



BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

Interest Rate Risk in the Banking Book

Exposure Draft

Applicable to:

1. Licensed banks
2. Licensed investment banks
3. Licensed Islamic banks
4. Financial holding companies

This Exposure Draft (ED) sets out the proposed rules for Interest Rate Risk in the Banking Book (IRRBB) for financial institutions. The requirements consist of (i) qualitative principles on IRRBB management; (ii) a quantitative Standardised Framework for financial institutions to measure and report IRRBB; and (iii) the Bank's expectations on Pillar 2 capital allocation for IRRBB.

The qualitative principles set out the Bank's supervisory expectations on the general application of sound principles for the management of IRRBB, in particular the need for effective IRRBB identification, measurement, monitoring and control.

The Bank proposes for the new IRRBB rules to come into force in 2027.

The Bank invites written feedback on the proposed requirements, including suggestions on areas to be clarified and alternative proposals that the Bank should consider. The written feedback should be constructive and supported by clear rationale, including accompanying evidence or illustrations where appropriate, to facilitate an effective consultation process. Where appropriate, please specify the applicable paragraph.

In addition to providing general feedback, respondents are also requested to respond to the specific questions set out in this ED and complete the Quantitative Impact Study (QIS) reporting template issued concurrently with this ED. Please refer to the accompanying Excel file *Interest Rate Risk in the Banking Book – Quantitative Impact Study Template* and the reporting instructions provided in the *Interest Rate Risk in the Banking Book – Quantitative Impact Study Instructions*.

Responses must be submitted electronically to the Bank via e-mail to pfconsult@bnm.gov.my by 30 January 2026. Submissions received may be made public unless confidentiality is specifically requested for the whole or any part of the submission. In the course of preparing your feedback, you may direct any queries to the following officers:

1. Cheryl Tan Kerr Tshin (cheryl@bnm.gov.my + ext. 8022)
2. Chong Yuen Kit (chongyuenkit@bnm.gov.my + ext. 8609)
3. Lau Yee Shann (yeeshann@bnm.gov.my + ext. 8399)
4. Bryan Kam Zhi Ming (bryan.kam@bnm.gov.my + ext. 8623)

TABLE OF CONTENTS

PART A	OVERVIEW	1
1	Introduction.....	1
2	Applicability	1
3	Legal provisions	1
4	Effective date.....	2
5	Interpretation	2
6	Related legal instruments and policy documents	4
7	Policy documents superseded.....	4
PART B	RISK MANAGEMENT PRINCIPLES	5
8	IRRBB management framework.....	5
9	Roles and responsibilities of the board and senior management	6
10	Risk appetite and limits.....	8
11	Measurement of IRRBB.....	9
12	Modelling assumptions.....	13
13	Data integrity and model governance	15
14	Reporting to board and senior management	18
PART C	STANDARDISED FRAMEWORK	20
15	Overall structure of the Standardised Framework	20
16	Cash flow slotting	21
17	NMD modelling	23
18	Treatment of positions with behavioural options other than NMDs.....	25
19	Interest rate shock scenarios.....	28
20	Treatment for automatic interest rate options (AIRO).....	30
21	Calculation of the Standardised Framework EVE measure	32
PART D	OTHER REQUIREMENTS	33
22	Capital adequacy for IRRBB.....	33
23	Supervisory Outlier Test	34
24	Public disclosure	35
25	Reporting requirements to the Bank.....	36
PART E	APPENDICES	37
APPENDIX 1	Dimensions influencing the exercise of embedded behavioural options	37
APPENDIX 2	Maturity schedule for notional repricing cash flows.....	38
APPENDIX 3	Two-step procedure for separation of NMDs	38
APPENDIX 4	A simplified example of the application of CPR	39
APPENDIX 5	Six interest rate shock scenarios for MYR, USD and SGD	39
APPENDIX 6	Illustrative example of Standardised Framework EVE calculation	41

PART A OVERVIEW

1 Introduction

- 1.1 Interest rate risk in the banking book (IRRBB) refers to the current and/or prospective risk to a financial institution's capital and earnings arising from adverse movements in interest/profit rates that affect the financial institution's banking book positions.
- 1.2 Excessive IRRBB can pose a significant threat to a financial institution's capital and/or future earnings if not managed appropriately. Movements in interest rates can change the underlying economic value of a financial institution's assets, liabilities and off-balance sheet items, because the present value of future cash flows (and, in many cases, the amount of cash flows themselves) change when interest rates change. Changes in interest rates also affect a financial institution's earnings by altering its interest rate-sensitive income and operating expenses, which in turn affects its net interest income (NII).
- 1.3 This policy document sets out the proposed rules for IRRBB for financial institutions. The requirements consist of:
- (a) qualitative principles on IRRBB management;
 - (b) a quantitative Standardised Framework for financial institutions to measure and report IRRBB; and
 - (c) the Bank's expectations on the capital allocation for IRRBB under the Pillar 2 capital framework.

2 Applicability

- S** 2.1 This policy document is applicable to all financial institutions as defined in paragraph 5.2.

3 Legal provisions

- S** 3.1 The requirements in this policy document are issued pursuant to:
- (a) section 47, 115, 143 of the Financial Services Act 2013 (FSA); and
 - (b) section 57, 127, 155 of the Islamic Financial Services Act 2013 (IFSA).
- S** 3.2 The guidance in this policy document is issued pursuant to section 266 of the FSA and section 277 of the IFSA.

4 Effective date

- S** 4.1 This policy document comes into effect on **[DD MM YYYY]** (date to be specified in the finalised policy document).

Question 1

The Bank plans to issue the finalised policy document in 2026, and to specify that the requirements take effect 12 months thereafter. Would your financial institution be able to comply with the requirements stipulated in the policy document based on this timeline? If not, please suggest an alternative implementation timeline, with clear justification.

5 Interpretation

- S** 5.1 The terms and expressions used in this policy document shall have the same meanings assigned to them in the FSA and IFSA, as the case may be, unless otherwise defined in this policy document.

- S** 5.2 For the purpose of this policy document:

“**S**” denotes a standard, an obligation, a requirement, specification, direction, condition and any interpretative, supplemental and transitional provisions that must be complied with. Non-compliance may result in enforcement action;

“**G**” denotes guidance which may consist of statements or information intended to promote common understanding and advice or recommendations that are encouraged to be adopted;

“**amortised cost**” refers to the amount at which a financial asset or financial liability is measured at initial recognition minus principal repayments, adjusted for cumulative amortisation and deducting any impairment, consistent with the definition of “amortised cost” under MFRS 9;

“**basis risk**” refers to the impact of relative changes in interest rates for financial instruments that have similar tenors but are priced using different interest rate indices;

“**board**” refers to the board of directors of a financial institution, including any committee of the board where the responsibilities of the board set out in this policy document have been delegated to such a committee;

“**Credit Spread Risk in the Banking Book**” or “**CSRBB**” refers to any kind of asset/liability spread risk of credit-risky instruments that is not explained by IRRBB and by the expected credit/jump-to-default risk;

“economic value of equity” or **“EVE”** refers to the net present value (NPV) of a financial institution’s assets, liabilities and off-balance sheet items, which reflects how much a financial institution is worth economically in a given scenario;

“fair value” refers to the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, consistent with the definition of “fair value” under MFRS 13;

“financial institution” refers to a:

- (a) licensed bank, licensed Islamic bank and licensed investment bank under the FSA or IFSA; and
- (b) a financial holding company under the FSA or IFSA;

“gap risk” refers to the risk which arises from the term structure of banking book instruments, particularly from the timing of the instruments’ rate changes. The extent of gap risk depends on whether changes to the term structure of interest rates occur consistently across the yield curve (i.e. parallel risk) or differentially by period (i.e. non-parallel risk);

“interest rate” also refers to profit rate in Shariah-compliant products for the purposes of this policy document;

“Interest Rate Risk in the Banking Book” or **“IRRBB”** refers to the current or prospective risk to a financial institution’s capital and earnings, arising from the impact of adverse movements in interest rates on its banking book. For the purposes of this policy document, IRRBB also refers to the Rate of Return Risk in the Banking Book (RORBB);

“non-maturity deposits” or **“NMDs”** refer to liabilities of financial institutions in which there is no contractually agreed maturity date and the depositor is free to withdraw at any time;

“option risk” refers to the risk which arises from option derivative positions or from optional elements embedded in a financial institution’s assets, liabilities and/or off-balance sheet items, where the financial institution or its customer can alter the level and timing of their cash flows. Option risk can be further categorised into the following:

- (a) **“automatic option risk”** which arises from standalone instruments, such as exchange-traded and over-the-counter option contracts, or is explicitly embedded within the contractual terms of an otherwise standard financial instrument (e.g. a capped rate financing) and where the holder will almost certainly exercise the option if it is in their financial interest to do so; and
- (b) **“behavioural option risk”** which arises from flexibility embedded implicitly or explicitly within the terms of financial contracts, such that changes in interest rates may effect a change in the behaviour of the

client (e.g. rights of a borrower to prepay a financing, with or without penalty, or the right of a depositor to withdraw their balance in search of higher yield);

“**Rate of Return Risk in the Banking Book**” or “**RORBB**” refers to the current or prospective risk to a financial institution’s earnings and capital, arising from the adverse movements in profit rates that affect Shariah-compliant financial instruments held in the banking book. RORBB is the Shariah-compliant equivalent of IRRBB;

“**risk-free rate**” refers to the theoretical rate of interest an investor would expect from a risk-free investment for a given maturity;

“**senior management**” refers to the chief executive officer and senior officers.

