

# Comparative Analysis: BMA SBA vs. UK Solvency II Matching Adjustment

## 1. Executive Summary

This document provides a comparative analysis of two advanced regulatory frameworks for insurance liability valuation: the Bermuda Monetary Authority's (BMA) **Scenario-Based Approach (SBA)** and the UK Prudential Regulation Authority's (PRA) **Matching Adjustment (MA)** under Solvency II.

Both the SBA and the MA are designed to provide capital relief to insurers holding well-matched, long-term assets to back predictable, long-term liabilities (e.g., annuities). They acknowledge that insurers intending to hold these assets to maturity are not exposed to the full extent of short-term credit spread volatility. However, they achieve this outcome through fundamentally different mechanisms.

- **The UK's Matching Adjustment (MA)** is a **valuation adjustment**. It provides a capital benefit by increasing the discount rate used to calculate the Best Estimate Liability (BEL), thereby lowering the present value of liabilities. The size of the benefit is derived from the portion of the asset spread over the risk-free rate that compensates for illiquidity, with a deduction for credit risk (the "Fundamental Spread").
- **The BMA's Scenario-Based Approach (SBA)** is a **cash flow modeling approach**. It calculates the BEL by projecting asset and liability cash flows under nine prescribed interest rate scenarios. The BEL is the amount of assets required to ensure cash flow sufficiency in the "biting" (worst) scenario, after accounting for asset sales and reinvestments. The benefit comes from avoiding forced sales in adverse scenarios by demonstrating strong asset-liability management (ALM).

In essence, the MA provides an upfront, formulaic benefit to the discount rate, while the SBA is a dynamic, scenario-based test of a portfolio's resilience.

## 2. High-Level Feature Comparison

Feature	BMA Scenario-Based Approach (SBA)	UK Matching Adjustment (MA)
Core Mechanism	Cash flow projection under 9 interest rate scenarios. BEL is the assets needed in the worst scenario.	Valuation adjustment. Increases the discount rate for BEL calculation based on asset spreads.
Primary Benefit	Capital relief by demonstrating robust ALM and avoiding forced asset sales at a loss in stress scenarios.	Reduces the present value of liabilities by recognizing a portion of the illiquidity premium from matching assets.
Calculation Focus	Dynamic cash flow sufficiency over time.	Static, point-in-time calculation of the "Fundamental Spread" to adjust the discount curve.
Key Input	9 prescribed interest rate scenarios, asset/liability cash flow data, reinvestment/disinvestment rules.	A portfolio of matching assets, risk-free curve, and a formula for the "Fundamental Spread" (credit risk).

Feature	BMA Scenario-Based Approach (SBA)	UK Matching Adjustment (MA)
<b>Asset Eligibility</b>	Graded system: "Acceptable", "Prior Approval", "Limited Basis" (10% cap). Focus on predictability and quality.	Requires assets with "fixed" or "highly predictable" cash flows. Recent reforms expanded eligibility.
<b>Liability Eligibility</b>	Primarily long-term business with minimal policyholder options (e.g., annuities).	Primarily long-term, non-cancellable liabilities with fixed cash flows (e.g., annuities).
<b>Risk Focus</b>	Interest rate risk (via scenarios), liquidity risk (LCR), reinvestment risk, and credit risk (default/downgrade costs).	Primarily credit risk (via the Fundamental Spread) and illiquidity.
<b>Governance</b>	Heavy emphasis on Board/Officer attestations, model change policy, and ALM framework.	Strong focus on the "Prudent Person Principle" and robust risk management of the matching portfolio.
<b>Flexibility</b>	More rigid due to prescribed scenarios and rules-based asset limits.	More flexible, especially after "Solvency UK" reforms, which allow a wider range of assets (e.g., "highly predictable").

### 3. Detailed Comparison

#### 3.1. Core Philosophy and Mechanism

- **BMA SBA:** The SBA's philosophy is grounded in a "going concern" view, testing whether an insurer's chosen asset portfolio can meet its liability obligations over time under various economic conditions. It is fundamentally a **solvency test through cash flow simulation**. The capital requirement is directly linked to the portfolio's performance in these simulations. A well-matched portfolio with strong cash flow alignment will require fewer asset sales in stress scenarios, thus resulting in a lower BEL.
- **UK MA:** The MA's philosophy is based on the economic principle that if an asset is held to maturity to back a predictable liability, the insurer is not exposed to short-term spread volatility. It is a **valuation technique** that allows insurers to recognize the long-term expected return of their assets above the risk-free rate, net of expected credit losses. The benefit is embedded directly into the balance sheet by adjusting the discount curve.

