BERMUDA MONETARY AUTHORITY

THE BERMUDA CAPITAL AND SOLVENCY RETURN

2024 INSTRUCTION HANDBOOK
FOR INSURANCE GROUPS

E. SCENARIO-BASED APPROACH

Paragraphs 28-32 in the Rules[12] include requirements on the Scenario-Based approach (SBA). The Instructions in this section should be read together with these paragraphs in the Rules.

E1. Discretion BMA to require use of Scenario-Based Approach or Standard Approach

Background

E1.1 Paragraphs 28(2) and 28(3) in the Rules include provisions for the Authority to require the use of the SBA or Standard Approach.

E1.2 The exercise of discretion by the Authority to determine whether an insurance group must apply either the scenario-based approach or the standard approach to some or all of the Long-Term business written will be approached with careful consideration and responsibility. The Authority understands that such decisions impact both the strategy and operations of the insurance group. Any exercise of this discretionary power will be undertaken judiciously, with a thorough evaluation of the specific circumstances and potential implications for the insurance group, and industry dynamics.

E1.3 The Authority is committed to fostering open communication to ensure a transparent regulatory process and level-playing field. Therefore, such determinations will only be made after due diligence and engagement with relevant stakeholders. The exercise of discretionary powers will be principle based, is expected to be rare, and will be aligned with the overarching goal of protecting policyholders and maintaining a stable insurance market. It should be noted that if the applicable regulatory requirements are being met there is little need for the Authority to exercise this discretion.

E2. Attestations

Background

E2.1 There are several provisions within the Rules that require an attestation or report from key officers, including the approved actuary, chief actuary, chief risk officer, chief investment officer, and chief executive officer.

Instructions

E2.2 The Authority retains the right to request additional information based on the attestation, extending to analyses conducted either by the attesting individual or another party enlisted to support the attestation. Moreover, the attestation may be built upon other attestations if there exists a reasonable and verifiable rationale for doing so. In such instances, the

[12] When in this section reference is made to the Rules, it is referred to Insurance (Prudential Standards) (Insurance Group Solvency Requirement) Rules 2011, as amended.

individual conducting the attestation may be required to provide additional details on their assessment of analyses or attestations from other sources, specifying checks and controls employed to validate their adequacy and reliability.

E2.3 Where the attestation involves an independent analysis, the attesting party may be required to provide further details on the information underlying the analysis. The person doing the attestation may keep a log of the information used to produce the attestation as well as the checks and controls carried out on the information used. This log should be readily available for submission upon request by the Authority.

E2.4 In situations where an insurance group deems an officer other than those specified in the Rules more suitable to provide an attestation, the group must seek a written no objection from the Authority.

E2.5 Insurance group officers should put careful consideration to the actual work done, systems, controls and resources in place as well as their own role in ensuring compliance with the requirements. The attestation could be of any length. It is important to note that the attestation does not replace the Approved Actuary's own review and challenge including their own opinion on the matters attested to.

E2.6 Below are some key principles to provide guidance in formulating attestations:

E2.6a Ensure that the language used in the attestation is clear, concise, and specific with no ambiguity.

E2.6b Effectively demonstrate in the attestation the work and challenge that went into complying with the relevant requirement.

E2.6c Demonstrate the work done is a natural consequence of the internal processes and controls in place as part of the ordinary course of doing business i.e., not specifically undertaken for attestation purposes only.

E2.6d Clearly identify and reference the specific regulatory requirements or articles being addressed in the attestation.

E2.6e Base attestations on concrete evidence of compliance e.g., provide summary of work done by relevant parties and outputs thereof.

E2.6f Clearly outline the roles and responsibilities of insurance group officers who are providing the attestation in relation to the areas being testified on.

E2.6g Specify the individuals accountable for ensuring compliance and those responsible for preparing and submitting the attestation.

E2.6h Highlight the role of any third-party assessments carried out in relation to the areas being testified on.

E2.6i Highlight the effectiveness of internal controls and monitoring mechanisms in place to ensure ongoing compliance on the matters being attested on.

E2.6j Avoid duplication of what is already covered in other submissions to the Authority. Where this is the case, the relevant documents (including sections and pages) can be referenced in the attestation.

E2.6k Provide a list of supporting documentation. The supporting documentation should be documentation that arises in the natural course of business and should not be specifically prepared for the Authority. This documentation may be requested by the Authority as part of its reviews.

E2.6l Identify the attesting officer(s) by name, title and the capacity within which they are giving the attestation.

E2.6m The attesting officer(s) should sign the attestation and file it with the Authority as part of the annual filing.

E3. Model Change Policy

Instructions

E3.1 The model change policy should describe a clear universe of changes, outline the models covered and what governance is in place for approving major changes including the making of decisions on those cases where it is unclear whether a change should be classified as major or minor. To enhance clarity, the policy should establish a comprehensive framework outlining the types of changes considered, specifying the tools included, and delineating the governance for approving significant changes.

E3.2 In delineating the materiality criteria that distinguish minor from major changes, the insurance group should contemplate both quantitative impacts (e.g., on own funds and solvency ratio) and qualitative indicators like alterations in governance or systems which may or may not create operational risks. Consideration, while not required, may be given to back-testing the metrics against historical changes, where applicable. A log of both potential new changes and historical changes (and how they have been classified) should be maintained as it could prove beneficial for reference and documentation purposes.

E3.3 When formulating the model change policy, as stipulated in paragraph 28(40) in the Rules, it is advisable for the insurance group to engage with the Authority. This should help ensure there is alignment between the Authority's expectations and the insurance group's definition of materiality and what is considered major or minor change.

E4. Well-matched portfolios

Instructions

E4.1 Insurance groups should perform and document a formal assessment of “well-matched” including the insurance group’s definition of well-matched. The documentation should include an assessment of why the insurance group considers it appropriate to use the SBA for the assets and liabilities (given the level of actual matching), and what the thresholds/tolerances/triggers are that would cause the insurance group to consider that it is not well-matched.