6 Related legal instruments and policy documents

- S** 6.1 This policy document must be read together with other relevant legal instruments and policy documents that have been issued by the Bank, including any amendments or reissuance thereafter, in particular:
- (a) *Corporate Governance* (BNM/RH/PD 029-9);
 - (b) *Financial Reporting* (BNM/RH/PD 032-13);
 - (c) *Financial Reporting for Islamic Banking Institutions* (BNM/RH/PD 033-9);
 - (d) *Liquidity Risk* (BNM/RH/PD 028-134);
 - (e) *Responsibility Mapping* (BNM/RH/PD 028-131);
 - (f) *Risk-Weighted Capital Adequacy Framework (Basel II) – Internal Capital Adequacy Assessment Process (Pillar 2)* (BNM/RH/GL 001-33);
 - (g) *Risk Weighted Capital Adequacy Framework (Basel II) – Disclosure Requirements (Pillar 3)* (BNM/RH/GL 001-32); and
 - (h) *Stress Testing* (BNM/RH/PD 029-15).

7 Policy documents superseded

- S** 7.1 This policy document supersedes the policy document on *Reporting Requirements for Interest Rate and Rate of Return Risk in the Banking Book* (BNM/RH/PD 029-43) issued on 30 June 2020.

PART B RISK MANAGEMENT PRINCIPLES

8 IRRBB management framework

- S Principle 1: A financial institution shall have a sound, well-developed framework in place to identify, measure, monitor and control its IRRBB. A financial institution shall conduct regular independent reviews and evaluations of the effectiveness of the framework.**
- S** 8.1 A financial institution shall establish a framework to manage IRRBB that includes policies, processes¹, and procedures for identifying, measuring, monitoring, and controlling IRRBB, commensurate with the financial institution's size and complexity.
- S** 8.2 A financial institution shall integrate its IRRBB management framework within its broader risk management framework and overall business plan.
- S** 8.3 A financial institution shall clearly delineate delegated powers, lines of responsibility and accountability over the management of IRRBB exposures within its IRRBB management framework.
- S** 8.4 A financial institution shall identify and fully understand the IRRBB inherent in all its products and activities. These products and activities shall be subject to the financial institution's IRRBB management framework and managed in accordance with its board-approved risk appetite.
- S** 8.5 A financial institution shall ensure that the IRRBB characteristics of new products and activities are well understood, and the financial institution has the capacity to measure, monitor, and control the associated IRRBB, before such new products and activities are rolled out.
- S** 8.6 A financial institution shall rely on robust data in its measurement of IRRBB exposures.
- S** 8.7 A financial institution shall clearly define its strategies to control IRRBB, along with the scope of authorised instruments for implementing these strategies.

Question 2

The Bank invites views on the differences in managing IRRBB associated with conventional financial exposures, versus Rate of Return Risk in the Banking Book (RORBB) associated with Islamic financial exposures. For Islamic financial institutions specifically, please share any challenges associated with managing/hedging RORBB.

¹ These include the appropriate governance and approval processes.

- S** 8.8 A financial institution shall have in place robust internal controls² to ensure the integrity of its IRRBB management framework and provide reasonable assurance that the financial institution's IRRBB management objectives are being achieved.
- S** 8.9 A financial institution shall conduct independent³ reviews and evaluate the effectiveness of its IRRBB management framework and internal controls, at least annually. The financial institution shall implement any revisions or enhancements arising from the independent reviews in a timely manner.
- S** 8.10 A financial institution shall identify, monitor and assess its credit spread risk in the banking book (CSRBB) as part of the implementation of its IRRBB management framework.

Question 3

Please share your financial institution's current practices and challenges faced in identifying, monitoring, and assessing CSRBB.

9 Roles and responsibilities of the board and senior management

- S** **Principle 2: The board shall be responsible for overseeing and approving the financial institution's IRRBB management framework. Senior management shall be responsible for developing, implementing and reviewing the financial institution's IRRBB management policies, processes and procedures.**
- S** 9.1 The board shall ensure it has sufficient⁴ understanding of the nature and level of the financial institution's IRRBB exposures, the implications of the financial institution's IRRBB strategies, and any potential linkages with other risks including market, liquidity, credit and operational risks.

² Internal control policies, processes and procedures shall include, but are not limited to, exposure limits, reviews, and other mechanisms that provide checks and balances.

³ Financial institutions shall ensure that all such evaluations and reviews are conducted by individuals and/or units that are independent of the function they are assigned to review. These may refer to an independent auditing function, such as an internal or external auditor.

⁴ For the avoidance of doubt, not every member of the board is expected to have detailed technical knowledge of complex financial instruments, or of quantitative IRRBB management techniques. However, the board must collectively be able to credibly question and challenge the financial institution's management of IRRBB.

- S** 9.2 The board shall approve the financial institution's:
- (a) IRRBB management framework and associated policies⁵;
 - (b) risk appetite, risk tolerance and associated risk limits for IRRBB; and
 - (c) strategies related to risk-taking and IRRBB hedging⁶ activities.
- S** 9.3 The board shall ensure that it is informed on the level and trend of the financial institution's IRRBB exposures, at least on a quarterly basis, and more frequently during rapidly changing market conditions.
- S** 9.4 The board shall ensure that senior management has the capabilities and skills to understand and manage IRRBB, and that adequate resources are devoted to the management of IRRBB.
- S** 9.5 Where responsibilities have been delegated, senior management shall clearly identify the delegates and their corresponding responsibilities, and ensure there is an adequate separation of responsibilities in terms of the key elements of the IRRBB management process to avoid actual, potential or perceived conflicts of interest.
- S** 9.6 Senior management shall ensure it clearly understands the significant modelling assumptions used in the financial institution's IRRBB systems.
- S** 9.7 Senior management shall ensure that any analysis and risk management activities related to IRRBB are conducted by personnel equipped with the requisite resources, technical knowledge and experience.
- S** 9.8 Senior management shall develop and implement:
- (a) specific procedures and processes on approvals, compliance with the board-approved IRRBB limits, and escalations of breaches or exceptions to those limits;
 - (b) hedging and management strategies for IRRBB;
 - (c) systems and standards for measuring⁷ IRRBB, valuing positions and assessing the effectiveness of the measurement system;
 - (d) an IRRBB stress testing framework;
 - (e) an IRRBB model risk governance framework;
 - (f) a comprehensive IRRBB reporting and review process; and
 - (g) effective internal controls and management information systems (MIS).
- S** 9.9 Senior management shall regularly review the financial institution's IRRBB management policies, processes and procedures to ensure that they remain appropriate and sound.

⁵ This includes model governance policies.

⁶ This includes internal risk transfers between the banking book and the trading book.

⁷ Including procedures for updating interest rate shock scenarios and key underlying assumptions driving the financial institution's IRRBB measurement and analysis.

- S** 9.10 Senior management shall review timely information⁸ that is sufficiently detailed to allow it to understand and assess the effectiveness of the financial institution in monitoring and controlling IRRBB, in compliance with policies approved by the board.
- S** 9.11 The board and senior management shall actively encourage discussions at, and between, all levels about the IRRBB management process. This would include frequent discussions between the board, senior management and Asset and Liability Committee (ALCO) over IRRBB management, regular communication between the risk management team and strategic/business/capital planning areas of the financial institution to evaluate risks arising from planned business activities.

10 Risk appetite and limits

- S** **Principle 3: A financial institution’s risk appetite for IRRBB shall be clearly articulated and appropriate limits shall be established to manage the impact on both economic value and earnings.**

Risk appetite

- S** 10.1 A financial institution shall have a clearly defined risk appetite statement⁹ for IRRBB that is approved by the board and implemented through the financial institution’s IRRBB management framework.
- S** 10.2 A financial institution shall review at least annually, and revise as needed, its risk appetite statement and associated risk limits on IRRBB (“IRRBB limits”).
- S** 10.3 A financial institution which is significantly exposed to CSRBB shall have a clearly defined risk appetite statement for CSRBB, as a complement to the risk appetite statement for IRRBB.

Limits

- S** 10.4 A financial institution shall ensure its IRRBB limits¹⁰ are:
- (a) consistent with the financial institution’s overall risk appetite, ability and approaches for measuring and managing IRRBB, taking into account the results of the stress tests described in paragraph 11.13 and
 - (b) commensurate with the nature, size and complexity of its business activities.

⁸ Senior management shall be furnished with such information more frequently and with shorter delays when the financial institution runs significant IRRBB exposures, has positions in complex IRRBB instruments, or when substantial changes to the interest rate environment warrant it.

⁹ A risk appetite statement is a written articulation of the aggregated level and types of exposures that a financial institution will accept, or avoid, in order to achieve its business objectives.

¹⁰ These IRRBB limits may be associated with specific scenarios of changes in interest rates and/or term structures, such as an increase or decrease of a particular size or a change in shape.

