	40	22	24	12	33	36	40
18 Chg in Surplus (held amt cost transfer to IMR)		9	17	22	24	30	33	36	40
19 Surplus (held FV no IMR)		4	82	98	115	134	157	181	210
20 Surplus (held FV transfer to IMR)	-	4	43	66	89	101	135	170	210
21 Surplus (held amt cost transfer to IMR)		9	26	48	71	101	135	170	210

This scenario creates a windfall from derivatives in year 2 & 5 of \$45 and \$18. If there are no surrenders in year 2, this will create an unrealistic surplus bump in year 2, which may be consumed by a surrender in any of the following years, and hence should not be released into income or surplus at that time, similar holds for the value of the option that matures in year 5.

However, Lines 15 and 18 (highlighted in green) above show significantly smoother NII and Surplus when derivative gains are treated consistently with other fixed income and transferred to the IMR. Also, when derivatives are treated consistently with the rest of the assets and liabilities, there is no disconnect between income and surplus.

**Scenario 4 – interest rates go up 300 bps and we see a 500 M surrender in year 4.**

Projection Year	T=0	1	2	3	4	5	6	7	8
Treasury Rate	4.50%	4.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%
Asset Yield	5.50%	5.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%
Surrender Value	930	972	1,016	1,061	1,121	656	693	731	810
Bond at Fair Value	986	1,041	1,006	1,092	685	767	833	903	170
<b>Assets</b>									
1 Bond Book Value	986	1,041	1,150	1,215	739	806	853	903	170
2 Market Value of derivative	14	8	24	24	24		-	-	-
3 Total Asset Book Value	1,000	1,049	1,174	1,239	764	806	853	903	170
<b>Liabilities</b>									
4 Account Value/Reserve	1,000	1,045	1,092	1,141	661	690	721	754	0
5 IMR Liability	-		38	32	(10)	6	4	2	-
<b>Surplus</b>	-	4	43	66	113	110	128	147	170
<b>Net Income</b>									
6 Interest Income	-	54	57	65	68	42	47	50	77
7 IMR Amortization (Derivative)	-	-	6	6	6	11	11	11	11
8 IMR Amortization (Bond)	-	-	-	-	(9)	(9)	(9)	(9)	(9)
9 Premium (Claim)	1,000	-	-	-	(500)	-	-	-	(810)
10 Change in Liability Reserve	(1,000)	(45)	(47)	(49)	481	(30)	(31)	(32)	754
11 G/L on Liquidated Bonds	-	-	-	-	(43.88)	-	-	-	-
12 Derivative Gain	-	0	45	0	0	18	0	0	0
13 Net Income (held FV no IMR)	-	9	55	16	40	22	7	9	11
14 Net Income (held FV transfer to IMR)	-	9	17	22	47	15	18	20	22
15 Net Income (held amt cost transfer to IMR)	-	9	17	22	47	15	18	20	22
16 Chg in Surplus (held FV no IMR)	-	4	78	16	40	4	7	9	11
17 Chg in Surplus (held FV transfer to IMR)	-	4	40	22	47	(3)	18	20	22
18 Chg in Surplus (held amt cost transfer to IMR)	-	9	17	22	47	15	18	20	22
19 Surplus (held FV no IMR)	-	4	82	98	138	142	150	158	170
20 Surplus (held FV transfer to IMR)	-	4	43	66	113	110	128	147	170
21 Surplus (held amt cost transfer to IMR)	-	9	26	48	95	110	128	147	170

In this case, in year 1, we see the same surplus drag from the decay of market value as in the prior scenarios. We see the payout of the first option in year 2, before the surrender in year 4, creating outsized income and surplus in year 2 in lines 13, 16 & 17. If options are not included in IMR (line 16) there is a windfall in surplus in year 2 and there is a big drop in surplus in year 5. Treating derivatives consistently with assets and liabilities creates a much more reasonable profile of surplus and income, consistent with timing of the realization of the risk.

**Scenario 5 - In Scenario 5 rate environment same as Scenario 4 but surrenders happen gradually starting in years 2 through 6.**

Projection Year	T=0	1	2	3	4	5	6	7	8
Treasury Rate	4.50%	4.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%
Asset Yield	5.50%	5.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%
Surrender Value	930	972	1,016	852	689	516	334	247	274
Bond at Fair Value	986	1,041	806	675	532	402	336	365	122
<b>Assets</b>									
1 Bond Book Value	986	1,041	920	748	573	420	343	365	122
2 Market Value of derivative	14	8	24	24	24		-	-	-
3 Total Asset Book Value	1,000	1,049	944	772	598	420	343	365	122
<b>Liabilities</b>									
4 Account Value/Reserve	1,000	1,045	877	701	520	333	244	255	0
5 IMR Liability		-	13	(9)	(21)	(11)	(9)	(5)	-
<b>Surplus</b>	-	4	54	80	99	98	108	114	122
<b>Net Income</b>									
6 Interest Income		54	57	52	43	33	26	22	31
7 IMR Amortization (Derivative)		-	6	6	6	11	11	11	11
8 IMR Amortization (Bond)		-	(4)	(8)	(12)	(15)	(16)	(16)	(16)
9 Premium (Claim)	1,000	-	(200)	(200)	(200)	(200)	(100)	-	(274)
10 Change in Liability Reserve	(1,000)	(45)	168	176	181	187	89	(11)	255
11 G/L on Liquidated Bonds		-	(30.10)	(23.74)	(17.55)	(11.54)	(2.84)	-	-
12 Derivative Gain		0	45	0	0	18	0	0	0
13 Net Income (held FV no IMR)		9	66	19	12	24	(1)	(5)	(4)
14 Net Income (held FV transfer to IMR)		9	27	26	19	17	10	6	7
15 Net Income (held amt cost transfer to IMR)		9	27	26	19	17	10	6	7
16 Chg in Surplus (held FV no IMR)		4	89	20	12	6	(1)	(5)	(4)
17 Chg in Surplus (held FV transfer to IMR)		4	51	26	19	(1)	10	6	7
18 Chg in Surplus (held amt cost transfer to IMR)		9	27	26	19	17	10	6	7
19 Surplus (held FV no IMR)		4	93	112	125	131	130	125	122
20 Surplus (held FV transfer to IMR)	-	4	54	80	99	98	108	114	122
21 Surplus (held amt cost transfer to IMR)		9	37	62	81	98	108	114	122

Here, with different emergence of losses on bonds and gains on the derivatives the surplus and income are much more volatile without the symmetrical reflection of derivatives gains and losses in IMR. Even though surrenders start to happen in year 2, when we see the first gain on the derivatives, there is still an overwhelming windfall from the derivatives because of how it is sized compared to the surrender. Lines 15 & 18, show a much more reasonable profile of net income and surplus emergence than holding at fair value without IMR treatment as shown on lines 13 & 16.

## Conclusion

In summary, the needs of US life insurers within the context of the US statutory accounting framework are broader than contemplated in the existing derivative and hedge accounting framework. The risks faced are often not fully visible within the financial statements, and therefore require additional risk management practices. The US GAAP hedge accounting framework does not adequately address these specific needs (i.e., *duration*, as it is not a true “balance sheet item”).

Insurers use derivatives to achieve the same results as buying and selling fixed income investments. Very often however, buying and selling fixed income investments would be inefficient, or the necessary investments do not exist. As fixed income investments are IMR eligible, and interest rate derivatives can be a substitute for them, removing IMR eligibility for their realized gains and losses would misalign the necessary economic picture insurers need to prudently enact their risk or ALM practices.

In order to avoid unintended disincentives against prudent behavior, all economically effective interest rate hedging derivatives should remain IMR eligible. Further, the hedge accounting effectiveness assessment requirements, at a minimum, should be revisited in relation to these hedging strategies so that impacts to surplus are appropriately recognized both during the derivatives' life and at termination.



## Appendix I – IMR in the context of Derivative Hedging Transactions

The applicability of the IMR construct to gains or losses from derivative hedging transactions flows from the concepts outlined in the earlier text. To illustrate its importance within plausible ALM strategies, the example outlined here assumes a more complex and realistic set of insurance liabilities.