E4.2 As part of its ongoing reviews, the Authority will assess whether an insurance group’s asset/liability portfolios are well-matched. In making its assessment, the Authority will consider the insurance group’s documented assessment as well as the following:

E4.3

E4.3a The cost of mismatch as implied by the difference in results between the base scenario and the biting scenario.

E4.3b Dispersion in results from the 8 scenario-based approach scenarios.

E4.3c The capital required for each of currency, interest rate risk, lapse, mortality, morbidity and longevity as a percentage of the best estimate liability.

E4.3d The extent to which assets backing the liabilities are denominated in the same currencies, any hedging used (extent, nature, effectiveness) and residual risks.

E4.3e The extent of asset sales to meet shortfalls in asset cashflows. Total asset sales expressed as a percentage of the best estimate liability.

E4.3f Analysis of the extent of and dependence on reinvestment, including but not limited to: a graphical representation of the annual liability cashflows, existing asset cashflows and cashflows from reinvestment assets, and sensitivity tests on the impact of change in reinvestment assumptions on the best estimate liability.

E4.3g The highest accumulated cashflow shortfall across all projection years expressed as a percentage of the best estimate liability.

E4.3h The ALM position versus internal tolerances including at different key rate points.

E4.3i The extent to which assets are fungible or encumbered.

E5. Application Package

Instructions

The SBA application package should cover the items included below:

E5.1 Evidence that the eligibility requirements for using the SBA included in the Insurance Rules are met for each sub-portfolio in the scope of SBA. Fungible sub-portfolios can be assessed as one.

E5.2 Evidence of signoff of the application by the Board or relevant board committee.

E5.3 Completed Lapse, Liquidity and SBA reporting template.

E5.4 Full SBA model calculations, including asset and liability models and/or cashflows used for the purpose of SBA.

E5.5 Assessment of asset/liability portfolios being well-matched.

E5.6 SBA methodology documentation that includes:

E5.6a Detailed description of the SBA methodology, liability/asset valuation methodologies and cashflow projections.

E5.6b Description of the data and how they meet the data quality requirements.

E5.6c Description of key assumptions and expert judgements.

E5.6d Any limitations and weaknesses of the methodology or data.

E5.6e Governance structure as it applies to reserving and use of the SBA.

E5.6f Fungibility assessment in compliance with the Rules.

E5.6g Validation reports of SBA mechanics, liability and asset valuation as well as cashflow projections.

E5.6h Summary and analysis of stress testing results:

i. Combined credit spread and mass lapse stress. Defined as follows:

1. Mass lapse shock shall assume an instantaneous lapse of a proportion of the business equal to the higher of:
    a. 20% (applied across all products); or
    b. the product specific shocks per the BSCR mass lapse risk charge calculation.
2. Credit spreads widening as per the table below.

a. All assets, i.e. both those backing the technical provisions as well as the capital, whether rated or unrated, available for sale or held to maturity, must be stress tested. Structured finance products, asset-backed securities, agency and non-agency mortgage-backed securities must be included as well. Unrated assets such as loans must be shocked appropriately. If there is no rating for an asset, assume that the rating is below CCC/C.

b. The spread stresses are to be applied as instantaneous shocks applicable during the first year in the projection. The shocks are assumed to be temporary in nature; accordingly, the spreads are assumed to revert back to their base (non-stressed) levels after the first year in the SBA projection.

Rating	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**	**CCC/C**
Δ bps	277	328	444	498	842	1346	2346

ii. One-notch credit downgrade stress on assets used in the SBA:

1. Apply one notch downgrade to all assets across the board (where one notch means e.g., from BBB to BBB-).
2. Use the post-shock assets to calculate the technical provisions. Spreads, default and downgrade costs should respond accordingly.
3. To the extent that, because of the downgrade stress, there are not enough SBA-eligible assets in order to use the SBA for the whole business, then the Standard Approach will need to be used for the rest of the business but ensuring that there is no splitting of liabilities at policyholder contract level and block-product level. To the extent that the no splitting of liabilities condition cannot be achieved, then the standard approach is used for the whole business.
4. No changes to the spreads themselves, for any rating category, should be assumed in the scenarios. However, as a result of a downgrade the assets would move onto a lower credit curve for pricing purposes, and this should be reflected in the mark-to-market value for each asset – generally leading to a reduction in the market value. (For example, if an asset originally rated BBB- was downgraded to BB+, it would need to be re-priced using the BB(+) spreads instead of the BBB(-) spreads to determine the post-downgrade market value for the asset.)
5. Definition of investment-grade assets in the SBA should be in line with the Authority's ratings definition and mapping with the lowest rating being taken for each rated asset. All rated assets are also to be downgraded as part of the stress including those NAIC-rated e.g., commercial mortgage loans.
6. The portion of liabilities for which the Standard Approach was used should be identified.

iii. No reinvestment into assets acceptable on a limited basis stress

1. Assume the insurance group cannot continue to reinvest in assets acceptable on a limited basis (formerly known as 258E assets).
2. This means the modelled reinvestment strategy is updated such that there is no reinvestment into assets acceptable on a limited basis.

E5.6i Policies:

i. Model Risk Management Policy
ii. Data Quality Policy (if not already covered under Model Risk Management Policy)
iii. Model Change Policy (if not already covered under Model Risk Management Policy)
iv. Model Validation Policy (if not already covered under Model Risk Management Policy)
v. Asset and Liability Management Policy
vi. Investment Policy and Guidelines
vii. Liquidity Risk Management Policy, liquidity plans and assessment of the liquidity position.

E5.6j Application requirements for use of derivatives, as applicable.

E5.6k Application requirements for use of assets requiring BMA approval, as applicable.