- G** 10.5 A financial institution may also identify and apply sub-limits for individual business units, portfolios, instrument types or specific instruments. The granularity of IRRBB limits is expected to reflect the characteristics¹¹ of the financial institution's holdings, including the various sources of its IRRBB exposures.
- S** 10.6 A financial institution shall apply IRRBB limits on both entity and consolidated levels, where applicable.
- S** 10.7 A financial institution shall develop a relevant set of IRRBB limits to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are measured at fair value.
- S** 10.8 A financial institution shall establish mechanisms to monitor and identify positions that exceed, or are likely to exceed, its IRRBB limits¹².
- S** 10.9 A financial institution shall develop a clear policy outlining who will be informed, how the communication will take place and the actions which will be taken in response to positions that exceed, or are likely to exceed, its IRRBB risk limits. These positions must receive prompt attention and be escalated on a timely basis in accordance with the policy.

11 Measurement of IRRBB

- S** **Principle 4: A financial institution shall measure its IRRBB using both economic value and earnings-based measures, derived from an appropriate range of interest rate shock and stress scenarios.**

Measurement system

- S** 11.1 A financial institution shall ensure its IRRBB measurement system and methodology captures all material sources of IRRBB, and that it enables the financial institution to assess the effects of interest rate changes on the full scope of its exposures and activities.
- S** 11.2 A financial institution shall adopt an appropriate IRRBB measurement system and methodology based on the financial institution's IRRBB risk profile, business activities and risk appetite.

¹¹ For example, a financial institution with significant exposures to gap risk, basis risk or positions with explicit or embedded options should establish IRRBB limits appropriate for these risks.

¹² Limits may either be absolute (i.e. should never be exceeded) or may, under specific circumstances, be temporarily exceeded for a pre-determined short period of time. If the limit may be exceeded, the financial institution should articulate the exact circumstances under which this is allowed, the allowed duration of the breach, and the remedial actions that will be taken.

- S** 11.3 A financial institution shall measure its vulnerability to losses under stressed market conditions, including vulnerability to losses arising from the breakdown of key assumptions. The outcomes of such assessments shall be considered in the formulation and review of IRRBB-related policies, processes, limits and capital adequacy.
- S** 11.4 A financial institution shall ensure its IRRBB measurement system is able to quantify the impact of interest rate shocks based on the following risk measures (“IRRBB measures”):
- (a) its economic value of equity (EVE);
 - (b) its earnings at risk (EAR), which reflects the financial institution’s ability to generate stable earnings sufficient to maintain its normal business operations; and
 - (c) the fair value changes¹³ of instruments classified as fair value through other comprehensive income (FVOCI) in the banking book, which may directly impact the financial institution’s capital base.
- S** 11.5 A financial institution shall incorporate into its IRRBB measurement system the ability to measure the cumulative effects of EAR and fair value changes of FVOCI instruments on earnings and capital.
- S** 11.6 A financial institution shall take into account the complementary nature of economic value and earnings-based measures when conducting risk and internal capital assessments, in terms of the following:
- (a) outcomes and conclusions reflecting the different risk dimensions;
 - (b) assessment horizons¹⁴; and
 - (c) future business/production¹⁵ (i.e. balance sheet assumptions).
- S** 11.7 In computing its IRRBB measures, a financial institution shall incorporate the potential impact on earnings and capital arising from the time needed to reduce or unwind unfavourable IRRBB exposures, and its capability and willingness to withstand accounting losses to reposition its risk profile.
- S** 11.8 A financial institution shall have the capability to measure the impact of interest rate shocks on the IRRBB measures of each significant¹⁶ currency based on the following:
- (a) internally selected interest rate shock scenarios, according to its Internal Capital Adequacy Assessment Process (ICAAP);

¹³ Fair value changes of FVOCI instruments (e.g. bonds and derivatives) could directly impact capital, especially if unhedged from an accounting perspective. FVOCI instruments used to economically hedge amortised cost instruments will remain exposed to balance sheet (and hence capital) volatility.

¹⁴ Economic value measures reflect changes over the remaining life of the financial institution’s assets, liabilities, and off-balance sheet items while earnings-based measures cover only the short- to medium-term and do not fully capture risks impacting profit and loss beyond the estimation period.

¹⁵ Economic value measures consider the NPV of repricing cash flows (run-off view), while earnings measures may also assume rollover of maturing items (constant balance sheet view) and/or include future earnings/business impacts (dynamic view). A dynamic balance sheet view aids business planning and budgeting purposes, but relies on assumptions that are extremely difficult to project accurately over time and may obscure certain key underlying risk exposures.

¹⁶ Financial institutions may refer to the definition of “significant currency” in the Bank’s policy document on *Liquidity Coverage Ratio* to guide their assessment of significance.

- (b) historical and hypothetical interest rate stress scenarios (including those used for stress testing), which tend to be more severe;
- (c) the six specified interest rate shock scenarios set out in Appendix 5; and
- (d) any additional interest rate shock scenarios as specified by the Bank.

Development and selection of shock and stress scenarios

- S** 11.9 In developing the IRRBB shock and stress scenarios as outlined in paragraphs 10 and 11, a financial institution shall consider a variety of factors, including but not limited to the following:
- (a) shape and level of the current term structure of interest rates, and the basis relationship between yield curves, rate indices, etc.;
 - (b) the historical and implied volatility of interest rates;
 - (c) parallel and non-parallel gap risk, basis risk and option risk¹⁷;
 - (d) instruments or markets where concentrations exist¹⁸;
 - (e) possible interactions of IRRBB with other risks (e.g. credit, liquidity, market, etc.);
 - (f) adverse changes in the spreads of new assets/liabilities replacing those assets/liabilities maturing over the horizon of the forecast (for net interest income (NII) measurement); and
 - (g) changes to interest rates that are administered or managed by the financial institution (e.g. prime rates or retail deposit rates, as opposed to those that are purely market-driven).
- S** 11.10 A financial institution shall involve relevant experts within the financial institution (e.g. traders, the treasury department, the finance department, the ALCO, the risk management and risk control departments and/or economists) when identifying relevant shock and stress scenarios for IRRBB, apply sound modelling approaches and analyse the results.
- S** 11.11 A financial institution shall select a sufficiently wide range¹⁹ of interest rate shock and stress scenarios to allow the board, senior management, and its other stakeholders to understand the risks inherent in the financial institution's products and activities.
- S** 11.12 A financial institution shall document the development and selection of the interest rate shock and stress scenarios used for the measurement of IRRBB.

¹⁷ For example, a financial institution that has products with sold caps or floors shall include scenarios that assess how the risk positions would change should those caps or floors move into the money. Given that the fair value of options also fluctuates with changes in the volatility of interest rates, the financial institution shall develop interest rate assumptions to measure its IRRBB exposures to changes in interest rate volatilities.

¹⁸ Those positions may be more difficult to liquidate or offset in a stressful market environment.

¹⁹ A financial institution shall ensure that the scenarios are both severe and plausible, in light of the existing level of interest rates and the interest rate cycle.

Stress tests

- S** 11.13 A financial institution shall develop and implement an effective stress testing framework for IRRBB as part of its broader risk management and governance processes.
- S** 11.14 A financial institution shall ensure its stress testing framework for IRRBB is commensurate with its nature, size and complexity as well as business activities and overall risk profile.
- S** 11.15 A financial institution shall include in its IRRBB stress testing framework clearly defined objectives, forward-looking²⁰ scenarios tailored to the financial institution's businesses and risks, well-documented assumptions and sound methodologies. In designing its IRRBB stress tests, the financial institution shall comply with the requirements laid out in the Bank's policy document on *Stress Testing*.
- S** 11.16 In line with paragraph 12.8 of the Bank's policy document on *Stress Testing*, a financial institution shall ensure its IRRBB stress testing framework and methodology takes into account interlinkages between IRRBB and other risk types (e.g. liquidity, market, credit, etc.).
- S** 11.17 A financial institution shall use the results of its IRRBB stress tests to:
- (a) assess the potential impact of the IRRBB stress scenario on the financial institution's capital and earnings; and
 - (b) inform decision-making processes, including strategic decisions (e.g. business and capital planning decisions).
- S** 11.18 A financial institution shall perform qualitative and quantitative reverse stress tests²¹ to:
- (a) identify interest rate scenarios that could severely threaten the financial institution's capital and earnings; and
 - (b) reveal vulnerabilities arising from its hedging strategies and the potential behavioural reactions of its customers.

²⁰ Forward-looking scenarios must incorporate (i) changes in portfolio composition due to factors under the control of the financial institution (e.g. acquisition and production plans) as well as external factors (e.g. changing competitive, legal or tax environments); (ii) new products where only limited historical data are available; (iii) new market information; and (iv) new emerging risks that are not necessarily covered by historical stress episodes.

²¹ See paragraph 15 of the Bank's policy document on *Stress Testing*.