#### 3.2. Eligibility and Asset Management

- **Asset Eligibility:**
  - **SBA:** Adopts a prescriptive, tiered approach. Government and high-grade corporate bonds are "acceptable," while private assets, structured securities, and sub-investment grade assets require approval or are subject to a strict 10% portfolio cap. This reflects a more cautious stance on asset complexity and liquidity.
  - **MA:** Historically focused on assets with "fixed" cash flows. The recent "Solvency UK" reforms have significantly broadened this to include assets with "highly predictable" cash flows, explicitly aiming to encourage investment in productive assets like infrastructure. There is more flexibility, provided firms can demonstrate robust risk management under the Prudent Person Principle.

- **Liability Eligibility:**

- Both frameworks target similar types of liabilities: long-duration, predictable obligations such as annuities, where policyholder options are minimal or negligible.
- The SBA explicitly requires insurers to quantify and hold capital for lapse risk (Lapse Cost) if any policyholder options exist, and to pass combined stress tests (e.g., mass lapse + credit spread widening).

- **Portfolio Management:**

- **SBA:** The model is dynamic. It explicitly models the consequences of cash flow mismatches, forcing the sale of assets (at a haircut) or reinvestment of surpluses (at scenario-dependent rates). The reinvestment strategy must be defined and attested to.
- **MA:** The MA portfolio is expected to be managed on a hold-to-maturity basis. While not explicitly modeled in the same way as the SBA, the insurer must demonstrate that the portfolio is managed to maintain the matching quality.

### 3.3. Risk Treatment and Stress Testing

- **Interest Rate Risk:**

- **SBA:** This is the central risk addressed. The entire framework is built around projecting cash flows across nine different interest rate curve scenarios (parallel shifts, twists, etc.).
- **MA:** Interest rate risk is managed through the requirement to match asset and liability cash flows. The MA itself is sensitive to the risk-free rate, but it doesn't use prescribed scenarios in the same way.

- **Credit Risk:**

- **SBA:** Treated as an explicit cost reduction. Projected asset cash flows must be reduced by a charge for expected defaults and rating downgrades, with assumptions subject to BMA-prescribed floors.
- **MA:** This is the core of the MA calculation. The "Fundamental Spread" is precisely the component of the asset spread that is meant to cover expected credit losses and residual risks. The accuracy of this calculation is paramount.

- **Stress Testing:**

- **SBA:** Requires a suite of severe, application-specific stress tests *in addition* to the nine core scenarios. These include combined mass lapse and credit spread widening events, and a one-notch downgrade of all assets.
- **MA:** Stress testing is a key part of the governance framework under the Prudent Person Principle. Insurers must be able to demonstrate the resilience of their MA portfolio to various stresses, but the approach is less prescriptive than the BMA's application tests.

### 3.4. Governance and Approval

Both frameworks demand a very high level of governance, risk management, and regulatory oversight.

- **SBA:** Requires explicit annual attestations from the CRO, CIO, Chief Actuary, and CEO on model integrity, assumptions, and strategies. It has a formal policy for defining and approving model changes.

- **MA:** Relies heavily on the insurer's adherence to the Prudent Person Principle, requiring firms to have the internal expertise and systems to manage the risks of their MA portfolio. The PRA's focus is on ensuring the firm's risk management capabilities are commensurate with the complexity of the assets held.

## 4. Conclusion

The BMA SBA and UK MA are two different paths to a similar goal.

The **UK Matching Adjustment** is an elegant, principles-based valuation tool. It grants a direct and quantifiable capital benefit based on the economic characteristics of a matching asset portfolio. Its recent reforms have increased its flexibility, positioning it as a tool to encourage long-term, productive investment.

The **BMA Scenario-Based Approach** is a more prescriptive and operational framework. It functions as a rigorous, dynamic simulation to prove a portfolio's resilience. The capital benefit is an emergent property of a well-constructed and well-managed ALM program, rather than an explicit calculation. It prioritizes a granular, rules-based assessment of cash flow sufficiency under a battery of pre-defined stresses.

For an insurer, the choice between similar regimes would depend on their asset portfolio, modeling capabilities, and appetite for prescriptive rules versus principles-based judgment. The SBA is arguably more operationally intensive due to the scenario-based modeling, while the MA places a greater burden on the justification and calculation of the Fundamental Spread.