E5.6l Overview and description of systems, infrastructure and people resources relevant to the SBA model. The system infrastructure could be presented graphically.

E5.7 Assessment of external dependencies (e.g., on vendors and consultants) and how this meets outsourcing requirements per the Rules.

E5.8 Logs arising as part of the Model Risk Management Framework.

E5.9 Any other relevant information that the applicant considers may be necessary for the assessment and decision by the Authority.

E5.10 An application for SBA approval may be submitted at any time, but the Authority encourages insurance groups to engage the Authority in pre-application discussions prior to formal submission. The pre-application engagement is not a mandatory part of the approval process, but it is expected this should help align expectations on the quality of the application.

E5.11 The exact timeframe for approval of the application for SBA is expected to vary from application to application. Where applications are supported by effective pre-application engagement and complete good-quality submission, the Authority expects to reach a decision within 4-8 weeks. Applications which do not meet these criteria may require additional review time.

E6. Approval of Assets

Instructions

E6.1 For operational and efficiency purposes, applications for different types of assets (i.e., affiliated assets, assets acceptable on a limited basis, structured assets, other investment-grade assets, and long-term investment credit) can be made as one application including a full listing of all assets i.e., those to be used in the SBA and surplus assets. The listing of assets should be on a BMA-provided template. Within the template the application category under which the assets fall should be clearly identified. Relevant analysis should be provided as applicable to each asset category.

E6.2 Delinquent, non-performing and troubled or challenged assets are not eligible to be used in the SBA. Troubled or challenged assets in this context refers to assets which may not be delinquent or not defaulted but whose future performance is in doubt such that future cashflows can no longer be considered to be highly predictable. Where the status of a particular asset is uncertain i.e., it is unclear whether it is troubled or challenged, the assets should be excluded by default.

E6.3 The applications should separately identify those assets where amendments, extensions or restructurings may have been done and explanations on why these are being proposed to be used in the SBA otherwise these should be excluded from use in the SBA by default.

E6.4 An assessment of those individual investment grade assets whose yields and/or spreads are higher than the caps imposed by the Authority on assets acceptable on a limited basis should be provided. The Authority would generally look to apply the same caps to investment grade assets as applied to assets acceptable on a limited basis.

E6.5 Insurance groups should be able to demonstrate that assets for which approval is sought are in line with a Board approved risk appetite, investment guidelines and appropriate application of the prudent person principle.

E6.6 The limits imposed by the Authority e.g., on assets acceptable on a limited basis, are not a target but a conservative limit, and the Authority would expect an insurance group to leave enough headroom in their utilisation of the 10% limit in order to absorb unexpected deterioration in the investment portfolio including downgrades. The same applies to all other assets e.g., allocation to assets with a BSCR 4 rating which are borderline investment grade. An insurance group should demonstrate that the use of such assets and applied limits is appropriate considering the level of diversification in the investment portfolio, nature and value of eligible surplus assets, amount and quality of excess capital available, embeddedness of risk management and the effectiveness of contingency measures to mitigate the adverse impacts of moderate and severe stress scenarios e.g., downgrade in assets used in the scenario-based approach.

E6.7 The Approved Actuary should assess and form an independent opinion on an insurance group's application of these instructions in the calculation of the best estimate liability using the scenario-based approach.

E6.8 Assets proposed to be used to back liability cash flows beyond 30 years for purposes of obtaining a long-term investment credit (formerly referred to as 258F) should either have no contractual maturity (i.e. be equity-type), or the contractual maturity should be commensurate with the tenor of the liability cash flows the asset is backing. Assets acceptable on a limited basis would only be allowed for long-term investment credit purposes, provided the aggregate total of all such assets in the SBA is within the 10% limit. Conservative adjustments to the returns/yields should be applied.

E7. Approval of Structured and Other Assets

Background

E7.1 Subparagraph 28(14) in the Rules includes that an insurance group shall obtain prior approval to use other investment grade fixed income assets.

E7.2 Applications shall be combined with those required in terms of subparagraph 25 of the scenario-based approach Rules.

E7.3 Requirements relating to approval of structured assets will be communicated separately by the Authority in 2024.

Instructions

Other Investment Grade Assets

E7.4 Applications for other assets submitted in terms of subparagraph 14 of the scenario-based approach Rules shall include but not be limited to the following information:

E7.4a Descriptions of the underlying liabilities

E7.4b Description of the investment and ALM strategy

E7.4c Overall portfolio summary of all investments held

E7.4d Description of the investment manager including their experience and expertise

E7.4e A quantitative and qualitative analysis of the key features and risks for each asset class including but not limited to:

i. Valuation methodologies and valuation uncertainty;
ii. Asset complexity and cashflow predictability;
iii. Asset illiquidity, match to liabilities and liquidity assessments;
iv. Due diligence, ratings and credit assessments carried out;
v. Portfolio diversification – by asset class, geography, collateral, sector, risk factors, correlation, etc.;
vi. Dependence on the investment manager and/or origination platforms including an assessment of the ability of the insurance group to continue to generate assumed spreads in the future;
vii. Quantitative and qualitative analysis of the assumed spreads and critical assessment of the supporting thesis;
viii. Stress testing results including analysis of change in credit profile under stressed conditions.

E7.4f An analysis on how the requirements of subparagraph 26 are met for these assets with respect to estimation of default and downgrade costs.

E7.4g Provide details of the assets – market values, yields, spreads, term etc. The Authority will provide a template for this purpose.

E7.4h Where the assets are affiliated/connected/related an assessment based on the requirements for approval of affiliated/connected/related party assets.

E7.4i Further information as may be requested by the Authority.

E8. Approval of Derivatives

Derivatives used in the SBA need to qualify as being for risk mitigating purposes as outlined in Section B5 of this handbook and comply with the eligibility and modelling criteria there instructed. This includes criteria on frequency of replacement, when such practices are used, for avoidance of doubt, dynamic hedging is not allowed in the SBA, namely daily or intra-day hedging.