12 Modelling assumptions

- S Principle 5: A financial institution shall ensure all key modelling assumptions are conceptually sound, fully understood and well-documented. These assumptions shall be rigorously tested and aligned with the financial institution’s business strategies.**
- S** 12.1 A financial institution shall identify all material products and exposures containing embedded behavioural options that could affect either the amount or timing (as compared to the contractual terms) of the cash flows associated with the product or exposure.
- S** 12.2 A financial institution shall have sound policies in place to govern the setting, and regular assessment, of key behavioural modelling assumptions for all on- and off-balance sheet items that have embedded behavioural options.
- S** 12.3 A financial institution shall ensure all key behavioural modelling assumptions used are conceptually sound and reasonable²², supported by sufficient data²³, and further adjusted based on prudent hypotheses.
- S** 12.4 A financial institution shall ensure the design of its behavioural models reflects the size, nature, and complexity of the financial institution, and is aligned with the financial institution’s balance sheet structure and risk profile.
- S** 12.5 In determining key behavioural modelling assumptions, a financial institution shall consider the following:
- (a) the implications of accounting practices on the measurement of IRRBB, and in particular hedge accounting effectiveness; and
 - (b) diversification assumptions.
- S** 12.6 A financial institution shall model the timing and amount of the cash flows of the following products with behavioural optionalities:
- (a) fixed rate financing subject to prepayment risk;
 - (b) fixed rate financing commitments to retail customers²⁴;
 - (c) term deposits subject to early redemption risks; and
 - (d) NMDs.
- S** 12.7 A financial institution shall model and assess all IRRBB exposures separately by each significant²⁵ currency.

²² I.e. justified from both economic and business perspectives.

²³ The historical data periods referenced should be long enough to include a full economic cycle but still remain representative of changes in customers preferences in the relevant scenarios.

²⁴ This refers to products where, for a specified period, retail customers can choose to draw down financing at a committed rate.

²⁵ See footnote 16.

- S** 12.8 In modelling fixed rate financing subject to prepayment risk, a financial institution shall account for the potential impact on current and future financing prepayment rates arising from the underlying economic environment, projected interest rate shock and stress scenarios and contractual features such as prepayment penalties that affect the embedded optionality.
- S** 12.9 In modelling fixed rate financing commitments to retail customers, a financial institution shall identify and estimate the behavioural and economic drivers²⁶ influencing the drawdown of these commitments.
- S** 12.10 In modelling term deposits subject to early redemption risks, a financial institution shall account for whether a term deposit is subject to redemption penalties or to other contractual features that help preserve the cash flow profile of the term deposit.
- S** 12.11 In determining the appropriate assumptions for its NMDs, a financial institution shall identify the proportion of core deposits (i.e. NMDs which are stable and unlikely to reprice even under significant changes in the interest rate environment).
- S** 12.12 A financial institution shall vary its behavioural assumptions for deposits according to depositor characteristics (i.e. retail/wholesale) and account characteristics (i.e. transactional/non-transactional).
- S** 12.13 A financial institution shall model the exercise of behavioural options under different interest rate shock and stress scenarios, as well as other relevant dimensions such as economic variables, product characteristics and customers characteristics. See Appendix 1 for a non-exhaustive list of other possible dimensions.
- S** 12.14 A financial institution shall perform sensitivity analyses on key model parameters²⁷, stress test those parameters, and compare measures based on contractual terms against behavioural assumptions to isolate the impact of behavioural modelling on its IRRBB measures, at least annually.
- S** 12.15 A financial institution shall validate and back-test²⁸ its behavioural models and modelling assumptions at least annually to verify their stability over time, and adjust²⁹ them if necessary. The financial institution shall conduct such validation exercises more frequently during rapidly changing market conditions.

²⁶ Unlike financing commitments to corporates, where drawdowns strongly reflect characteristics of AIROs, financing commitments to retail customers are impacted by other behavioural and economic drivers.

²⁷ Such as the percentage and maturity of core account balances and the pass-through rate.

²⁸ The modelling assumptions and methodologies used shall be sufficiently representative of the financial institution's profile and actual experience.

²⁹ For example, the increasing ease and prevalence of online withdrawals may increase the volatility of a financial institution's deposits, requiring revisions to assumptions on the stability and amount of core deposits to reflect this heightened volatility. Another example includes lower transaction costs for refinancing residential mortgages, which may lead to prepayments becoming more sensitive to reductions in interest rates.

- S** 12.16 A financial institution shall maintain comprehensive documentation³⁰ of all modelling assumptions used, any changes made to those assumptions or key parameters, and how those assumptions affect the effectiveness of the financial institution’s hedging strategies.

Application of proportionality and materiality thresholds

- S** 12.17 Notwithstanding paragraph 12.6, a financial institution shall have the option to adopt the following behavioural assumptions provided the associated exposures remain below the defined materiality thresholds:
- (a) all NMDs shall be classified as non-core deposits, if total NMDs constitute less than 5% of total banking book liabilities or the exposure is denominated in a non-significant³¹ currency;
 - (b) the financing prepayment rate shall be zero, if total fixed rate financing constitutes less than 5% of total banking book assets or the exposure is denominated in a non-significant currency; and
 - (c) the early redemption rate shall be zero, if total term deposits constitute less than 5% of total banking book liabilities or the exposure is denominated in a non-significant currency.

Question 4

What are the challenges your financial institution foresees in adhering to the requirements within this Principle, if any? Please elaborate on any steps your financial institution is currently taking, if any, to work towards overcoming those challenges.

13 Data integrity and model governance

- S** **Principle 6: A financial institution shall ensure its IRRBB measurements are based on accurate, comprehensive and timely data, and its IRRBB models are subjected to sound governance processes, including independent validation.**

Data integrity and granularity

- S** 13.1 A financial institution shall have in place adequate internal controls to ensure the integrity of the data used in its IRRBB measurement models. This includes periodic reviews and tests of the processes used to map data from source systems (e.g. core banking, treasury, customer deposit databases) to the specific components of the IRRBB measurement models.

³⁰ The model surveillance perimeter must cover all models in the financial institution’s model inventory along with key details such as model definitions, developers, owners, users, materiality, quality and date of latest review.

³¹ See footnote 16.

- S** 13.2 A financial institution shall ensure sufficient documentation of the data sources used in its IRRBB measurement process.
- S** 13.3 When slotting cash flows into different time buckets (e.g. for gap analyses) to reflect the different tenors of the interest rate curve, a financial institution shall ensure that the criteria used to slot the cash flows are stable over time to allow a meaningful comparison of risk measures over different time periods.

Model governance process

- S** 13.4 A financial institution shall ensure that its model governance policy is reviewed and approved by the board.
- S** 13.5 A financial institution shall clearly define the relevant roles and responsibilities within its model governance policy, including the designation of personnel responsible for the development, implementation and use of models as well as model oversight responsibilities.
- S** 13.6 A financial institution shall develop a comprehensive model risk governance process covering the following:
- (a) initial and ongoing validation procedures;
 - (b) evaluation and documentation of validation results;
 - (c) mechanism for approval and version control; and
 - (d) processes for exceptions, escalations, modifications and model decommissioning.
- S** 13.7 A financial institution shall evaluate model soundness using a structured process that is commensurate with each model's quantitative and qualitative dimensions such as size, impact, past performance and familiarity with the modelling technique employed.
- S** 13.8 A financial institution shall adopt a comprehensive approach to model risk management for IRRBB that begins with the motivation for model use, development and implementation of IRRBB models by model owners and users.
- S** 13.9 A financial institution shall establish a formal policy, and consequently an effective framework, for the validation of IRRBB measurement methods and the assessment of corresponding model risk. The framework shall comprise, at minimum, the following:
- (a) evaluation of conceptual/methodological soundness, including developmental evidence;
 - (b) ongoing model monitoring, including process verification and benchmarking;
 - (c) outcomes analysis, including back-testing³² of key internal parameters (e.g. stability of deposits, prepayments, early redemptions, or pricing of instruments);
 - (d) thorough assessment of any expert opinions and judgements used in internal models; and

³² If a model exhibits material degradation of its predictive ability, a financial institution is expected to recalibrate and/or redevelop the model.

(e) validation of diversification assumptions.

- S** 13.10 A financial institution shall ensure the processes for determining model inputs, assumptions, modelling methodologies and outputs are reviewed and validated independently of the development of IRRBB models, prior to receiving authorisation for the usage of the model.
- S** 13.11 A financial institution shall present the results of the review and validation process to the board, along with any recommendations on model usage. Upon receiving the board's approval, the model shall be subject to ongoing reviews, process verifications and validations at a frequency that is consistent with the level of model risk determined and approved by the board.
- S** 13.12 A financial institution shall establish a set of exception trigger events that obligate the model reviewers to notify senior management in a timely manner, in order to determine corrective actions and/or restrictions on model usage.
- S** 13.13 A financial institution shall establish clear policies for model transition, including change and version control authorisations and documentation.
- S** 13.14 A financial institution shall ensure that management overlays, including additional adjustments or caps on modelling assumptions made to align model outcomes with management expectations, are clearly documented and communicated across relevant internal and external stakeholders. These overlays shall be reviewed and approved by an independent control function, with the accompanying rationale, assumptions, and impacts transparently assessed.
- S** 13.15 A financial institution's internal audit function shall review the model risk management process as part of its periodic risk assessments and audit plans. The audit activity must not duplicate the model risk management process, but instead review the integrity and effectiveness of the risk management system and the model risk management process.

Third-party vendors

- S** 13.16 A financial institution shall subject all IRRBB models developed by third-party vendors, as well as model inputs or assumptions sourced from related modelling processes or sub-models (both in-house and vendor-sourced) to its validation framework and processes.
- S** 13.17 Consistent with paragraph 13.16, a financial institution shall ensure there is adequate documentation of the IRRBB models procured from third-party vendors, including any specific customisations to the models.
- S** 13.18 A financial institution shall have a process in place to determine if any inputs provided by third-party vendors for market data, behavioural assumptions or model settings are reasonable for its business and the risk characteristics of its activities.