### Example 3

Assume Company XYZ issues life insurance contracts where the premiums come in each year until death and there is a payment upon death estimated to occur at the end of 5 years. Assume Company XYZ is again starting out with \$10 of surplus invested in equity securities (again, assume no change in value over the period of valuation). The current interest rate environment is such that the fixed income bond yield and the insurance liability valuation rate are again both 4%, and Company XYZ:

- Sells 100 insurance contracts that pay \$1 upon death for yearly premiums of 18.47 cents at the end of each year 1 through 5.
- Purchases bonds with a coupon rate of 4%, with all premiums and coupons received, maturing at the anticipated time of death in 5 years.
- Assume the market yield of 4% is constant throughout the 5-year period.

Company XYZ's balance sheet for each year, using a simplified net premium calculation for reserves, would look like Figure H.

Figure H						
	Assets			Liabilities and Surplus		
Year	Bonds	Equities	Total	Insurance Liability	Surplus	Total
1	18.47	10.00	28.47	18.47	10.00	28.47
2	37.67	10.00	47.67	37.67	10.00	47.67
3	57.64	10.00	67.64	57.64	10.00	67.64
4	78.40	10.00	88.40	78.40	10.00	88.40
5	100.00	10.00	110.00	100.00	10.00	110.00

Company XYZ can pay all claims on the policy and the balance sheet surplus appropriately reflects surplus at the end of each reporting period. In the real world with this more dynamic pool of liabilities, other changes could occur, such as one or multiple of:

- Interest rates could decline, and coupon and premium payments would not be able to be invested at 4%.
- Death benefits could be paid at a point in time greater than the invested bond maturity and if interest rates decline, the bond would not be able to be re-invested at 4%.
- Policy surrenders could occur, including due to changes in market interest rates, causing the claims patterns to change from expectations.

Amidst this real-world uncertainty, Company XYZ could consider any of the following risk mitigating activities, which inherently depend upon its mix of insurance liabilities:

- Accept the risk of future asset and liability cash flow fluctuations, which could result in an inability pay claims in certain situations. For instance, if interest rates declined, the coupon payments, premium payments, and/or maturities would not be able to be re-invested in fixed income investments that have sufficient yield to pay claims as expected.
- Charge higher premiums at inception to account for the reinvestment risk and *duration* risk associated with the insurance liabilities.

- Manage the investment portfolio to a prudent liability *duration* or any number of appropriate and prudent asset liability management (ALM) strategies.
- Prudently hedge with derivatives within the ALM strategy. Such derivative usage strategies are used where purchases are not viable or where it is more efficient to utilize derivatives.

If the derivative strategy is applied, the reinvestment risk could be hedged to lock in a 4% yield. When interest rates fluctuate, any gain or loss on the derivative offsets the lower or higher actual yield that is received on the reinvestments.

In Example 3, if interest rates plunged to 0% on day 2, Company XYZ would not be able to support the liabilities because future premiums and coupons would not be able to be reinvested at 4%. If Company XYZ had hedged reinvestment risk, they would have a gain on derivatives equal to the economic loss of not being able to invest at 4%. Similarly, if interest rates doubled to 8%, Company XYZ would have a loss on derivatives equal to the economic gain of now being able to invest at the much higher interest rate of 8%. In both cases, Company XYZ has hedged reinvestment risk and has not changed the solvency picture in Example 3.

In summary, IMR is appropriate for all types of fixed income investments, including derivatives which alter the interest rate characteristics of assets/liabilities, for all realized capital gains and losses which result from changes in the overall level of interest rates as they occur.

## Appendix II – Glossary

These terms are commonly used in these strategies and/or included in the document, therefore are defined here for common understanding.

- “Duration” is a measure of interest rate sensitivity related to the sensitivity of the market value of an instrument for a given change in interest rates, when the entire curve is shifted. This may be based on MacAuley, modified, or effective duration metrics. Shocks may be based on par curve, spot curve, or other similar methods.

$$Duration = \frac{PV_{CF}(Starting\ Yield\ Curve - 1bp) - PV_{CF}(Starting\ Yield\ Curve)}{PV_{CF}(Starting\ Yield\ Curve) * 0.0001} = \frac{DV01}{PV_{CF}(Starting\ Yield\ Curve) * 0.0001}$$

- “Convexity” is measure of the curvature of how price changes with respect to interest rates. Alternatively, it is the change in duration for changes in interest rates.

$$Convexity = DV01(Starting\ Yield\ Curve - 1bp) - DV01(Starting\ Yield\ Curve)$$

- “Duration dollars” is a measure of interest rate sensitivity when the entire curve is shifted, and is the duration times the market value of an instrument.
- “DV01” is a measure of interest rate sensitivity of how much the market value of an instrument changes, in dollars or other currency, for a 1 bps move in rates when the entire curve is shifted. It may be calculated off of a larger shock and scaled to a 1 bp size.

Dollar

$$DV01 = PV_{CF}(Starting\ Yield\ Curve - 1bp) - PV_{CF}(Starting\ Yield\ Curve)$$

Value

1 Basis Point

- “Key rate duration (KRD)” is similar to duration but represents the impact when a shock is applied to a specific bucket or set of maturities along the curve. The buckets to be used are not prescribed and can be determined by a given firm. The sum of all key rate exposures is very close to the overall duration
- “Key rate duration dollars” is similar to duration dollar but represents the impact when a shock is applied to a specific bucket or set of maturities along the curve. The buckets to be used are not prescribed and can be determined by a given firm.
- “Key rate DV01” is similar to DV01 but represents the impact when a shock is applied to a specific bucket or set of maturities along the curve. The buckets to be used are not prescribed and can be determined by a given firm.

## Appendix II

### Special Accounting Provision Proposal for Asset Liability Management (ALM) Derivatives

The “Derivatives and Hedging Under Life Insurance and the NAIC’s Statutory Framework” memo concluded:

- In summary, the needs of US life insurers within the context of the US statutory accounting (US Stat) framework are broader than contemplated in the existing derivative and hedge accounting framework. The risks faced are often not fully visible within the financial statements, and therefore require additional risk management practices. The US GAAP hedge accounting framework does not adequately address these specific needs (i.e., ALM exposures, like duration, as they are not true “balance sheet items,” but instead contribute to the volatility of other balance sheet items as financial markets move).
- Insurers use derivatives to achieve the same results as buying and selling fixed income investments. Very often however, buying and selling fixed income investments is inefficient or the necessary investments do not exist or are illiquid. As fixed income investments are IMR eligible, and interest rate derivatives can be a substitute for them, removing IMR eligibility for their realized gains and losses would misalign the appropriate economic portrayal of insurer solvency and be contrary to the goal of prudently enacting their risk management and ALM practices.
- To avoid unintended disincentives against prudent behavior, all derivative instruments that are economically effective in hedging interest rate risks should remain IMR eligible. Further, the accounting should be revisited in relation to these hedging strategies so that impacts to surplus are appropriately recognized both during the derivatives’ life and at termination.

This document expands on the above conclusion that derivatives used in interest rate hedging should remain IMR eligible and proposes updates to accounting for derivative IMR that reflect the economics of hedging activities while still presenting financial statements that appropriately reflect financial condition.

#### Current State

In 2023, the NAIC adopted interim guidance that allows for the admission of negative IMR up to 10% of surplus (excluding DTA, goodwill, etc.), which may include negative IMR generated by interest related realized gains and losses on fair value derivatives (as long as positive IMR generated by derivatives was previously admitted by the insurance company).

Current guidance highlights (including the interim IMR guidance):

- Per IMR instructions (2023 NAIC Annual Statement Instructions for LAH companies, pages 343-357), it is appropriate to include hedges in IMR:
  - For derivative instruments used in hedging transactions, the determination of whether the capital gains/(losses) are allocable to the IMR or the AVR is based on how the underlying asset is treated

- Realized gains/(losses), on derivative transactions entered into solely for the purpose of altering the interest rate characteristics of the company's assets and/or liabilities (hedging transactions) should be allocated to the IMR and amortized over the life of the hedged assets
- Note: "hedging transactions" are defined as derivative transactions which reduce the risk of a change in fair value or cash flow of assets and liabilities (SSAP 86, paragraph 8) and not whether the derivative is deemed "qualified" under US STAT for hedge accounting treatment
- While industry practice varies, many companies amortize gains and losses generated by certain derivatives hedging interest rates through IMR over the average maturity of the invested assets in the hedged portfolio
- Derivatives that qualify for hedge accounting treatment are reported using the same valuation method as the hedged asset (i.e., a derivative hedging bonds will be held at amortized cost)
- Statutory accounting guidance does not allow for a hedge accounting model specific to or sufficient for ALM hedges
  - Therefore, to achieve hedge accounting, interest rate derivatives must be linked to specific assets or liabilities and prove to be highly effective at offsetting their changes in cash flows or fair value from interest rate movements.
  - As noted in previously referenced memos, many of these hedging programs are calibrated on a portfolio basis and the existing hedge accounting frameworks do not address this type of hedging construct (i.e., focused on more of a fixed "1x1" relationship construct, as opposed to a dynamic portfolio of assets and liabilities).
  - As a result, many insurance companies with ALM and portfolio duration hedging programs mark their derivatives to market through surplus (unrealized gains/losses) and reclass realized gains/losses to IMR at termination/maturity.
    - This causes surplus volatility that does not reflect the economics of the hedging transactions (which ironically are intended to mitigate surplus volatility; see examples in the previously referenced memo)

**More specifically, three items have been proposed for review given perceived shortfalls in current statutory accounting related to derivative accounting and IMR:**

- 1) Effectiveness assessment methods for ALM hedging,
- 2) Accounting for hedges entered into and maintained in a manner consistent with the definition of IMR without causing inappropriate surplus volatility, and
- 3) Guidelines for the amortization of derivatives gains or losses that have been deferred to IMR.