Instructions

E8.1 An application to use derivatives in the scenario-based approach should cover the following areas:

E8.1a Summary of the investment strategy

E8.1b Hedging strategy and risk management

E8.1c List and description of the derivatives

E8.1d Modelling and assumptions in the SBA

E8.1e Risks not hedged and residual risks

E8.1f Liquidity and Collateral

E8.1g Stress and Scenario Testing

E8.1h Oversight and Governance

E8.1i Worked example

E8.2 The Authority's review will be proportionate to an insurance group's use of derivatives considering the nature, scale and complexity of the business. Pre-engagement with the Authority is recommended especially where the insurance group has carried out an assessment of what minimum requirements could be considered proportionate and/or the insurance group can demonstrate it has applied conservatism in its use of derivatives in the SBA in a manner that addresses the intended outcomes.

E8.3 Further details on each of the areas are as provided below.

E8.3a Summary of investment strategy:

i. Provide a summary of the investment strategy and why this requires derivatives.

ii. Where derivatives are only required for a subset of the SBA portfolio, these assets should be described in detail (particularly where they are related to a separate SBA-related application e.g., assets acceptable on a limited basis or those for the long-term investment credit).

iii. Note that the description should be on the investments (not the derivatives) and their pertinent features that drive the need for the derivatives (such as the currency, fixity, timing of their cash flows).

E8.3b Hedging Strategy & Risk Management

i. Describe the hedging program(s) – including the rationale and aims, what is being hedged and how, targets, implementation, rebalancing (where applicable), etc.

ii. The strategy should explicitly describe whether derivatives are buy-and-hold, or whether future trading of derivatives is expected.

iii. This should describe the strategy, not considering any modelling assumptions / limitations.

iv. Provide details on the risks being hedged and the cashflows behind each derivative instrument and structure.

v. Provide details of the derivative contracts used and for which purpose. Provide the amounts of notional value/market value per category of derivative contracts held including key information (e.g., for swaps: fixed rate, timing of payments, cost of hedging etc.)

vi. Confirm the derivative instruments and the hedging program qualify as risk mitigating, as defined in this instructions handbook.

vii. Describe collateral and/or margin requirements, including clearing/settlement processes, agreements in place (ISDA, CSA), and eligible types of collateral/margin (e.g. cash only)

viii. Provide details on the effectiveness of the hedging program and how its assessed – metrics, criteria, frequency etc. Data on historical hedge effectiveness should be provided as far back as available.

ix. Describe any basis risk where applicable, and explain how basis risk is measured and managed, including demonstration that basis risk is not material.

x. Include a list of any operational risk incidents arising from, or related to, hedging or derivatives use within the last three years. A description should be provided for each incident, including (root) causes, loss amount, remedial actions taken, and current status of those actions.

E8.3c List and description: An exhaustive list and description of the derivatives to be considered in the application:

i. This should specify both the type and the currency of derivatives.

ii. This should detail the expected cash flows to be paid and received in each type, including whether these are contractually fixed or variable (related to prevailing market rates).

iii. Provide confirmation that the derivatives in question are actually held.

iv. Where approval is given for specific derivatives, this will be currency specific. A new application should be submitted if additional currencies are subsequently utilised.

E8.3d Modelling and Assumptions

i. A description of how the derivatives (and any associated assets) are modelled within the SBA calculation including how, as may be applicable, the market value is determined at each time step for each scenario.

ii. Provide impact analysis on the best estimate liability (BEL) with and without derivatives under base and the 8 scenarios, and explain the results.

iii. Detail and justify key assumptions, including hedging costs and future rebalancing assumptions within the SBA projections as applicable.

iv. Describe and demonstrate how the following are incorporated into the SBA projections: hedging effectiveness, basis risk, frictional costs (incl. transaction costs).

v. A description of any deviations between the modelling of the derivative strategy and the previously described investment and hedging strategies, such as simplifications or limitations of the modelling approach. These should be quantified and validated.

E8.3e Risks not hedged and Residual risks: Identify and discuss risks that are not hedged, residual risks as well as the circumstances under which the hedging would not work. The assessment of residual risks should consider the impact to cash flow matching, or equivalently the impact to the quantum of assets required to decease the liabilities.

i. This is any risk other than the domestic interest rate risk captured in the standard SBA scenarios.

ii. It should include uncertainty in execution of future hedges for strategies which are not exclusively buy-and-hold.

iii. Residual Risks in the portfolio should be quantified to a 1 standard deviation (1SD) confidence level.

iv. Particular attention should be given to risks which are asymmetric (i.e., where the benefit from a 1SD stress in one direction is different to the disbenefit from a 1SD stress in the other direction), either due to asymmetry in the underlying risk driver or asymmetry in the impact.

v. Once they have been quantified, this section should describe how the uncertainty related to these risks is captured by prudence in the calculation of the BEL.

vi. A commonly omitted Residual Risk is the evolution of credit spreads when interest rate swaps (or other derivatives) are used to hedge cash flow mismatches. Uncertain reinvestment / disinvestment yields are not directly a feature of the derivative usage, but without the derivatives the uncertainty associated with them are already captured within the standard SBA scenarios.

E8.3f Liquidity and collateral: this should be a summary document and include any relevant policies and procedures. The approach to managing the liquidity and collateral should be described:

i. A description of the collateral requirements for each type of derivative.

ii. A description of the liquidity and collateral management approach (including examples of relevant monitoring dashboards and metrics).

iii. It should be demonstrated that the SBA portfolio has sufficient liquidity and collateral to meet all expected collateral demands in all SBA scenarios, including those identified in Residual Risks analysis.

iv. Where the management approach assumes that assets are sold to meet liquidity requirements, it should be explained how this is reflected in the SBA modelling approach, or otherwise that the SBA modelling approach is assessed to be prudent.