- S** 13.19 A financial institution shall review, challenge and fully understand the underlying analytics, assumptions and methodologies of third-party IRRBB models and ensure that they are adequately integrated into the financial institution's overall risk management systems and processes.

14 Reporting to board and senior management

- S** **Principle 7: A financial institution shall ensure appropriate systems, processes, and procedures are in place to report IRRBB measurement outcomes and hedging strategies to the board and senior management on a regular and timely basis.**

- S** 14.1 A financial institution shall ensure its MIS is able to retrieve accurate IRRBB information in a timely manner. The MIS must capture all material IRRBB exposures and generate a sufficiently granular report that reflects differences in repricing, maturity, optionality and product characteristics.
- S** 14.2 A financial institution shall ensure its IRRBB risk measures are reported to the board and senior management on a timely basis and are reviewed regularly. The IRRBB reports shall include aggregate information and sufficient details to enable the board and senior management to evaluate how the financial institution's portfolios respond to interest rate changes, especially those with potential for significant mark-to-market movements.
- S** 14.3 A financial institution shall include, at minimum, the following information in its IRRBB internal reporting to the board and senior management:
- (a) summaries of the financial institution's aggregate³³ IRRBB exposures, and explanatory text that highlights the assets, liabilities, cash flows, and strategies that are driving the level, trend, and direction of IRRBB;
 - (b) reports on compliance with internal policies and limits³⁴;
 - (c) key IRRBB modelling assumptions such as:
 - (i) NMD assumptions, including but not limited to the average repricing maturity of NMDs and the percentage of core deposits over total deposits;
 - (ii) prepayments on fixed rate financing, including an assessment of the modelled prepayment rates against actual realised prepayment rates;
 - (iii) early redemptions of term deposits; and
 - (iv) currency aggregation;
 - (d) the impact of the key modelling assumptions in paragraph (c) on the financial institution's IRRBB measures;
 - (e) reports on IRRBB model risk, including model validation, assessments of model performance and outcomes of back-testing exercises;
 - (f) hedging strategies and their effectiveness, including the influence of behavioural assumptions on hedging strategies and the use and

³³ Information must be aggregated at the relevant levels of aggregation. At minimum, this shall include by consolidation levels and individual currencies.

³⁴ Including a comparison of past and current IRRBB exposures with the financial institution's IRRBB limits.

- impact of interest rate derivatives on the financial institution's IRRBB measures;
- (g) results of IRRBB stress tests, including assessments of sensitivity to changes in key assumptions, parameters, market conditions and other relevant factors; and
 - (h) summaries of the reviews of IRRBB policies, procedures and adequacy of the IRRBB measurement systems, including any findings of internal and external auditors and/or equivalent external parties.

PART C STANDARDISED FRAMEWORK

15 Overall structure of the Standardised Framework

- S** 15.1 A financial institution shall apply the Standardised Framework by applying the following steps:
- (i) **Step 1 (Cash flow slotting)** - Identify and allocate cash flows arising from interest rate-sensitive positions³⁵, according to the treatment laid out in paragraphs 16, 17 and 18.
 - (ii) **Step 2 (Interest rate shocks)** – Calculate the changes in EVEs (Δ EVEs) under each of the six interest rate shock scenarios specified by the Bank in Appendix 5 (“specified scenarios”), by currency, according to the treatment laid out in paragraph 19.
 - (iii) **Step 3 (Automatic interest rate options (AIRO))** – Calculate additions for changes in the value of AIRO (whether explicit or embedded), according to the treatment laid out in paragraph 20, and add these to the Δ EVEs calculated under Step 2.
 - (iv) **Step 4 (Calculation of EVE measure)** – calculate the resultant IRRBB EVE measure according to the treatment outlined in paragraph 21.
- G** 15.2 Notwithstanding paragraph 15.1, a financial institution should complement the EVE measure as computed under the Standardised Framework with its own internal measurement models and methodologies, especially for non-capital setting purposes (e.g. internal risk management, pricing, monitoring).

³⁵ Financial institutions shall exclude their own equity from the computation of the Standardised Framework EVEs.

16 Cash flow slotting

Notional repricing cash flows

- S** 16.1 A financial institution shall slot all future notional repricing cash flows, $CF_{i,c}(t)$ of interest rate-sensitive positions, for each currency (c) and under each specified scenario³⁶ (i), into 19 predefined time buckets (indexed numerically by k), as set out in Appendix 2) according to their repricing dates.

Question 5

The Bank recognises that there are alternative methods for slotting cash flows (and subsequently discounting them for the calculation of EVE) into time buckets. In particular, one such alternative method involves splitting each cash flow between two adjacent time buckets using weights, such that it reflects the exact maturity of the cash flow, rather than slotting them fully into the time bucket in which they fall.

What are your financial institution's views on the cash flow slotting methodology outlined in this ED?

- S** 16.2 A financial institution shall classify all interest rate-sensitive assets³⁷, liabilities³⁸, and off-balance sheet items in the banking book as interest rate-sensitive positions for the purposes of paragraph 16.1, except fixed assets (such as real estate or intangible assets) and equity exposures in the banking book.
- S** 16.3 For the purposes of paragraph 16.1, a financial institution shall classify the following as notional repricing cash flows:
- (a) any repayment of principal (e.g. at contractual maturity);
 - (b) any repricing³⁹ of principal; or
 - (c) any interest payment, that has not yet been repaid or repriced, on a tranche of principal.

³⁶ These refer to the 6 interest rate shock scenarios specified by the Bank in Appendix 5.

³⁷ Assets that are deducted from Common Equity Tier 1 (CET1) capital shall not be included.

³⁸ Liabilities that are classified as CET1 capital under the Bank's policy document on *Capital Adequacy Framework (Capital Components)* shall not be included. All non-remunerated deposits shall be included.

³⁹ Repricing date refers to the date of each repayment, repricing or interest payment. Repricing occurs at the earliest date at which either the financial institution or its counterparty is entitled to unilaterally change the interest rate, or at which the rate on a floating rate instrument changes automatically in response to a change in an external benchmark.

- S** 16.4 A financial institution shall slot cash flows associated with fixed rate positions⁴⁰ by allocating all coupon cash flows, and periodic or final principal repayments, to the relevant time buckets according to their contractual due dates or maturities.
- S** 16.5 A financial institution shall slot cash flows associated with floating rate positions⁴¹ by allocating:
- (a) the entire principal amount to the time bucket corresponding to the earlier of the next repricing date or the contractual due date; and
 - (b) any coupon cash flows due before the next repricing date to the relevant time buckets, with no additional slotting of notional repricing cash flows past the next repricing date to later time buckets (other than the fixed spread component, in line with paragraph 16.6).
- S** 16.6 Notwithstanding paragraph 16.5, a financial institution shall strip out the fixed spread component that has not been repaid and which do not reprice, from the associated floating rate interest payments, and slot them into time buckets based on their contractual due dates or maturities.
- S** 16.7 In deciding whether to include or exclude commercial margins and other spread components from the notional repricing cash flows, a financial institution shall apply a prudent, consistent and transparent methodology.

Treatment of behavioural options

- S** 16.8 A financial institution shall, for the following exposures in each significant currency, model the behavioural optionality and slot the resultant cash flows into the relevant time buckets:
- (a) NMDs, according to the requirements in paragraph 17;
 - (b) fixed rate financing subject to prepayment risk, according to the requirements in paragraph 18; and
 - (c) term deposits subject to early redemption risk, according to the requirements in paragraph 18.

⁴⁰ Such positions generate cash flows that are certain until the point of contractual maturity. Examples include fixed rate financing without embedded prepayment options, term deposits without redemption risk and other amortising products such as mortgage financing.

⁴¹ Such positions generate cash flows that are not predictable past the next repricing date, except that their present value will reset to par. Accordingly, such positions are assumed to reprice fully at the nearest repricing date.

Treatment of AIROs

- S** 16.9 A financial institution shall exclude⁴² all optionality (whether sold or bought) of positions⁴³ with explicit and embedded⁴⁴ AIRO from the slotting of notional repricing cash flows, and apply the treatment laid out in paragraph 20.
- S** 16.10 A financial institution shall include any behavioural options held by a wholesale customer that may change the pattern of notional repricing cash flows within the treatment of AIRO⁴⁵.

17 NMD modelling**Categorisation and separation of NMDs**

- S** 17.1 A financial institution shall segment its NMDs into the following categories:
- (a) retail transactional NMDs;
 - (b) retail non-transactional NMDs; and
 - (c) wholesale NMDs.
- S** 17.2 A financial institution shall categorise its NMDs as retail NMDs if such NMDs were placed by:
- (a) an individual person; or
 - (b) a small business customer, where:
 - (i) the total aggregated liabilities raised from the customer is less than RM5 million; and
 - (ii) the NMD is managed as a retail exposure⁴⁶.
- S** 17.3 A financial institution shall further categorise retail NMDs as retail transactional NMDs if:
- (a) regular transactions are carried out in that account (e.g. when salaries are regularly credited); or
 - (b) they are non-interest bearing.