## Background

Current derivative accounting under SSAP No. 86 includes four categories of derivatives, none of which include speculative derivatives (which are disallowed under state insurance laws):

### *1) Income Generation Transactions*

Income generation transactions are defined as derivatives written or sold to generate additional income or return to the reporting entity. They include covered options, caps, and floors (e.g., a reporting entity writes an equity call option on stock that it already owns).

Noting derivatives cannot be speculative, per SSAP 86, paragraphs 47 and 48, as well as state derivatives laws, income generation transactions are limited to “covered” transactions.

Derivative gains and losses are based on how the underlying interest (for a put) or covering asset (for a call, cap or floor) is treated. Therefore, if the underlying/covering asset is IMR eligible (e.g., a bond), the derivative gains and losses go to IMR. If it is not IMR eligible (e.g., equity), the derivative gains or losses do not go to IMR.

### *2) Replication (Synthetic Asset) Transactions (RSATs)*

RSATs are entered into in conjunction with other investments to reproduce the investment characteristics of otherwise permissible investments. Hedging or income generation transactions shall not be considered an RSAT. Derivative gains and losses follow those of the replicated investment. If it is IMR eligible, the derivative gains and losses go to IMR. If it is not IMR eligible, the derivative gains or losses do not go to IMR.

### *3) Other Derivatives (Derivatives that are not used in hedging, income generation, or replication transactions)*

Other derivatives are non-admitted under statutory accounting, examples include structured notes or private warrants. Given that state insurance law does not allow companies to engage in speculation using derivative instruments, any derivatives included in this category must still comply with state insurance law, which defines them as derivatives not used for hedging, income generation, or replication. Therefore, by default, they must be one of the aforementioned examples or a similar such instrument.

### *4) Hedging Transactions*

Hedging transactions are defined as derivatives which reduce the risk of a change in fair value or cash flow of assets and liabilities. As mentioned previously, all hedges must be legally effective to comply with state insurance laws, and companies are not allowed to speculate using derivatives. There is no additional or prescriptive effectiveness assessment requirement within SSAP No. 86, unless companies elect hedge accounting under SSAP No. 86 or 108 (see additional detail below).

The US Stat framework for hedging transactions is largely aligned with US GAAP accounting, with a few variations due to the broader valuation standards within the accounting frameworks (ie., amortized cost

versus fair value). Hedging transactions that do not attain hedge accounting are carried at market value with unrealized gains and losses in surplus (under US Stat). This is aligned with US GAAP, except that US GAAP allows reporting of unrealized gains/losses within the P&L. US Stat does not use these concepts. Hereafter the “default” hedging transactions that are not designated as Hedge Accounting under SSAP No. 86 or 108 will be referred to as “Other Economic Hedges”.

The concept of “Hedge Accounting” (hereafter referred to as “HA Hedges”), a specific subset of hedging derivatives meeting prescriptive requirements, exists in both US Stat (SSAP No. 86 and 108) and US GAAP frameworks (and is also consistent with other accounting frameworks). Under US Stat, hedges for which the entity both elects the treatment and which “meet the criteria of a highly effective hedge shall be considered an effective hedge and are permitted to be valued and reported in a manner that is consistent with the hedged asset or liability.” Under US GAAP accounting, the derivative is carried at fair value regardless of its characterization as a HA Hedge. However, US GAAP HA Hedges receive a geography match, by which the derivative accounting appears in the same financial statement line as the hedged item. Additionally, under US GAAP, the balance sheet is largely carried at fair value for certain investments, so prudent hedging strategies can more easily achieve their purpose of both financial statement and economic risk and volatility mitigation even without hedge accounting treatment.

Under US Stat, any derivative in a HA Hedge relationship is permitted to be valued and reported in a manner that is consistent with the hedged asset or liability (there is nuance between SSAP No 86 and 108, but these are both effectively amortized cost when considering the direct accounting impact of the derivative(s) within surplus). As discussed in previous papers, this typically leads to amortized cost accounting (or a form of amortized cost accounting) for interest rate related hedges of assets and liabilities. However, if the derivative cannot achieve, or if the entity does not elect, hedge accounting there is an accounting mismatch between the hedging instrument (derivative at fair value) and the hedged item (asset or liability, often at amortized cost). This means the same prudent transaction would generally reduce volatility under US GAAP (as both are generally mark-to-market, albeit not within the same financial statement line), may actually introduce volatility under US Stat (as the hedged item is typically amortized cost and the derivative is mark-to-market).

While there is some nuance between SSAP 86 and SSAP 108, specifically within the hedge documentation requirements and actual accounting methodology, both could be considered a form of an amortized cost methodology. As a very high-level summary, one method could be thought of as “off Balance Sheet” amortized cost (SSAP No 86) and one method could be thought of as “grossed up Balance Sheet” amortized cost (SSAP No 108). However, both methods ensure that the matched derivative mark-to-market volatility (which is unrealized) is not reflected in surplus.

Many companies treat interest related gains and losses from both Other Economic Hedges and HA Hedges as IMR eligible due to the historical documentation of IMR which noted that:

*Realized gains and losses on derivatives investments, which alter the interest rate characteristics of assets/liabilities, also are allocated to the IMR and are to be amortized into income over the life of the associated assets/liabilities.*

Additionally, for HA Hedges of bonds under SSAP No 86, if the derivative is terminated when the bond is sold, gains and losses on the derivative follow and are aligned with the treatment of the bond’s gains and

losses. If only the derivative is terminated, the derivative gain/loss can either adjust the basis of the bond or be deferred to the IMR. This is consistent with the interpretation from the IMR instructions, which state:

*For derivative instruments used in hedging transactions, the determination of whether the capital gains (losses) are allocable to the IMR or the AVR is based on how the underlying asset is treated. Realized gains (losses) on portfolio or general hedging instruments should be included with the hedged asset. Gains (losses) on hedges used, as specific hedges should be included only if the specific hedged asset is sold or disposed of.*

As stated, insurance companies are often subject to Derivatives Use Plans (many with annual Agreed Upon Procedures by audit firms) filed with regulators. Any Income Generation, RSAT, and Hedging derivatives should not be considered Other Derivatives (and therefore non-admitted) as this would misstate solvency and disincentivize prudent risk management of insurers.

Given the wide variety of prudent hedging strategies required and employed by life insurers, the framework for assessing their effectiveness must be sufficiently flexible, while providing meaningful information to regulators as to their effectiveness. Therefore, it may be best to use the economic hedging framework within SSAP No. 108 for variable annuities where the embedded derivatives on VAs are not marked-to-market, while derivatives hedging the VA risk are. A proposal for requirements to qualify for a special accounting provision for ALM derivatives which effectively hedge interest rate risk is included below.

This proposal should be a company election on an individual program basis. Any Hedging derivatives utilized by the company which either do not meet the provision's criteria or those for which the company does not elect the provision (akin to the election and qualification process for Hedge Accounting under SSAP No. 86 and the special accounting provision under SSAP No. 108), would be considered as Other Economic Hedges under SSAP No. 86 (carried at fair value and gains/losses would not be IMR eligible).