E8.3g Stress and Scenario Testing

i. Describe the methodology and frequency of stress testing and scenario analysis conducted to assess the potential impact of adverse market conditions on derivative positions. Provide details of such stress testing.

ii. Describe and provide details on liquidity stress testing around derivatives use.

iii. Provide details on risks arising from derivatives held in a volatile interest rates environment, where applicable, including relevant historical experience. Provide results of stress tests performed to assess liquidity shortfalls when rates change and whether the insurance group is able to meet margin/collateral calls originating from either bilateral or centrally cleared derivatives.

E8.3h Governance and oversight

i. This should describe the risk framework within which the derivative strategy is executed. Where external managers execute some or all of the derivative strategy, extracts of the relevant investment management agreements should be provided which demonstrate the limits that the manager is expected to operate within. Policies and procedures should also be provided to demonstrate the insurance group's monitoring of the manager's execution.

ii. This should also describe and evidence the governance framework for modelling assumptions, where the SBA model mechanics does not perfectly reflect the investment and hedging strategies.

iii. Provide evidence of the internal approvals of the hedging program(s) as well as the second-line reviews performed.

iv. Describe risk exposure monitoring process including regular reporting that is in place.

v. Provide internal management reports (incl. board reports as applicable) on derivative usage.

vi. Where the insurance group uses derivatives for purposes other than those backing the SBA liabilities or where multiple SBA portfolios contain derivatives, they should be referenced here along with an overview of any dependence or interaction that those strategies have with the SBA derivatives. This might include fungibility of collateral, netting of trades, or cross-trading approaches. It should make it clear how the derivatives backing the SBA liabilities are separately identified. Pre-engagement with the Authority on such cases is recommended.

E8.3i Worked example: This should be a worked example, preferably in Excel, of how the derivatives are modelled within the SBA calculation. To the extent that there is a difference, this should also demonstrate how the investment strategy is executed. This would typically be a stylised example but should be representative of all use cases of derivatives. Actual implementations can also be considered, supported with walk-throughs.

E9. Risk-free curve used in the SBA

Instructions

E9.1 The risk-free curve used in the SBA calculations shall be either:

E9.1a The risk-free curve published or directed by the BMA; or

E9.1b The relevant risk-free market curve with no adjustments.

E9.2 The relevant risk-free rates referred to in point b above shall correspond either to the government bond rates or the swap rates, depending on the currency and the generally accepted market practices regarding risk-free benchmark rates for each such currency. The market curve shall be kept flat beyond the last traded tenor point[13] i.e., no extrapolation shall be applied.

E9.3 Insurance groups shall document the choice of the curve as part of their SBA methodology documentation, and shall use the curve consistently over time. Change in use of the curve requires prior approval of the Authority.

E9.4 The spreads used in the SBA shall be consistent with the choice of the risk-free curve. That is, the spreads shall be determined with respect to the risk-free curve used.

E9.5 For the avoidance of doubt, the choice of the risk-free curve for SBA shall not distort the actual initial market values of assets, which shall not be affected. Accordingly, the spread for each asset shall be adjusted, where necessary and not fully addressed by the previous paragraph, by including an (idiosyncratic) spread adjustment. This adjustment is determined so that the expected present value of the projected cash flows of the asset, when priced using the chosen risk-free rates and applicable spreads plus the spread adjustment, equals the actual market value of the asset. The so determined spread adjustment for each asset must be used as part of the valuation of that specific asset throughout the SBA projections. In particular, this adjustment would be required where the market benchmark curve underlying the actual market value of an asset differs from the risk-free curve used in the SBA, and the previous paragraph (i.e., determining spreads with respect to the risk-free curve used in the SBA) does not fully address the valuation difference for the asset.

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[13] E.g. in the case of the US Treasury curve, all the rates beyond the 30Y point shall be set equal to the observed 30Y rate.

E10. Default and Downgrade Costs

Background

E10.1 Paragraph 28(22) in the Rules includes requirements on default and downgrade costs in the SBA.

Instructions

Application of Default and Downgrade Costs

E10.2 Default and downgrade costs shall be applied by reducing the projected asset cash flows. A simplified spreadsheet example is published on the BMA website (https://www.bma.bm) to illustrate the core mechanics.

E10.3 The annualized default and downgrade costs provided by the Authority are to be converted into cumulative loss rates (and marginal loss rates, where necessary) for application to asset cash flows within the SBA projections. For a given asset category and rating combination, the same loss rate applies to all cash flows within a given period in the SBA projections. The spreadsheet example also demonstrates the above points.

E10.4 Default and downgrade costs shall be applied in a manner that reflects the full cumulative impact of default and downgrade costs in all situations, including when an asset is held to maturity and when it is sold before maturity.

E10.5 For the avoidance of doubt, the application of default and downgrade cost (i.e., the reduction in projected asset cash flows) shall not affect the initial time-0 market value of the assets, nor the projected purchase prices of assets at the point of reinvestment. Only the actual cash flows received within the projections will be impacted (including proceeds from sale where applicable).

E10.6 The marginal loss rate implied by the default and downgrade cost assumptions shall not be negative (equivalently, the cumulative loss rate shall be non-decreasing). Where this may otherwise not be the case, the marginal loss rate shall be floored at zero (i.e., an adjustment shall be applied so that the cumulative loss rate is non-decreasing), and all the subsequent cumulative loss rates shall be adjusted accordingly to reflect the knock-on impact of flooring the said marginal loss rate to zero.