⁴² I.e. stripped out from the process of slotting notional repricing cash flows. For example, a floating rate financing or debt security with a floor would be treated as if there were no floor, hence it would be treated as if it fully reprices at the next reset date, and its full outstanding balance slotted in the corresponding time band. Similarly, a callable bond issued by a financial institution at a fixed yield would be treated as if it matures at its longest contractual term, ignoring the call option.

⁴³ A common feature of these positions is optionality that makes the timing of notional repricing cash flows uncertain. This optionality introduces a non-linearity, which suggests that delta-equivalent approximations are imprecise for large interest rate shock scenarios.

⁴⁴ An example of a product with embedded AIRO is a floating rate mortgage with embedded caps and/or floors. Notional repricing cash flows for those financing are treated as a fixed rate financing until the next repricing date, thereby ignoring the option, which instead is treated like a separate AIRO.

⁴⁵ An example of such an option would be a puttable fixed coupon bond issued by the financial institution in the wholesale market, for which the owner has the right to sell the bond back to the financial institution at a fixed price at any time.

⁴⁶ I.e. not individually managed like large corporate deposits.

- S** 17.4 A financial institution shall categorise all other retail NMDs that do not meet the criteria in paragraph 17.3 as retail non-transactional NMDs.
- S** 17.5 A financial institution shall categorise NMDs placed by non-natural persons (i.e. legal entities, including sole proprietorships, partnerships and small and medium-sized enterprises (SMEs)⁴⁷) as wholesale NMDs, except where such NMDs meet the criteria set out in paragraph (b) and are categorised as retail NMDs.
- S** 17.6 For each of the three NMD categories, a financial institution shall separate each NMD category into its stable and non-stable portions, where:
- (a) stable NMDs shall be NMDs that are highly likely to remain undrawn; and
 - (b) non-stable NMDs shall be all other NMDs not deemed as stable NMDs.
- S** 17.7 A financial institution shall determine the stable and non-stable portions of each NMD category using the observed changes in NMD volumes over the past 10 years.

Question 6

- (a) Does your financial institution face any challenges in meeting the minimum data requirements (i.e. 10 years of historical data) for determining the stable and non-stable portions of NMDs? If yes, please provide further details.
- (b) Would a transition period (e.g. gradually increasing minimum data requirements) alleviate those issues?

- S** 17.8 After determining the stable and non-stable portions of each NMD category, a financial institution shall further separate⁴⁸ the stable portion of each NMD category into core and non-core portions, where:
- (a) core NMDs shall be the proportion of stable NMDs that are unlikely to reprice even under significant changes in the interest rate environment; and
 - (b) non-core NMDs shall be the remainder of NMDs that do not qualify as core NMDs (i.e. total of all non-stable NMDs and stable NMDs that are likely to reprice).
- S** 17.9 In determining the portion of core NMDs, a financial institution shall calculate a pass-through rate⁴⁹ to determine the rate-sensitive portion of stable NMDs.

⁴⁷ While the definition of an SME may vary from jurisdiction to jurisdiction, for purposes of this policy document, an SME in the context of Malaysia shall be a micro-, small- or medium-sized SME, as defined by SME Corporation Malaysia.

⁴⁸ This is illustrated in Appendix 3.

⁴⁹ The pass-through rate refers to the proportion of a market interest rate change that the financial institution will pass on to its customers in order to maintain the same level of stable deposit balances. The pass-through rates shall be measured in response to a shift in interest rates over the relevant time horizon.

- S** 17.10 A financial institution shall aggregate its estimates of core deposits for each NMD category, to determine the overall volume of core deposits.

Cash flow slotting of NMDs

- S** 17.11 A financial institution shall slot the estimated cash flows of core NMDs for each NMD category into the appropriate time buckets, after applying the prescribed caps on the proportions of core NMDs and average maturity of NMDs as specified in the table below:

Table 1: Caps on core deposits and average maturity by category

	Cap on proportion of core NMDs (%)	Cap on average maturity of core NMDs (years)
Retail transactional	90	5.0
Retail non-transactional	70	4.5
Wholesale	50	4.0

- S** 17.12 For the purpose of slotting the associated notional repricing cash flows of its core balances into the appropriate time buckets, a financial institution shall estimate the timing of the cash flows using a robust and sound methodology.
- S** 17.13 A financial institution shall slot the cash flows of other core balances that fall outside the caps and non-core NMDs into the overnight time bucket.

18 Treatment of positions with behavioural options other than NMDs

Fixed rate financing subject to prepayment risk

- S** 18.1 In determining the associated notional repricing cash flows of retail fixed rate financing that are subject to prepayment risk⁵⁰, a financial institution shall model the behavioural optionality in accordance with paragraphs 18.2 to 18.6. The financial institution shall calculate prepayment risk for wholesale⁵¹ fixed rate financing in accordance with paragraph 20.
- S** 18.2 A financial institution shall treat a retail fixed rate financing as being subject to prepayment risk if the economic cost of prepayments is not fully charged to the borrower, or charged only for prepayments above a certain threshold.
- S** 18.3 A financial institution shall determine the baseline conditional prepayment rate (CPR) for each portfolio (p) of homogeneous prepayment-exposed financing products denominated in currency (c) under the prevailing term structure of interest rates, denoted as $CPR_{0,c}^p$.

⁵⁰ Prepayment risk arises from the customer having an option to repay the financing early (i.e. prepay) before the scheduled date, which will alter the timing of the cash flows.

⁵¹ By calculating add-ons for AIRO.

- S** 18.4 A financial institution shall determine the CPR for each portfolio (p) of homogeneous prepayment-exposed financing products denominated in currency (c) under each specified scenario (i) using the formula below:

$$CPR_{i,c}^p = \min(1, \gamma_i * CPR_{0,c}^p)$$

where:

- $CPR_{0,c}^p$ is the (constant) baseline CPR of a portfolio (p) of homogeneous prepayment-exposed financing given in currency (c)⁵², given the prevailing term structure of interest rates; and
 - γ_i is a multiplier⁵³ applied for the specified scenario (i) as stipulated in paragraph 18.5.
- S** 18.5 A financial institution shall apply the following values of γ_i for the purposes of computing $CPR_{i,c}^p$, as stipulated in paragraph 18.4.

Table 2: CPRs under the six specified scenarios

Scenario number (i)	Interest rate shock scenarios	Scenario multiplier (γ_i)
1	Parallel up	0.8
2	Parallel down	1.2
3	Steepener	0.8
4	Flattener	1.2
5	Short rate up	0.8
6	Short rate down	1.2

⁵² Alternatively, the baseline CPR may also vary over the life of each financing in the portfolio. In that case, it is denoted as $CPR(k)_{0,c}^p$ for each time bucket (k).

⁵³ This multiplier reflects the expectation that prepayments will generally be higher during periods of falling interest rates and lower during periods of rising interest rates.

- S** 18.6 A financial institution shall reflect the modelled prepayments of fixed rate financing in the slotting of the relevant notional repricing cash flows. In doing so, the financial institution shall split the modelled cash flows into scheduled payments adjusted for prepayments according to the following formula:

$$CF_{i,c}^p(k) = CF_{i,c}^s(k) + CPR_{i,c}^p * N_{i,c}^p(k-1)$$

Where:

- $CF_{i,c}^s(k)$ refers to the scheduled interest and principal repayments; and
- $N_{i,c}^p(k-1)$ denotes the notional principal outstanding at time bucket $k-1$.

The baseline cash flows (i.e. given the current interest rate yield curve and the baseline CPR) are given by $i = 0$, while the specified scenarios are given for $i = 1$ to 6 .

Term deposits subject to early redemption risk

- S** 18.7 In determining the associated notional repricing cash flows for retail term deposits that are subject to early redemption risk⁵⁴, a financial institution shall model the behavioural optionality by applying paragraphs 18.8 to 18.11. The financial institution shall calculate early redemption risk for wholesale⁵⁵ term deposits in accordance with paragraph 20.
- S** 18.8 A financial institution shall treat retail term deposits as fixed rate liabilities with no early redemption risk if the depositor has no legal right to early withdraw the term deposit. The financial institution shall slot the notional repricing cash flows for such positions into the relevant time buckets according to their corresponding contractual maturity dates.
- S** 18.9 A financial institution shall determine the baseline term deposit redemption ratio (TDRR) applicable to each homogeneous portfolio (p) of term deposits in currency (c), denoted by $TDRR_{0,c}^p$.
- S** 18.10 A financial institution shall calculate the TDRR for each time bucket (k) applicable to each homogeneous portfolio (p) of term deposits in currency (c) and under specified scenario (i) by multiplying $TDRR_{0,c}^p$ as calculated in paragraph 18.9 by a scalar (u_i) that depends on the specified scenario (i), as follows:

$$TDRR_{i,c}^p = \min(1, u_i * TDRR_{0,c}^p)$$

where the values of the scalars (u_i) are set out in the following table.

⁵⁴ Early redemption risk arises from the customer having an option to withdraw a term deposit at will, which may alter the timing of the cash flows.

⁵⁵ By calculating add-ons for AIRO.