### **ALM Hedging Derivatives Proposal**

Due to uneconomic volatility caused by economical and precise hedges, as well as to prevent concerns related to the transformation of negative surplus to assets, we propose the following solution. This special accounting provision is intended for derivative transactions that alter the interest rate characteristics of assets/liabilities under risk mitigation programs. More specifically, "macro-hedging" ALM programs (which hedge risks that are often not true balance sheet items) and therefore hedge accounting frameworks do not address this type of hedging construct. This is because the duration and convexity of asset and liability may differ and when interest rates change, asset and liability duration may change by different amounts. Companies manage ALM programs to mitigate reinvestment, guarantee, and disintermediation risks, and to manage asset portfolios within limited ranges around a liability target duration. For these derivative transactions to be IMR eligible, they need to hedge assets/liabilities within the context of the definition and purpose of IMR; that is, to provide consistency between asset and liability measurement so solvency is accurately reflected.

If this proposal becomes effective, any existing programs with active derivatives could be redesignated (at the proposal implementation/effective date) to the solution proposed herein so as not to cause unintended consequences or disqualify existing programs. ACLI would work with NAIC Staff to determine appropriate accounting for the transition date.



## Definition and Purpose of IMR

IMR is a valuation adjustment to maintain consistency between insurance liabilities (the assumptions for which are often unchanged from origin) and the assets needed to support them (where the assumptions can essentially be revisited any time there are fixed income realizations).

IMR defers and amortizes the recognition of non-economic gains or losses where investment activity, whether through fixed income investment sales or fixed income derivative hedging transactions, essentially unlock unrealized gains/losses for either assets or liabilities. IMR is not intended to defer economic gains and losses related to asset sales compelled by liquidity pressures that fund significant cash outflows (e.g., such as excess withdrawals and collateral calls).

Specifically, the IMR valuation adjustment more appropriately reflects the impact to statutory surplus from fluctuations in interest rates and therefore provides a more accurate representation of solvency under the NAIC's statutory framework which often includes amortized cost valuation of fixed income investments and liability valuations with fixed assumptions in accordance with the Accounting Practices and Procedures and Valuation Manual.

## Program Parameters and Documentation

The entity must document and follow a Clearly Defined Hedging Strategy (CDHS) for each ALM hedging program, which, at a minimum, must identify:

- A. Specific risks being hedged,
- B. Hedge objectives,
- C. Risks not being hedged,
- D. Financial instruments that will be used to hedge the risks (incorporating all potential instruments),
- E. Hedge trading rules, including permitted tolerance from hedging objectives,
- F. Metric(s) used for measuring hedge effectiveness,
- G. Criteria that will be used to measure effectiveness,
- H. Frequency of measuring hedging effectiveness,
- I. Conditions under which hedging will not take place, and
- J. The individuals responsible for implementing the hedging strategy.

The ALM hedging program may be based at a legal entity, product, segment, portfolio, investment strategy, or similar level. Any assessment should be completed at the overall ALM hedging program level and must include all hedged items (assets and/or liabilities) and hedging instruments (derivatives) within each program (aligned with the specifications within the program's CDHS). Specifically, the company should specify in advance the criteria that are being used to test for effectiveness. For example, companies could focus on duration, duration dollars, DV01, key rate durations, key rate duration dollars, and key rate DV01s, among other measures, for this approach (the latter referred to as "Allowed Metric"). At a minimum, one metric needs to be identified. Alternatively, a company may focus on a modeled downside risk measure over a range of interest rate scenarios to show a reduction in risk, such as n-th percentile or conditional tail expectation on the present value of ending surplus (PVES) or similar metric (referred to as "Allowed Modeled Metric.")

The portfolio of derivative positions meeting the quantitative assessment requirements would be eligible for the proposed special accounting provision.

#### *Documentation required at inception*

The Company must document the calculation and measured values for their records in support of initial qualification of the hedging activity/program. There should be a clear determination, in advance of the inception of the program or the trade (if one-off), that the intent of that program/position is to manage the risks noted below. This could include, but is not limited to, identifying a portfolio or other tagging approach to which all derivatives assigned to it would be included. Trades must be designated as included within the ALM hedging program at their inception (except any noted at the time of the transition, which will be identified at transition). Such documentation should be available for review by the firm's external auditor or domiciliary regulator.

#### *Documentation required at each reporting period*

Quantitative effectiveness assessment must occur and be documented at the beginning and end of each reporting period (at a minimum, at least every three months). All derivatives within the designated ALM program must be effective at both measurements to qualify for this special accounting provision. The selected effectiveness assessment and allowed metrics must be specified in the inception documentation (CDHS), see additional details in the "Effectiveness Assessment" section.

#### Effectiveness Assessment

The designated portfolio of assets, liabilities, and derivatives comprising a CDHS within this special accounting provision require a quantitative assessment at the beginning and end of each reporting period (at a minimum, at least every three months). Metric and assessment level (legal entity, etc.) should be consistent with prior periods and how the hedges are calibrated. Changes should be supported by changes in business conditions and hedging strategies and should be infrequent (e.g., not every quarter), with any changes documented in the CDHS (including the effective date of the change and the rationale details for the change). Given that exposure amounts can change day-over-day due to new sales, surrenders, interest rate moves, etc., it is acceptable for a quantitative assessment to reference metrics that are within three months of the assessment.

ALM Hedging Programs under this proposal will follow the guidance in SSAP No. 86, paragraph 23 and 40, as well as Exhibit A, regarding the effectiveness of the derivatives and any excluded components. The inception documentation (CDHS) and any assessment will clearly indicate which component(s) are excluded (e.g., foreign currency rates).

#### Definitions:

- L – the portfolio of liabilities hedged
- A – the portfolio of assets backing liabilities L (excluding derivatives)
- D – the portfolio of derivatives that is hedging the residual ALM exposure of assets and liabilities.
- M(x) – the Allowed Metric for L, A, D, or any linear combination of the three

## Example Assessment Metrics:

### 1. “ALM Risk Reduction Approach”

- In this approach, the company is reducing the mismatches between identified assets and liabilities. The requirement is that the trades that are part of the designated program reduce the risk that would exist without the program. There is not a requirement to offset the entire mismatch. Derivatives for a given strategy or program would be considered on an aggregate basis in terms of the duration metric that is being hedged. The interest rate risk exposure for the chosen metrics for derivatives are measured consistently with the same metrics for the Hedged Item.
- The requirement would be that trades in D are such that Portfolio D under the designated program would reduce the risk in the portfolio of A & L that would exist without the program such that under above definitions:  $|M(A)-M(L)| \geq |M(A+D)-M(L)|$ , where  $|X|$  = Absolute Value of X.
- Alternatively, a company may rely on actuarial modeling over a range of interest rate scenarios to show a reduction in an Allowed Modeled Metric. The requirement would be that the Allowed Modeled Metric is improved when performing the modeling on A+D (assets including the hedging derivatives), compared to only modeling with A (assets excluding the hedging derivatives).

### 2. “ALM Limit Management Approach”

- In this approach, the company is using derivatives to help keep an asset portfolio aligned with a duration or key rate duration target or threshold, backing a liability need. Using interest rate derivatives can be akin to buying/selling bonds, can be a more efficient way to keep the portfolio aligned with target durations, while also providing for investment flexibility.
- The liability target or threshold should be determined to align with the interest rate-related objectives for that given liability and/or the Specified Portfolio backing some or all of the assets of that liability. This target or threshold should be communicated based on an Allowed Metric. It is acceptable for the target or threshold to be represented in a number of ways, such as: a specific point metric, a calculation, a formula, a market-based investment index (like the Bloomberg US Aggregate bond index), or a customized version of a market-based investment index.
- Portfolio D under the designated program must comply with the following definition of staying within a limit P:  $|M(A+D)-M(L)| < P$ .
- The limit P can be specified as a certain percentage of either M(A) or M(L), or just as an absolute number defined and governed by the company’s Risk or Asset Liability Management Committee (or similar oversight Committee function).

## Accounting

ACLI proposes three different possible accounting methods for derivatives which qualify under effective ALM hedging programs. Two approaches are modeled from existing derivative accounting guidance, and one approach is new. The following table illustrates the methodologies, with example journal entries to further illustrate and compare the potential accounting methods.

Note Method 3 is intended to incorporate the “total” derivative (both changes in FV and interest accruals) to treat all derivative instruments equally. Methods 1 and 2 do not incorporate changes in interest accruals within the unrealized gains/losses discussed below.