E10.7 In the rare case that the implied spread for an investment turned out negative as a result of the application of default and downgrade costs, the default and downgrade costs for that investment may be adjusted so that the implied spread equals the lower of zero and the actual implied market spread at the valuation date. For the avoidance of doubt, the postadjustment default and downgrade costs cannot be lower than zero (i.e., at most the adjustment can lead to nil default and downgrade costs being applied to an investment). For the purposes of this paragraph, the implied spread is calculated as the difference between the default and downgrade cost-adjusted yield and the applicable risk-free rate, where the default and downgrade cost-adjusted yield is determined based on i) the actual market value of the investment as of the valuation date; and i) the default and the downgrade cost-adjusted cash flows used in the SBA for that investment.

5-year Transitional for the Downgrade Cost component

E10.8 The downgrade cost component of the default and downgrade costs will be phased in gradually over 5 years. The downgrade costs published by the Authority are the ultimate downgrade costs, whereas the downgrade costs to be applied at each relevant valuation date are determined as follows:

E10.8a For valuation dates during 2024, including 31 Dec 2024: 20% of the full ultimate downgrade costs will be used.

E10.8b For valuation dates during 2025, including 31 Dec 2025: 40% of the full ultimate downgrade costs will be used.

E10.8c For valuation dates during 2026, including 31 Dec 2026: 60% of the full ultimate downgrade costs will be used.

E10.8d For valuation dates during 2027, including 31 Dec 2027: 80% of the full ultimate downgrade costs will be used.

E10.8e For valuation dates during 2028 and later: 100% of the full ultimate downgrade costs will be used.

E10.9 In each case, the downgrade costs after application of the phase-in factor are to be rounded to the nearest whole basis point, to be done individually for all the applicable asset type/rating/tenor combinations.

E10.10 Insurance groups may choose to early adopt the full downgrade costs at any point. However, once elected, it is not possible to revert back without prior written approval from the Authority.

E10.11 For the avoidance of doubt, the phasing in does not apply to the default cost (expected loss) component, which will apply in full immediately.

Use of Issuer vs. Issue ratings

E10.12 The default and downgrade costs have been calibrated based on issuer defaults and issue-level recoveries (LGDs). This also reflects that defaults are generally issuer-level events, while the recoveries are issue-specific i.e., depend on the place of the debt issue in the issuer's capital stack, as well as on the amount and nature of any collateral.

E10.13 The application of the default and downgrade costs should be consistent with the way the costs were derived. Accordingly, issuer ratings should be used in assigning the default & downgrade costs.

E10.14 However, where an insurance group can demonstrate that ether: i) the use of issue-level ratings leads to outcomes that are no less conservative (i.e., leads to SBA BELs for the relevant blocks of business that are no lower) than those obtained by using issuer-level ratings; or ii) where criterion i) is not met, the differences are demonstrated to be immaterial; then the issue-level ratings may be used.

Use of Simplifications

E10.15 Reasonable simplifications are allowed provided they are prudent and appropriately capture the cumulative impact of default and downgrade costs at all points, including on point of sale.

Default and Downgrade Cost Floors

E10.16 For all assets for which the BMA does not publish default and downgrade costs, the default and downgrade costs applied within SBA shall be no less than the applicable floors. That is, the default and downgrade costs for all such assets shall be determined as the greater of: i) the insurance group's own default and downgrade cost assumptions for the asset; and ii) the applicable floors. The applicable floors are defined as the corporate bond (senior unsecured) default and downgrade costs for the corresponding rating, unless otherwise prescribed by the Authority. For structured assets and securitizations, the floors shall apply at the level of the tranches (as opposed to the underlying collateral assets).

Default and Downgrade Costs beyond the Published Tenors

E10.17 For default and downgrade cost assumptions beyond the last tenor/maturity for which the Authority publishes the costs, the insurance groups may keep the default and downgrade costs constant at the values corresponding to the last published tenor/maturity.[14]

E10.18 Alternatively, other approaches may be used provided it is demonstrated that those lead to assumptions that are no less conservative (i.e., lead to default and downgrade costs and cumulative losses that are no lower) than the approach above. Examples of such alternative approaches include fitting a curve to reflect the trend in the published default and

[14] For the avoidance of doubt, it is noted that this still implies increasing cumulative losses.

downgrade costs; or utilizing rating agency data beyond the last tenor published by the BMA to extrapolate the default and downgrade costs; in each case provided the conservatism criterion above is met.

Treatment of Government Debt

E10.19 In terms of default and downgrade costs, government debt shall be treated the same as unsecured corporate bonds of the same rating, except for the following cases:

E10.19a For countries rated AA- or better, there will be no default & downgrade costs for government debt issued in the local currency of the country.

E10.19b Otherwise, there will be no default & downgrade costs for government debt where all of the following conditions are met:

i. The debt is denominated in the local currency of the country;
ii. The country is rated A- or better;
iii. The currency of the country has a status as global reserve currency and is fully convertible; and
iv. The country has full and independent control over fiscal and monetary policy.

E11. Transaction Costs

Background

E11.1 Paragraph 28(30)-(32) in the Rules include requirements on transaction costs in the SBA.

Instructions

E11.2 For all assets, the full expected price impact of selling or buying the asset shall be reflected within the scenario-based approach projections. In addition to the price impacts of trading, any applicable fees, commissions and expenses required to purchase or sell assets—whether implicit or explicit—should be included within the transaction cost assumptions. As per subparagraph 28(30)(c), where no sufficient data for a specific asset type is available, or uncertainty around the level of assumptions exists, prudent assumptions shall be applied by insurance groups in modelling of the transaction costs and related costs.

Application of Bid-Ask spreads

E11.3 If current observed bid-ask spreads are lower than long-term average bid-ask spreads, a grading-in from current market to long-term average bid-ask spreads should be applied; the same shall apply if current bid-ask spreads are wider than long-term average bid-ask spreads, except that the grade-in period shall be set to be more prudent. This applies to both existing assets and potential reinvestments. Alternatively, long-term average bid-ask spread assumptions can be used where these are demonstrated to be more prudent than current bid-ask spreads.

