**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.”[[1]](#footnote-1)

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 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.* [[2]](#footnote-2)

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.

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  Equities 10  Total Assets 110 | Insurance liability 100  Surplus 10  Liabilities & Surplus 110 |

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  Equities 10  Total Assets 128 | Insurance liability 100  Surplus 28  Liabilities & Surplus 128 |

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.

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| --- | --- |
| Figure C | |
| Assets | Liabilities and Surplus |
| Bonds 100  Equities 10  Total Assets 110 | Insurance liability 100  Surplus 10  Liabilities & Surplus 110 |

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 10

Total shortfall including sale of surplus assets (10)

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.

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| --- | --- |
| Figure D | |
| Assets | Liabilities and Surplus |
| Bonds 118  Equities 10  Total Assets 128 | Insurance liability 100  IMR 18  Surplus 10  Liabilities & Surplus 128 |

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  Equities 10  Total Assets 95 | Insurance liability 100  Surplus (5)  Liabilities & Surplus 95 |

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 10

Total surplus including after sale of surplus assets 10

\*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  IMR\* 15  Equities 10  Total Assets 110 | Insurance liability 100  Surplus 10  Liabilities & Surplus 110 |

\* 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  Unrealized Loss 15  Equities 10  Total Assets 110 | Insurance liability 100  Surplus 10  Liabilities & Surplus 110 |

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 | | | | | | |
|  | 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.

https://naiconline.sharepoint.com/teams/FRSStatutoryAccounting/National Meetings/A. National Meeting Materials/2025/08-11-25 Summer National Meeting/Hearing/09 - 25-03 - ACLI IMR Definition.docx

1. “Asset Valuation Reserves and Interest Maintenance Reserves, Blue Book, December 2002”. Report to the NAIC Financial Condition Committee. [↑](#footnote-ref-1)
2. “Asset Valuation Reserves and Interest Maintenance Reserves, Blue Book, December 2002”. Report to the NAIC Financial Condition Committee. [↑](#footnote-ref-2)