Table 3: TDRR scalars under the six specified scenarios

Scenario number (<i>i</i>)	Interest rate shock scenarios	Scalar multiplier (<i>u_i</i>)
1	Parallel up	1.2
2	Parallel down	0.8
3	Steeper	0.8
4	Flattener	1.2
5	Short rate up	1.2
6	Short rate down	0.8

- S** 18.11 A financial institution shall reflect the modelled early redemptions of term deposits in the slotting of the relevant notional repricing cash flows by slotting the portion of term deposits which are expected to be redeemed early into the overnight time bucket $k = 1$. In doing so, the financial institution shall apply the following formula to determine the withdrawals under each specified scenario (*i*):

$$CF_{i,c}^p(1) = TD_{0,c}^p * TDRR_{i,c}^p$$

where $TD_{0,c}^p$ is the outstanding amount of term deposits of type (*p*).

19 Interest rate shock scenarios

- S** 19.1 A financial institution shall calculate the changes in EVEs (Δ EVEs) of the notional repricing cash flows estimated in line with paragraphs 16, 17, and 18, under the following six specified scenarios as laid out in Appendix 5:
- parallel shock up;
 - parallel shock down;
 - steeper shock (short rates down and long rates up);
 - flattener shock (short rates up and long rates down);
 - short rates shock up; and
 - short rates shock down.
- S** 19.2 A financial institution shall compute Δ EVEs for each of the six specified scenarios, separately for every significant currency in which it has an exposure to.

Calculating EVEs

- S** 19.3 A financial institution shall compute the EVEs under each specified scenario, in each significant currency.

S 19.4 A financial institution shall net all positive and negative notional repricing cash flows within each time bucket (k) to form a single long or short position, with the cancelled parts removed from the calculation, resulting in sets of notional repricing cash flows by scenario and significant currency $CF_{i,c}(k)$, $k \in \{1, 2, \dots, K\}$ ⁵⁶.

S 19.5 A financial institution shall derive a continuously compounded discount factor for each specified scenario, in each significant currency, using the following formula:

$$DF_{i,c}(t_k) = \exp(-R_{i,c}(t_k) * t_k)$$

Where:

- (t_k) is the midpoint of time bucket (k); and
- $R_{i,c}(t_k)$ the interest rate for maturity (t_k), on the interest rate term structure under scenario (i).

S 19.6 A financial institution shall weight the net notional repricing cash flows in each time bucket (k) by the continuously compounded discount factor derived in accordance with paragraph 19.5, resulting in a weighted net position (which may be positive or negative) for each time bucket.

S 19.7 In computing the continuously compounded discount factor for the purposes of paragraph 19.5, a financial institution shall base its interest rate term structure on either:

- (a) a risk-free rate⁵⁶; or
- (b) a risk-free rate including commercial margin and other spread components (only if the financial institution has included commercial margins and other spread components in its notional repricing cash flows, in line with paragraph 16.7).

S 19.8 A financial institution shall sum the weighted net positions across all time buckets to determine the EVE in currency (c) under scenario (i) (excluding AIRO positions):

$$EVE_{i,c}^{nao} = \sum_{k=1}^K CF_{i,c}(k) * DF_{i,c}(t_k)$$

⁵⁶ The discounting factors must be representative of a risk-free zero-coupon rate. An example of an acceptable yield curve is a secured interest rate swap curve.

Interest rate shocks

- S** 19.9 In calculating the ΔEVE under each specified scenario for its exposures in Malaysian Ringgit (MYR), United States Dollar (USD) and Singapore Dollar (SGD), a financial institution shall apply the corresponding MYR, USD and SGD interest rate shocks, respectively, for that scenario as specified in Appendix 5, to derive a shocked interest rate term structure. For the avoidance of doubt, the baseline EVE is calculated using $DF_{0,c}(k)$, where no shocks are applied to the interest rate term structure.
- S** 19.10 For exposures in other significant currencies, a financial institution shall refer to the shock parameters prescribed⁵⁷ by the Basel Committee on Banking Supervision (BCBS). The financial institution shall derive the interest rate shocks using the calibration methodology⁵⁸ described by the BCBS for significant currencies that are not prescribed by the BCBS.

Question 7

What are your financial institution's views on the application of the BCBS's calibration methodology for deriving the interest rate shocks applicable to significant currencies not prescribed by the BCBS?

- S** 19.11 A financial institution shall use the six specified scenarios and the corresponding interest rate shocks when deriving other EVE measures computed under its own internal measurement system (beyond the Standardised Framework), if any.

20 Treatment for automatic interest rate options (AIRO)

- S** 20.1 A financial institution shall calculate the change in value of each bought and sold (denoted by o and q , respectively) AIRO in each currency (c), denoted by $\Delta FVAO_{i,c}^o$ and $\Delta FVAO_{i,c}^q$ respectively, for each of the six specified scenarios (i) by computing:
- (a) an estimate of the value of the option to the option holder, given:
- (i) a yield curve in currency c under the interest rate shock scenario (i); and
 - (ii) a relative increase in the implicit volatility of 25%;
- minus
- (b) the value of the option to the option holder, given the yield curve in currency (c) at the valuation date.

⁵⁷ Refer to paragraph 31.90 of the Basel Committee on Banking Supervision's (BCBS) SRP31 document; [SRP31 - Interest rate risk in the banking book](#).

⁵⁸ Refer to paragraphs 98.56 – 98.62 of the BCBS's SRP98 document; [SRP98 - Application guidance on interest rate risk in the banking book](#).

- S** 20.2 A financial institution shall compute the total AIRO risk ($KAO_{i,c}$) under each specified scenario (i), in currency (c) as follows:

$$KAO_{i,c} = \sum_{q=1}^{m_c} \Delta FVAO_{i,c}^o - \sum_{o=1}^{n_c} \Delta FVAO_{i,c}^q$$

where m_c (n_c) is the number of bought (sold) options in currency (c).

- S** 20.3 A financial institution shall include wholesale fixed rate financing that are subject to prepayment risks, and wholesale term deposits with early redemption risks, in the calculation of total AIRO. In doing so, the financial institution shall assume the wholesale customer will always exercise the right to withdraw in the way that is most disadvantageous to the financial institution.
- S** 20.4 A financial institution shall add the resultant values of $KAO_{i,c}$ to the Δ EVE measures under each specified scenario (i) for each currency (c).

Question 8

What are the challenges faced by your financial institution, if any, in calculating the add-ons for AIRO for:

- (a) products with prepayment and/or early withdrawal risk for wholesale customers;
- (b) products containing embedded call/put options; and
- (c) products containing caps/floors?

21 Calculation of the Standardised Framework EVE measure

- S** 21.1 A financial institution shall calculate the full change in EVE in currency (c) under scenario (i) by subtracting the EVE under the current interest rate term structure (“baseline EVE”), $EVE_{0,c}^{nao}$, from the EVE under scenario (i) for that currency, $EVE_{i,c}^{nao}$, and then adding the total measure for AIRO risk, $KAO_{i,c}$, as follows:

$$\Delta EVE_{i,c} = \left[\sum_{k=1}^K CF_{i,c}(k) * DF_{i,c}(t_k) \right] - \left[\sum_{k=1}^K CF_{0,c}(k) * DF_{0,c}(t_k) \right] + KAO_{i,c}$$

- S** 21.2 A financial institution shall aggregate the EVE losses (i.e. $\Delta EVE_{i,c} < 0$) across currencies under a given interest rate shock scenario (i). The financial institution shall use the maximum loss across all interest rate shock scenarios as its Standardised Framework EVE risk measure⁵⁹.

Standardised Framework EVE risk measure:

$$\max_{i \in \{1,2,\dots,6\}} \left\{ \max \left(0; \left| \sum_{c: \Delta EVE_{i,c} < 0} \Delta EVE_{i,c} \right| \right) \right\}$$

Question 9

- (a) What are the main differences between your financial institution’s current method of computing EVE, relative to the Standardised Framework?
- (b) What are the main challenges, if any, faced by your financial institution in computing EVE based on the Standardised Framework as set out above?

⁵⁹ Refer to Appendix 6 for an illustrative example.

PART D OTHER REQUIREMENTS

22 Capital adequacy for IRRBB

- S** 22.1 As part of its broader internal capital adequacy assessment process (ICAAP), a financial institution shall hold adequate internal capital (i.e. capital allocated under Pillar 2⁶⁰) against IRRBB as well as other relevant material risks.
- S** 22.2 A financial institution shall evaluate the internal capital required for IRRBB based on, but not limited to, the following IRRBB measures:
- (a) risks to the financial institution's economic value arising from its assets, liabilities and off-balance sheet items (i.e. EVE);
 - (b) risks impacting its future earnings (i.e. EAR); and
 - (c) fair value changes of FVOCI instruments in the banking book.
- S** 22.3 In determining the level of internal capital required to cover its IRRBB exposures, a financial institution shall, at minimum, use the EVE measure as calculated under the Standardised Framework, as specified under Part C.
- S** 22.4 In addition to the requirements stipulated in paragraph 22.3, a financial institution shall assess the need to set aside additional internal capital if its Δ NII as calculated under the parallel up and parallel down specified scenarios indicates that the financial institution would not have sufficient income to maintain its normal business operations⁶¹ in either of those specified scenarios.
- S** 22.5 In addition to the requirements stipulated in paragraph 22.3 and 22.4, a financial institution shall consider the additional internal capital required (if any) to buffer against reductions in capital levels arising from fair value changes of FVOCI instruments that remain unhedged, both from accounting and economic perspectives.
- S** 22.6 A financial institution shall evaluate the internal capital required for IRRBB as stipulated in paragraphs 22.1 to 22.5 on both entity and consolidated levels.
- S** 22.7 In addition to the use of IRRBB measures as stipulated in paragraph 22.2, a financial institution shall also consider the following factors when determining the required amount and quality of internal capital to be allocated for IRRBB:
- (a) the size and tenor of IRRBB limits, and whether these limits are breached, or are likely to be breached, at the point of capital calculation;
 - (b) the effectiveness and expected costs of hedging open IRRBB positions;

⁶⁰ Refer to the Bank's policy document on *Risk-Weighted Capital Adequacy Framework (Basel II) – Internal Capital Adequacy Assessment Process (Pillar 2)*.