E11.4 The bid-ask spreads should be the effective bid-ask spreads that consider the size of the insurance group's positions and the volumes traded within the SBA projections in relation to the liquidity and depth of the market for the relevant asset. Marginal bid-ask spreads (e.g., the bid-ask spread involved in buying/selling an incremental unit of quantity at the market) should not be used. In case an insurance group considers that the effective bid-ask spreads do not provide an appropriate reflection of economic reality, then the insurance group may use more realistic bid-ask spreads that explicitly vary based on the quantities sold/bought. The derivation of such bid-ask spreads should be based on observed market data and consider all the principles noted within this section and in the principal Rules (including application of appropriate conservatism where uncertainty exists).

Treatment of liquid publicly traded assets

E11.5 For liquid publicly traded assets, the minimum requirement is to reflect bid-ask spreads, in the manner described in the principal Rules and these Instructions, where it can be demonstrated that this adequately captures (and does not understate) the full expected price impact of selling and buying.

Treatment of all other assets

E11.6 For assets other than liquid publicly traded assets, the market bid-ask spreads may not provide a full reflection of the price impact of selling/purchasing, and this shall be reflected in the assumptions used. The impact is expected to vary by degree of (il)liquidity and between asset classes. For less liquid assets, the magnitude of the impact is expected to be higher than the bid-ask spreads based on advertised or displayed prices/quotes (including broker quotes or other non-binding prices).

E11.7 In addition to the requirements set out in the Rules, the transaction cost assumptions should also satisfy the following:

E11.7a The transaction cost assumptions incorporating full price impacts should not be lower, for any asset type, than the implied bid-ask spreads or discounts/premiums observed based on past actual trades for that asset type.

E11.7b The price impacts and bid-ask spreads for illiquid or less liquid assets should be no less than those for similar liquid publicly quoted assets of equivalent credit quality/rating.

F. APPENDIX A - GLOSSARY

Act – means the Insurance Act 1978.

Accident and Health Insurance – means an insurance that pays a benefit or benefits in the event of the insured incurring an insured injury, illness or infirmity.

Annuity or Annuities – means an insurance that provides savings or income benefits during the lifetime of the insured or some limited period thereafter.

Approved Group Internal Capital Model – means a model approved under paragraph 5 of the Rules.

Available Statutory Capital and Surplus – Available Statutory Capital and Surplus is defined as Total Statutory Capital and Surplus including subsequent Capital Contribution including 'Deductions'. All capital contributions are to be approved by the BMA, and all adjustments are determined at the discretion of the BMA.

Average Annual Loss (AAL) – based on insurance group's Cat models; mean expected net natural catastrophe loss (after reinsurance), including reinstatement premiums, for annual aggregate exposure to all related risks and perils other than those relating to the Property Catastrophe line of business for the year following the 'relevant year' as reported on Schedule V. The AAL should be calculated from the same underlying loss distribution used to determine the Gross PML and Net PML (excluding the property catastrophe component).

Bermuda Monetary Authority (BMA or Authority) – the BMA is the integrated regulator of the financial services sector in Bermuda. Established under the Bermuda Monetary Authority Act 1969, the Authority supervises, regulates and inspects financial institutions operating in or from within the jurisdiction. It also issues Bermuda's national currency; manages exchange control transactions; assists other authorities in Bermuda with the detection and prevention of financial crime; and advises the Government and public bodies on banking and other financial and monetary matters. The Authority develops risk-based financial regulation that it applies to the supervision of Bermuda's banks, trust companies, investment businesses, investment funds, fund administrators, money service businesses, corporate service providers, insurance companies, digital asset business and digital asset issuance. It also regulates the Bermuda Stock Exchange.

Group Bermuda Solvency Capital Requirement (Group BSCR) – establishes a measure of solvency capital that is used by the BMA to monitor the capital adequacy of insurance groups domiciled in Bermuda. The Group BSCR is determined by combining the calculated capital for each risk category (excluding operational risk) and applying a covariance adjustment with the square root rule, which is further adjusted to include group-specific operational risk, group-specific catastrophe-related measures, group-related risks and capital add-on.

Group BSCR Ratio – the Group BSCR Ratio is the ratio of the Available Statutory Economic Capital and Surplus to the Group BSCR (after covariance adjustment).

Group Capital and Solvency Return – means such return relating to the group's risk management practices and to the information used by the group to calculate its ECR as may be prescribed by or under Rules made under section 6A.

Cat – abbreviation of the word catastrophe.

Catastrophe Risk – means the risk of a single catastrophic event or series of catastrophic events that lead to a significant deviation in actual claims from the total expected claims;

Concentration Adjustment Factor – the concentration adjustment factor is used in relation to the premium risk and the reserve risk. It is based on the ratio of the largest individual line of business amount to total amount. The Factor will decrease as the number of lines of business increases to a minimum value of 60%

Concentration Risk – means the risk of exposure to losses associated with inadequate diversification of portfolios of assets or liabilities.

Credit Risk – includes the risk of loss arising from an insurance group's inability to collect funds from debtors.

Critical Illness Insurance – means a form of accident and health insurance that pays a benefit if the insured incurs a predefined major illness or injury.

Deferred Annuity – means an insurance that provides benefits at a future date which may be fixed deferred annuities where specified amounts are payable or variable annuities where the benefits are dependent on the performance of an investment fund or funds.

Disability Income Insurance – means an accident and health insurance that pays a benefit for a fixed period of time during disability.

Form 1 – Statutory balance sheet as defined by the BMA.

Form 2 – Statutory statement of income as defined by the BMA.

Form 8 – Statutory statement of capital and surplus as defined by the BMA.

Form 1EBS – Economic balance sheet as defined by the BMA.