	<b>Amortized Cost (Method 1)</b>	<b>Defer Unrealized (Method 2)</b>	<b>Mark and Spread (Method 3)</b>
Precedent Guidance	Yes – same as SSAP No. 86 (qualified accounting hedges)	Yes – similar to SSAP No. 108	No – New method
Description	Derivatives carried at amortized cost (following the accounting treatment of the hedged items).	Derivatives carried at fair value, but any unrealized gains/losses are deferred to a different Balance Sheet account as opposed to recognized in surplus.	Derivatives carried at fair value, but any unrealized gains/losses are deferred to a different Balance Sheet account, as opposed to recognized in surplus, with amortization beginning immediately.
Derivative Basis (Carry Value)	Amortized Cost	Fair Value	Fair Value
Unrealized Gain/Loss Treatment	Not recognized until termination	Deferral Account until termination	Deferral Account with amortization through income beginning immediately
Realized Gain/Loss Treatment	Deferred to and amortized through the IMR	Deferred to and amortized through the IMR	Deferred to and amortized through the Deferral Account (same treatment as IMR)

The following table highlights differences between the methodologies:

	<b>Amortized Cost (Method 1)</b>	<b>Defer Unrealized (Method 2)</b>	<b>Mark and Spread (Method 3)</b>
Better Economic and Accounting Alignment?	Yes	Yes	Yes
Discretionary surplus changes (realized losses reclass from surplus to asset)	Virtually all eliminated (potential discretion on timing of realization, but no surplus impact)	Virtually all eliminated (potential discretion on timing of realization, but no surplus impact)	All eliminated (all derivatives treated as terminated each reporting period end)
Derivative Fair Value on Balance Sheet?	No	Yes	Yes
Derivative Unrealized (MTM) in Surplus?	No	No	No (current period amortization only)
Do Derivative and Hedged Portfolio accounting align?	Yes	Somewhat (Unrealized not reflected in surplus, net carry value approximates amortized cost)	Somewhat (Amortization is aligned)

The following simplified journal entries highlight each of the above methods:

Method 1 Amortized Cost (URGL/RGL recognized only at termination, then amortized)	Method 2 Fair Value Deferred (amortized upon termination)	Method 3 Mark & Spread (MTM and defer each quarter, begin amortization the following quarter regardless of termination)
<b>Change in Value Example Entries:</b>	<b>Change in Value Example Entries:</b>	<b>Change in Value Example Entries:</b>
Change in Value N/A	Change in Value DR-CR: Derivative Asset/Liab } surplus neutral DR-CR: Deferred Asset/Liab }	Change in Value DR-CR: Derivative Asset/Liab } surplus neutral DR-CR: Deferred Asset/Liab } Change in value includes entire fair value of derivative instrument (clean value plus accrued income)
Amortization (subsequent quarter) N/A	Amortization (subsequent quarter) N/A	Amortization (subsequent quarter) DR-CR: Deferred Asset/Liab } surplus impact DR-CR: Net Investment Income } over amort period derivative is remeasured each reporting period, with any chg in value amortized starting in the subsequent qtr (regardless of termination)
<b>Termination Example Entries:</b>	<b>Termination Example Entries:</b>	<b>Termination Example Entries:</b>
Termination DR-CR: Cash } surplus neutral DR-CR: IMR } (simplified RCGL to IMR)	Termination DR-CR: Cash } surplus neutral DR-CR: Derivative Asset/Liab } DR-CR: Deferred Asset/Liab } surplus neutral DR-CR: IMR } (simplified RCGL to IMR)	Termination DR-CR: Cash } surplus neutral DR-CR: Derivative Asset/Liab }
Amortization (subsequent quarter) DR-CR: IMR } surplus impact DR-CR: Net Investment Income } over amort period	Amortization (subsequent quarter) DR-CR: IMR } surplus impact DR-CR: Net Investment Income } over amort period	Amortization (subsequent quarter) N/A (already occurring)
Note-surplus impacts in year of termination limited (e.g., assuming 10-year life and mid-year termination, only 5% of g/l impacts surplus; so discretionary surplus changes materially eliminated)	Note-surplus impacts in year of termination limited (e.g., assuming 10-year life and mid-year termination, only 5% of g/l impacts surplus; so discretionary surplus changes materially eliminated)	Notes-amortization is independent of termination, so discretionary surplus changes eliminated At termination, any change in value (realized gain/loss) would continue to be recognized in the Deferred Asset/Liab account and amortized, which is the same treatment as deferring to IMR and amortizing. Propose a separate deferral account (similar to SSAP No. 108, however could utilize IMR)

Method 1 Amortized Cost (URGL/RGL recognized only at termination, then amortized)	Method 2 Fair Value Deferred (amortized upon termination)	Method 3 Mark & Spread (MTM and defer each quarter, begin amortization the following quarter regardless of termination)
Using SSAP No. 86 as a guide:		
<b>De-Designation Example Entries:</b>	<b>De-Designation Example Entries:</b>	<b>De-Designation Example Entries:</b>
De-designation DR-CR: Derivative Asset/Liab } current value DR-CR: IMR } (surplus neutral) Start amortizing	De-designation DR-CR: Deferred Asset/Liab } reclass deferral to IMR DR-CR: IMR } (surplus neutral) Start amortizing	De-designation No entry or surplus impact (Deferral already booked) Amortization already occurring
<b>Subsequent Accounting (MTM)</b> DR-CR: Derivative Asset/Liab } (prospective MTM in URGL DR-CR: URGL (Surplus) } no addl IMR when RGL)	<b>Subsequent Accounting (MTM)</b> DR-CR: Derivative Asset/Liab } (prospective MTM in URGL DR-CR: URGL (Surplus) } no addl IMR when RGL)	<b>Subsequent Accounting (MTM)</b> DR-CR: Derivative Asset/Liab } (prospective MTM in URGL DR-CR: URGL (Surplus) } no addl IMR when RGL)

Regardless of the selected individual accounting method for ALM hedging program, any realized gain or loss at termination or de-designation is not permitted to adjust the basis of the hedged item (per SSAP No. 86 paragraph 24). Basis adjustments are limited to derivatives in Hedge Accounting relationships as specified in existing SSAP No. 86 guidance.

Along with each proposal above, ACLI would work with NAIC staff to create additional footnote disclosures and/or updates to Schedule DB. For example, for methods 2 and 3, additional disclosures could be added to separately report the balance carried in the IMR. New Schedule DB categories could be considered for any of the methods (e.g., new reporting categories similar to those added for SSAP No. 108).

### IMR Amortization

ACLI acknowledges the diversity in practice for the amortization period used for any hedging derivatives' realized gain/loss after deferral to the IMR. However, this is due to how insurers view the risks hedged and their specific ALM hedging programs. To create industry uniformity, ACLI has highlighted two common amortization periods for discussion, with the intent to include both or one method in the final special accounting provision guidance.

The applicable amortization method would apply to realized gains/losses from the selected accounting methodology (applicable to Methods 1, 2, and 3), as well as for any deferred unrealized gains/losses under Method 3 (within the "Deferred Asset/Liability" account as illustrated within the sample journal entries above).

Possible amortization periods for this special accounting provision are summarized below:

- Proposed Amortization Period 1: Life of the underlying/referenced item: Utilize the underlying or referenced item, which may differ from the life of the derivative contract itself (ie., gains/losses from a 3-month futures contract on a 5-Year T-Note would be amortized over a 5-year period)

This method would tie to the underlying risk being managed by the derivative and creates a similar outcome as if a company had used cash bond transactions to achieve the same interest rate exposure. This method is preferable to using a single maturity assumption or the average duration of the hedged portfolio, as it more closely ties to the specific intent of a given derivative. Given that bonds (and derivatives) in the portfolio can each cover specific cash flow and key rate duration objectives for the liability(ies), tying the amortization period for derivatives to the underlying/referenced item most accurately aligns with the interest rate exposures being managed.

For instance, if an insurer trades ultra-bond futures to manage interest rate exposure at the 30-year point of the curve, this method would align with the deliverable basket of the bond future (25+ years). It would be similar to an insurer instead buying 30-year bonds. If the insurer uses bond forwards or forward starting interest rate swaps to manage reinvestment risk into long duration assets, the underlying bond or swap tenor aligns with the liability need being hedged and with the assets that would eventually be purchased on the other side of the hedge creating a smooth income pattern. When using a swaption to manage interest rate risks, the underlying swap that the trade is exercisable into is the exposure period being managed and aligns with managing price risk on a similar-tenor bond in the portfolio.

- Proposed Amortization Period 2: Average duration of the hedged portfolio (assets or liabilities): Utilize the duration of the assets or liabilities identified in the Program (must specify which population will be referenced and how often it will be calculated)

These types of ALM hedging programs are most often focused on a combination of static and dynamic activities to reduce the key rate DV01/duration mismatches between assets and liabilities. Therefore, the optimal amortization method would allow us to reflect these mismatches properly. However, to amortize over the mismatch (or DV01/duration gap between assets and liabilities), would likely be too complicated, as the mismatches can change more frequently, and can migrate over time. Therefore, the next best thing is the weighted average life (WAL) or duration of the liabilities, as that represents the set of cashflows that the portfolio of cash bonds and derivatives is intended to defease. A company could also choose to utilize the duration of the assets supporting the liabilities. This method also eliminates having different amortization periods based on the use of different derivative instruments.

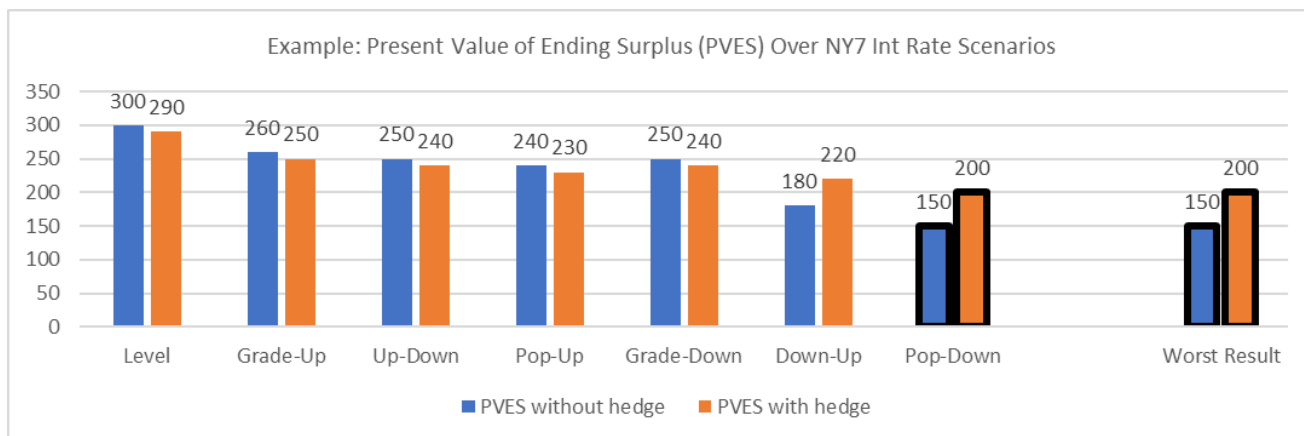


## **Appendix: Example of an Allowed Modeled Metric to Show Effectiveness**

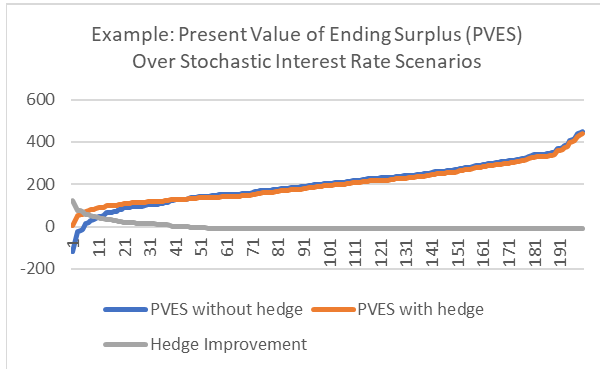
The use of an Allowed Modeled Metric can be a useful way to show hedge effectiveness. The example below shows hypothetical results under deterministic and stochastic interest rate scenarios, with and without a hedge. Metrics like the worst Present Value of Ending Surplus (PVES) outcome over a set of NY7 interest rate scenarios, or the 90<sup>th</sup> percentile outcome over a range of stochastic interest rate scenarios can be a good way to illustrate the benefit of these types of hedging instruments. While these aren't the only metrics that a company could focus on, these are used in the illustrations below.

Consider a company that has issued an annuity product with an embedded minimum interest rate guarantee. They will be subject to downside risk in the event interest rates decline. They could purchase interest rate floors or receiver swaptions as a hedge against this risk. They would pay an upfront premium (reducing the PVES in most "good" scenarios) and would see a benefit of a hedge payout (increasing the PVES in the worst scenarios). This type of hedge can help to support guarantees, protect against the risk of reserve deficiencies, and reduce income volatility - which are desirable outcomes for all stakeholders.

The first chart shows hypothetical modeled results over a set of deterministic interest rate scenarios like the NY7, and an improvement in "Worst Result" from the unhedged product (blue) compared to with the hedge (orange).



The second chart shows hypothetical modeled results over a set of stochastic scenarios, including the reduced downside risk (PVES improvement in the left side of the distribution). Additionally, the table below shows improvement in some potential Allowed Modeled Metrics that a company may consider using based on the distribution of modeled results.



	PVES Without Hedge	PVES With Hedge	Hedge Improvement
90th %ile	81	106	24
95th %ile	37	84	46
99th %ile	-61	34	96
80 CTE	65	98	32
90 CTE	27	78	52
95 CTE	-10	60	70
99 CTE	-89	21	109

## **Appendix III**

### **Definition and Purpose of the Interest Maintenance Reserve (IMR)**

The intent of this document is to offer a theoretical definition and purpose of IMR within the context of the U.S. Statutory Framework so that specific IMR-related issues can be addressed in future sessions of the Ad Hoc Technical Working Group from a mutually agreed upon foundation. In summary, the conceptual development of IMR recognized the need for a valuation adjustment to ensure consistent treatment of assets and liabilities and an accurate presentation of solvency amid fluctuations in interest rates. Illustrative examples further illuminate the necessity of an IMR for both positive and negative balances within the context of such a framework. After such a conceptual grounding, IMR is then considered in tandem with the more recent development of Principles-based Reserves (PBR) in Appendix 1 with Asset Adequacy Testing (AAT) in Appendix 2 and with Derivatives in Appendix 3 ensuring no inconsistencies need to be separately addressed.

### **The Objective of the Statutory Framework and the Necessity of IMR**

The most important and fundamental purpose of the Statutory Statements is to provide basic financial information focusing on solvency. It must provide regulators (and management) the tools to monitor and ensure policy and contract holder obligations can be met when they come due. To that end, “the valuation of assets and liabilities proceeds on the assumption that the insurer is a going concern” and “valuation is not done on a liquidation basis.”<sup>2</sup>

#### Liability Valuation

In keeping with the focus on solvency and conservatism, the prudent valuation of long duration insurance liabilities needs to be determined. Because insurance liabilities generally do not have a deep and wide market, their valuation is dependent on assumptions, calculations, and/or models. A market-consistent approach to liability valuation can be challenging to develop, is highly sensitive to the assumptions used, and can over rely upon or misapply current market conditions. These challenges can distort financial solvency and inhibit companies from issuing long duration insurance products. A market-consistent approach has not been adopted in the U.S. Statutory framework.

The Statutory framework’s amortized cost valuation approach utilizes conservative methodologies and assumptions. In many cases, these conservative methodologies and assumptions are determined at origin and may not be changed over the entire course of the liability. As the U.S. Statutory framework has evolved, additional/new valuation approaches have been introduced (e.g., PBR). Regardless of the specific approach, the U.S. Statutory framework has remained focused on ensuring the company’s long-term solvency in a stable, durable, and conservative manner.

#### Asset Valuation

To support their insurance liabilities and ensure solvency, companies need to invest their assets such that they have a very high probability of paying contractual liabilities when they become due. For long-duration liabilities, these investments are predominantly in conservative fixed income assets. To accurately assess whether a company can fulfill its obligations, its liabilities and assets must be presented on a financially integrated and consistent basis.

In the Statutory framework, asset valuations for fixed income securities are primarily based on amortized cost accounting principles. Here the valuations reflect the market available yields (interest rates) and outlook at the time of purchase. They

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<sup>2</sup> “Asset Valuation Reserves and Interest Maintenance Reserves, Blue Book, December 2002”. Report to the NAIC Financial Condition Committee.

are generally not revisited for changes in interest rates (only for impairment). The amortized cost asset valuation approach maintains consistency with the valuation of liabilities. It also limits the use of market values, which are not always observable or reliable across the spectrum of assets insurance companies hold in support of their liabilities.