Group Enhanced Capital Requirement (Group ECR) – establishes a measure of solvency capital that is used by the BMA to monitor the capital adequacy of insurance groups domiciled in Bermuda. It is equal to the higher of an approved group internal capital model/Group BSCR or MSM.

Group ECR Ratio – the Group ECR Ratio is the ratio of Available Statutory Economic Capital and Surplus to the Group ECR.

Group Life, Health and Disability Insurance – means insurance that is issued to insureds through a group arrangement such as through an employer or association.

Insurance (Group Supervision) Rules 2011(the Supervision Rules) – these Rules apply to insurance groups for which the BMA is the group supervisor.

Insurance (Prudential Standards) (Insurance Group Solvency Requirement) Rules 2011 (the Prudential Standard Rules) – under section 6A of the Act, the BMA may make Rules prescribing prudential standards in relation to (a) ECR, (b) Capital and solvency returns, (c) Insurance reserves, and (d) Eligible capital that must be complied with by insurance groups for which the BMA is the group supervisor

Insurance Risk – means the risk of fluctuations or deterioration in the experience factors affecting the cost of benefits payable to policyholders or impacting upon the amounts held to provide for policyholder obligations, including Long-Term business risks.

Legal Risk – means the risk arising from an insurance group's (a) failure to comply with statutory or regulatory obligations; or (b) failure to comply with its bye-laws; or (c) failure to comply with any contractual agreement.

Life Insurance – including term insurance, whole-life insurance and universal-life insurance; means insurance of risks on the mortality (risk of death) of the life insured.

Liquidity Risk – means (a) the risk arising from an insurance group's inability to meet its obligations as they fall due or (b) an insurance group's inability to meet such obligations except at excessive costs.

Longevity Risk – means the risk of fluctuations or improvements in mortality that causes benefits or payout annuities to be paid for longer than expected.

Market Risk – means the risk arising from fluctuations in values of, or income from, assets or in interest rates or exchange rates.

Morbidity Risk – means the risk of fluctuations or deteriorations of morbidity experience causing increased claims on accident and health insurance coverage.

Mortality Risk – means the risk of fluctuations or deteriorations of mortality experience causing increased claims on life insurance coverage.

Non-Proportional Insurance – means coverage of risk that is not shared at a given layer or that attach above an insured layer.

Non-Rated Bonds – Bonds that have not been rated by AM Best, Standard & Poor's, Moody's, Fitch or equivalent agencies.

Operational Risk – means the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events including legal risk.

Quoted – assets that are carried at fair value quoted on an exchange or a determinable market.

PML – see Probable Maximum Loss definition.

Premium Risk – means the risk that premium is insufficient to meet future obligations.

Probable Maximum Loss (PML) – based on insurance group's Cat models; probable maximum loss is the anticipated maximum loss that can occur with a certain level of probability. The BSCR utilises a probable maximum natural catastrophe loss at a 99.0% TVaR level for annual aggregate exposure to all related risks and all perils, including reinstatement premiums.

Rated Bonds – bonds rated with respect to the latest available AM Best, Standard & Poor's, Moody's, Fitch or equivalent agencies.

Regulatory Action Level – defined by BMA's regulatory action guidelines.

Relevant Year – in relation to an insurance group, this means its financial year.

Reputational Risk – includes risk of adverse publicity regarding an insurance group's business practices and associations.

Required Capital and Surplus – see Enhanced Capital Requirement.

Retrocessional Contracts – Reinsurance contract whereby one reinsurer transfers all or part of the reinsurance risk that it has assumed or will assume to another reinsurer.

Scenario-based Approach (SBA) - the alternative approach to calculating the best estimate liability

Schedule II – Schedule of Fixed Income and Equity Investments By BSCR Rating as defined by the BMA.

Schedule IIA – Schedule of Funds Held by Ceding Reinsurers In Segregated Accounts/Trusts by BSCR Rating as defined by the BMA.

Schedule III – Schedule of Loss and Loss Expense Provisions by line of business as defined by the BMA.

Schedule IV – Schedule of Premium Written by Line of Business as defined by the BMA.

Schedule IV(B) – Schedule of Long-Term Business Premiums as defined by the BMA.

Schedule V – Schedule of Risk Management as defined by the BMA.

Schedule VI – Schedule of Fixed Income Securities as defined by the BMA.

Schedule VII – Schedule of Long-Term Insurance Data as defined by the BMA.

Schedule VIII – Schedule of Long-Term Variable Annuity as defined by the BMA.

Schedule VIIIA – Schedule of Long-Term Variable Annuity – Internal Capital Model as defined by the BMA.

Schedule IX – Schedule of Group's Solvency Self-Assessment as defined by the BMA.

Schedule X – Catastrophe Risk Return as defined by the BMA.

Schedule XIA – Schedule of Regulated Non-insurance Financial Operating Entities as defined by the BMA.

Schedule XIB – Schedule of Unregulated Entities Where the Parent Exercises Control as defined by the BMA.

Schedule XIC – Schedule of unregulated entities where the parent exercises significant influence as defined by the BMA.

Schedule XID – Schedule of entities' capital deducted from the available statutory capital and surplus as defined by the BMA.

Schedule XII – Schedule of group minimum margin of solvency as defined by the BMA.

Schedule XIII – Schedule of group eligible capital as defined by the BMA.

Square Root Rule – the square root rule is an approximation of the covariance effect of the risk categories.

Strategic Risk – means the risk of an insurance group's inability to implement appropriate business plans and strategies, make decisions, allocate resources, or adapt to changes in the business environment.

Stop Loss Insurance Risk – is a form of non-proportional risk that provides benefits if total claims experience exceed a predefined level.

Supervision Rules – see Insurance (Group Supervision) Rules 2011.

Tail Value-at-Risk (TVaR) – means the conditional average potential given that the loss outcome exceeds a given threshold.