However, if an asset is sold and a new asset is purchased, the company effectively “unlocks” the yield and reflects the current market available yield in the asset valuation. The liability assumptions, as explained earlier, cannot be readily adjusted in the same manner. Because of this potential for inconsistent asset and liability valuations, the company’s financial statements could provide false indicators of financial strength or of financial weakness. Concerns related to this dynamic led to the development of a prudent and innovative valuation adjustment concept within the Statutory framework: the Interest Maintenance Reserve.

### Interest Maintenance Reserve

The original E Committee report lays out many considerations reviewed during its development of IMR, and it summarizes the IMR as:

*The Interest Maintenance Reserve (IMR) - captures for all types of fixed income investments, all of the realized capital gains and losses which result from changes in the overall level of interest rates as they occur. Once captured, these capital gains or losses are amortized into income over the remaining life (period to maturity) of the investments sold. Realized gains and losses on derivative investments, which alter the interest rate characteristics of assets/liabilities, also are allocated to the IMR and are to be amortized into income over the life of the associated assets/liabilities.*<sup>3</sup>

Ultimately, the IMR facilitates better alignment of the timing of interest rate related gain/loss realizations on certain fixed income investments with the interest rate assumptions embedded in the policyholder liabilities they support. The IMR was developed to complement existing valuation practices, rather than replace them, and subsequent updates to valuation methodologies considered IMR in their development.

There are times when IMR treatment of an interest-related gain or loss would not be appropriate; for instance, if assets are sold to fund excess withdrawals or surrenders or to meet other significant expenses, collateral calls, etc. In general, the IMR is only appropriate for fixed income gains and losses from a portfolio of assets that support existing insurance liabilities.

### **Applicable Illustrative Examples**

Illustrative examples are useful for understanding the concepts underpinning IMR. The following examples are simplified (e.g., the role asset adequacy testing plays in the valuation of liabilities is ignored), but they illustrate the implications of the valuation concepts involved in the IMR’s development. They can then be appropriately extrapolated to the more complex insurance contracts and reserve methodologies.

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<sup>3</sup> “Asset Valuation Reserves and Interest Maintenance Reserves, Blue Book, December 2002”. Report to the NAIC Financial Condition Committee.

### Example 1

Assume Company XYZ starts out with \$10 of surplus invested in equity securities with no change in value over the period of valuation. The prevailing interest rate environment is such that the fixed income bond yield and the insurance liability valuation rate are both 4%, and Company XYZ:

- Sells an insurance contract that pays \$100 at the end of ten years as well as pays \$4 at the end of years 1 – 10 for \$100 dollars of premium received today.
- Purchases a 10-year bond with a coupon rate of 4% to support the liability.

Under statutory accounting, Company XYZ's balance sheet would look like Figure A.

Figure A			
Assets		Liabilities and Surplus	
Bonds	100	Insurance liability	100
Equities	<u>10</u>	Surplus	<u>10</u>
Total Assets	<u>110</u>	Liabilities & Surplus	<u>110</u>

Next, assume that bond yields drop to 2% immediately after Company XYZ purchases the bond. Company XYZ's balance sheet would not change, although the bond is now valued at \$118. From a statutory solvency perspective, there is no concern with the balance sheet because the bond can fund the liability and the financial statements are reported on a financially integrated basis and accurately reflect solvency.

Later that day, assume Company XYZ sells the bond and immediately invests the proceeds in a new 10-year bond of the same credit quality with a coupon rate of 2%. Par value would now be \$118. Company XYZ's balance sheet, without the Interest Maintenance Reserve concept (or performing asset adequacy analysis), would now look like Figure B.

Figure B			
Assets		Liabilities and Surplus	
Bonds	118	Insurance liability	100
Equities	<u>10</u>	Surplus	<u>28</u>
Total Assets	<u>128</u>	Liabilities & Surplus	<u>128</u>

Without IMR, Company XYZ's balance sheet shows an illusory increase in surplus as the bond has essentially been marked to market at \$118 but the insurance liability is unchanged. The bond's coupon payments are now insufficient to meet policyholder obligations, and the company may have to sell a portion of the bond every year to meet its yearly obligation.

To further illustrate the solvency distortion absent the IMR, assume Company XYZ sells \$18 of the bond and dividends the \$18 to its owners. Its balance sheet in Figure C would show the company still appearing solvent.

Figure C			
Assets		Liabilities and Surplus	
Bonds	100	Insurance liability	100
Equities	<u>10</u>	Surplus	<u>10</u>
Total Assets	<u>110</u>	Liabilities & Surplus	<u>110</u>

However, the total shortfall (without adjusting for minor interest effects) as the liability runs off would be:

Total of yearly (40) and final (100) payments owed policyholder	(140)
Total bond interest payments (20) and maturity (100)	120
Total equity sale	<u>10</u>
Total shortfall including sale of surplus assets	<u>(10)</u>

As discussed earlier, the IMR was developed to address the marking to market of assets upon sale, where the liabilities are unchanged, with a valuation adjustment (IMR) so that the Statutory framework can value both assets and liabilities on a consistent basis. With IMR, the inappropriate portrayal of solvency in Figures B and C would not occur. More importantly, the inappropriate dividend would not have been able to occur, and the balance sheet would instead look like Figure D.

Figure D			
Assets		Liabilities and Surplus	
Bonds	118	Insurance liability	100
Equities	<u>10</u>	IMR	18
Total Assets	<u>128</u>	Surplus	<u>10</u>
		Liabilities & Surplus	<u>128</u>

## Example 2

After demonstrating the importance of IMR in a declining interest rate environment in Example 1, Example 2 demonstrates its importance in a rising interest rate environment. For Company XYZ, assume the same starting position as Example 1. Immediately after purchasing the bond, the bond yield increases to 6%. Company XYZ's balance sheet would not change although the bond now has a market value of \$85. From a statutory solvency perspective, there is no concern with the balance sheet valuation because the bond can fund the liability and the financial statements are reported on a financially integrated basis and accurately reflect solvency.

Later that day, assume Company XYZ sells the bond and immediately invests the proceeds in a 10-year bond of the same credit quality with a coupon rate of 6%. Par value would now be \$85. Company XYZ's balance sheet, without IMR, would look like Figure E.

Figure E			
Assets		Liabilities and Surplus	
Bonds	85	Insurance liability	100
Equities	<u>10</u>	Surplus	<u>(5)</u>
Total Assets	<u>95</u>	Liabilities & Surplus	<u>95</u>

Company XYZ's balance sheet now shows illusory decreased financial strength as the bond has essentially been marked to market at \$85 but the insurance liabilities are unchanged. The company could still fund the liability by retaining and investing the increased bond coupons received. The total surplus as the liability runs off would be:

Total of yearly (40) and final (100) payments owed policyholder	(140)
Total bond interest payments (55*) and maturity (85)	140
Total equity sale	<u>10</u>
Total surplus including after sale of surplus assets	<u>10</u>

\*10 payments of \$5.10 (\$85 x 6%) plus approximately \$4 of interest earnings from investing the annual excess of the coupon payments the new bond generates (\$5.10) from that paid to the policyholder (\$4).

Just like in Example 1, the inappropriate portrayal of solvency in this example would not occur after including IMR, and the balance sheet would look like Figure F.

Figure F			
Assets		Liabilities and Surplus	
Bonds	85	Insurance liability	100
IMR*	15	Surplus	<u>10</u>
Equities	<u>10</u>	Liabilities & Surplus	<u>110</u>
Total Assets	<u>110</u>		

\* For these examples, it is inconsequential whether negative IMR is reported an asset or contra liability. It is placed here as an asset for illustrative purposes only.

Prior to selling the original bond and re-investing the proceeds, the bond on Company XYZ's balance sheet was in an unrealized loss position. Hypothetically, it could have been shown in the financial statements as in Figure G.

Figure G			
Assets		Liabilities and Surplus	
Bonds at Market	85	Insurance liability	100
Unrealized Loss	15	Surplus	<u>10</u>
Equities	<u>10</u>	Liabilities & Surplus	<u>110</u>
Total Assets	<u>110</u>		

As the original bond and the new bond are transacted at market value, there would be no difference in solvency position pre- and post-trade for Company XYZ. Disallowing negative IMR in Figure F (the IMR value under "Assets") is no more appropriate than disallowing the unrealized loss embedded within the balance sheet in Figure G.

An illustrative example regarding IMR in the context of derivative hedging transactions is provided in Appendix 3.

### Definition of IMR

With this background, we now have the proper context to define and state the purpose of IMR:

IMR is a valuation adjustment to maintain consistency between insurance liabilities (the assumptions for which are often unchanged from origin) and the assets needed to support them (where the assumptions can essentially be revisited any time there are fixed income realizations).

IMR defers and amortizes the recognition of non-economic gains or losses where investment activity, whether through fixed income investment sales or fixed income derivative hedging transactions, essentially unlock unrealized gains/losses for either assets or liabilities. IMR is not intended to defer economic gains and losses related to asset sales compelled by liquidity pressures that fund significant cash outflows (e.g., such as excess withdrawals and collateral calls).

Specifically, the IMR valuation adjustment more appropriately reflects the impact to statutory surplus from fluctuations in interest rates and therefore provides a more accurate representation of solvency under the NAIC's statutory framework which often includes amortized cost valuation of fixed income investments and liability valuations with fixed assumptions in accordance with the Accounting Practices and Procedures and Valuation Manual.

To accurately assess whether a company can fulfill its obligations, it must present its liabilities and assets on a financially integrated and consistent basis. If they are inconsistent, then the annual statement will not reveal the degree to which assets exceed liabilities and neither regulators nor management can appropriately determine the risk of insolvency for the company. Taken further, limiting IMR balances creates an inconsistency within the Statutory framework and would generate false solvency signals for regulators. Limiting IMR balances can also disincentivize prudent interest rate risk management. By appropriately recognizing fixed income gains and losses within the Statutory framework, the IMR prevents the misrepresentation of surplus from changes in interest rates.



**Appendix 1 – IMR in the context of Principle-Based Reserving (PBR)**

PBR is a relatively recently developed method for calculating U.S. statutory reserves that intends to better quantify product risks. Distinctive to PBR in the Statutory framework, the approach considers a range of future economic scenarios and uses justified company-specific assumptions that can change over time as company experience emerges, subject to regulatory guardrails. PBR is generally applicable for individual life insurance contracts issued 2020 and later (VM-20) and for all variable annuity contracts (VM-21). PBR is expected to apply to fixed annuity contracts issued 2025 and later (VM-22). Minimum reserves under PBR are the maximum of a formula-based reserve and modeled reserves.

For PBR's formula-based reserves, the accounting basis is "frozen" and "locked in" at issue and does not reflect underlying assets or a company's investment strategy (e.g., the net premium reserve). As a result, the existing IMR construct works in tandem with PBR's formula-based reserves to maintain consistency between the liability and asset valuations when the asset valuation is unlocked due to asset sales.

For PBR's modeled reserves, the accounting basis is not "frozen" but is unlocked over time with assumptions that reflect company experience in its cash flow models (e.g., the deterministic reserve and the stochastic reserve). Under PBR's modeled reserves, the reserves reflect the company's underlying assets and investment strategy, and the impact of asset gains or losses is reflected in the modeled reserve calculation. Distinctive to the modeled reserve component(s) of PBR, the modeled reserves then reflect an explicit adjustment for IMR so that there is no surplus impact at time of asset sale.

In summary, the IMR construct is necessary for consistent liability valuation under PBR's formula-based reserves and is already explicitly reflected and accounted for under PBR's modeled reserves.

**Appendix 2 – IMR in the context of Asset Adequacy Testing (AAT)**

Asset adequacy analysis is an analysis of the adequacy of reserves and other liabilities, considering the assets supporting such reserves and other liabilities under moderately adverse conditions. If additional assets are needed, then the actuary should establish an additional reserve equal to the value of those additional assets.

A common form of asset adequacy analysis is cash flow testing, which is the projection and comparison of the timing and amount of cash flows under one or more scenarios. Conceptually, cash flow testing is similar to the deterministic reserve, or a set of deterministic reserves, under PBR as discussed in Appendix 1.

In 2022 and 2023, the NAIC's Life Actuarial (A) Task Force provided guidance on allocating negative IMR for PBR and AAT. This guidance recommended that any portion of negative IMR that is an admitted asset should be allocated for PBR and AAT in a principle-based, reasonable, and appropriate manner that would be consistent with the handling of negative IMR. Effectively, AAT explicitly accounts for admitted negative IMR by reducing the amount of interest-earning assets. Likewise, AAT can reflect positive IMR by allowing for a larger starting balance of interest-earning assets. In summary, AAT has been designed in tandem with the IMR construct to ensure the consistent valuation of assets and liabilities within the Statutory framework.

### **Appendix 3 – IMR in the context of Derivative Hedging Transactions**

The applicability of the IMR construct to gains or losses from derivative hedging transactions flows from the concepts outlined in the earlier text. To illustrate its importance within plausible ALM strategies, the example outlined here in Appendix 3 assumes a more complex and realistic set of insurance liabilities.

#### **Example 3**

Assume Company XYZ issues life insurance contracts where the premiums come in each year until death and there is a payment upon death estimated to occur at the end of 5 years. Assume Company XYZ is again starting out with \$10 of surplus invested in equity securities (again, assume no change in value over the period of valuation). The current interest rate environment is such that the fixed income bond yield and the insurance liability valuation rate are again both 4%, and Company XYZ:

- Sells 100 insurance contracts that pay \$1 upon death for yearly premiums of 18.47 cents at the end of each year 1 through 5.
- Purchases bonds with a coupon rate of 4%, with all premiums and coupons received, maturing at the anticipated time of death in 5 years.
- Assume the market yield of 4% is constant throughout the 5-year period.

Company XYZ's balance sheet for each year, using a simplified net premium calculation for reserves, would look like Figure H.

Figure H						
Year	Assets			Liabilities and Surplus		
	Bonds	Equities	Total	Insurance Liability	Surplus	Total
1	18.47	10.00	28.47	18.47	10.00	28.47
2	37.67	10.00	47.67	37.67	10.00	47.67
3	57.64	10.00	67.64	57.64	10.00	67.64
4	78.40	10.00	88.40	78.40	10.00	88.40
5	100.00	10.00	110.00	100.00	10.00	110.00

Company XYZ can pay all claims on the policy and the balance sheet surplus appropriately reflects surplus at the end of each reporting period. In the real world with this more dynamic pool of liabilities, other changes could occur, such as one or multiple of:

- Interest rates could decline, and coupon and premium payments would not be able to be invested at 4%.
- Death benefits could be paid at a point in time greater than the invested bond maturity and if interest rates decline, the bond would not be able to be re-invested at 4%.
- Policy surrenders could occur, including due to changes in market interest rates, causing the claims patterns to change from expectations.

Amidst this real-world uncertainty, Company XYZ could consider any of the following risk mitigating activities, which inherently depend upon its mix of insurance liabilities:

- Accept the risk of future asset and liability cash flow fluctuations, which could result in an inability pay claims in certain situations. For instance, if interest rates declined, the coupon payments, premium payments, and/or maturities would not be able to be re-invested in fixed income investments that have sufficient yield to pay claims as expected.

- Charge higher premiums at inception to account for the reinvestment risk and duration risk associated with the insurance liabilities.
- Manage the investment portfolio to a prudent liability duration or any number of appropriate and prudent asset liability management (ALM) strategies.
- Prudently hedge with derivatives within the ALM strategy. Such derivative usage strategies are used where purchases are not viable or where it is more efficient to utilize derivatives.

If the derivative strategy is applied, the reinvestment risk could be hedged to lock in a 4% yield. When interest rates fluctuate, any gain or loss on the derivative offsets the lower or higher actual yield that is received on the reinvestments.

In Example 3, if interest rates plunged to 0% on day 2, Company XYZ would not be able to support the liabilities because future premiums and coupons would not be able to be reinvested at 4%. If Company XYZ had hedged reinvestment risk, they would have a gain on derivatives equal to the economic loss of not being able to invest at 4%. Similarly, if interest rates doubled to 8%, Company XYZ would have a loss on derivatives equal to the economic gain of now being able to invest at the much higher interest rate of 8%. In both cases, Company XYZ has hedged reinvestment risk and has not changed the solvency picture in Example 3.

In summary, IMR is appropriate for all types of fixed income investments, including derivatives which alter the interest rate characteristics of assets/liabilities, for all realized capital gains and losses which result from changes in the overall level of interest rates as they occur.