⁶¹ Insufficient income refers to a level of income below which the financial institution may start reporting losses, or curtailing normal dividend distribution and business operations. In such cases, the financial institution shall ensure it has sufficient internal capital to withstand the adverse impact of such events until it can implement mitigating actions such as reducing exposures or increasing internal capital.

- (c) the sensitivity of IRRBB measures to key modelling assumptions;
- (d) the impact of shock and stress scenarios on positions priced off different interest rate indices (i.e. basis risk);
- (e) the impact of mismatched positions in different currencies;
- (f) the impact of embedded losses;
- (g) the potential impact on capital levels should banking book positions held at amortised cost become subject to fair valuation;
- (h) the distribution of capital relative to risks across legal entities within the financial group that the financial institution is a part of, in addition to the adequacy of the financial group's overall capital on a consolidated basis;
- (i) the sources and drivers of the financial institution's IRRBB; and
- (j) the circumstances under which IRRBB might crystallise.

- S** 22.8 A financial institution shall document its assessment of IRRBB internal capital adequacy within the financial institution's ICAAP report to ensure transparency and accountability.

23 Supervisory Outlier Test

- S** 23.1 A financial institution shall be classified as an outlier if the ratio of its EVE measure (calculated under the Standardised Framework outlined in Part C) to its Tier 1 capital base exceeds 15%, at either the entity or consolidated level.
- S** 23.2 Consistent with the broader Supervisory Review and Evaluation process⁶², a financial institution classified as an outlier shall be subject to greater supervisory scrutiny from the Bank. When a review of the financial institution's IRRBB exposure reveals inadequate management or excessive risk relative to capital or earnings, the Bank may require the financial institution to undertake the following remedial actions:
- (a) allocate additional internal capital;
 - (b) reduce its IRRBB exposures (e.g. by hedging);
 - (c) set constraints on internal risk parameters used by the financial institution;
 - (d) undertake improvements to its IRRBB management framework; and/or
 - (e) any other remedial action as deemed appropriate by the Bank.
- S** 23.3 A financial institution shall implement any remedial actions as specified by the Bank under paragraph 23.2 within a specified timeframe as agreed upon between the financial institution and the Bank, taking into consideration the prevailing financial and economic conditions.

⁶² Refer to Part C of the Bank's policy document on *Risk-Weighted Capital Adequacy Framework (Basel II) – Internal Capital Adequacy Assessment Process (Pillar 2)*.

24 Public disclosure

- S** 24.1 A financial institution shall publicly disclose information on the level of its IRRBB exposures, including the EVE measure as calculated under the Standardised Framework outlined in Part C, and its IRRBB management practices, in line with the Bank’s policy document on *Risk Weighted Capital Adequacy Framework (Basel II) - Disclosure Requirements (Pillar 3)*.

Question 10

The Bank intends to leverage existing Pillar 3 requirements under the Bank’s policy document on *Risk Weighted Capital Adequacy Framework (Basel II) - Disclosure Requirements (Pillar 3)*. As part of the broader Basel III roadmap, IRRBB public disclosure requirements will be revised as part of a holistic Pillar 3 review, scheduled for no earlier than 2028.

Does your financial institution have any views on this proposed workplan and timeline?

25 Reporting requirements to the Bank

- S** 25.1 A financial institution shall submit the [*Interest Rate Risk in the Banking Book – Quantitative Impact Study Template*] to the Bank at the stipulated reporting dates, as per the accompanying [*Interest Rate Risk in the Banking Book – Quantitative Impact Study Instructions*].

Question 11

The QIS template and instructions manual are indicative of the finalised reporting template and reporting instructions respectively. The Bank is proposing for financial institutions to submit the reporting template:

- (a) Monthly on an entity-level basis; and
- (b) Quarterly on a consolidated basis.

Does your financial institution have any views on the proposed reporting requirements?

Question 12

In ensuring the integrity of reporting data, the Bank is considering a 12-month parallel run period commencing on the effective date of the final policy document, where financial institutions will be required to submit both the current and new reporting templates to the Bank during that period. Does your financial institution have any views on the proposed parallel run?

Question 13

Does your financial institution foresee the implementation of this ED resulting in changes to business decisions, particularly funding and lending decisions? If yes, please provide details of the expected changes and underlying rationale for the changes.

PART E APPENDICES

APPENDIX 1 Dimensions influencing the exercise of embedded behavioural options

Product	Dimensions influencing the exercise of embedded behavioural options
Fixed rate financing subject to prepayment risk	<p>Financing size, financing-to-value (FTV) ratio, borrower characteristics, contractual interest rates, seasoning, geographical location, original and remaining maturity, and other historical factors.</p> <p>Other macroeconomic variables such as stock indices, unemployment rates, GDP, inflation and housing price indices should be considered in modelling prepayment behaviour.</p>
Fixed rate financing commitments	<p>Borrower characteristics, geographical location (including competitive environment and local premium conventions), customer relationship with the financial institution as evidenced by cross-products, remaining maturity of the commitment, seasoning and remaining term of the mortgage.</p>
Term deposits subject to early redemption risk	<p>Deposit size, depositor characteristics, funding channel (e.g. direct or brokered deposit), contractual interest rates, seasonal factors, geographical location and competitive environment, remaining maturity and other historical factors.</p> <p>Other macroeconomic variables such as stock indices, unemployment rates, GDP, inflation and housing price indices should be considered in modelling deposit redemption behaviour.</p>
NMDs	<p>Responsiveness of product rate to changes in market interest rates, current level of interest rates, spread between a financial institution's offered rate and the market rate, competition from other firms, the financial institution's geographical location and demographic and other relevant characteristics of its customer base.</p>

APPENDIX 2 Maturity schedule for notional repricing cash flows

Table 4: Maturity schedule with 19 time buckets for notional repricing cash flows repricing at t^{CF}

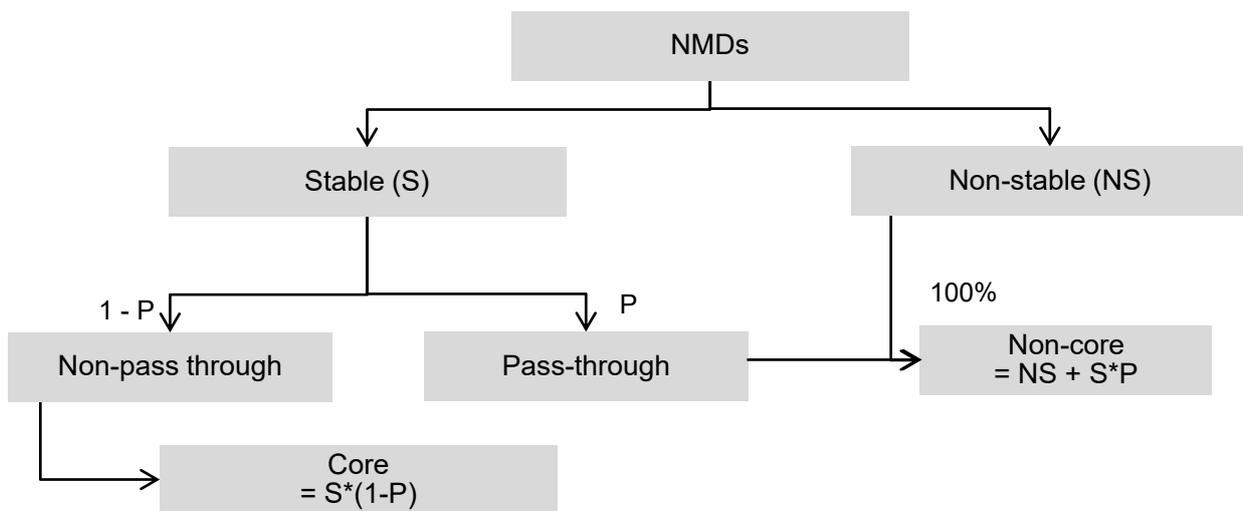
Short-term rates	Medium-term rates	Long-term rates
Overnight (O/N) (0.003Y)	$2Y < t^{CF} \leq 3Y$ (2.5Y)	$7Y < t^{CF} \leq 8Y$ (7.5Y)
$O/N < t^{CF} \leq 1M$ (0.042Y)	$3Y < t^{CF} \leq 4Y$ (3.5Y)	$8Y < t^{CF} \leq 9Y$ (8.5Y)
$1M < t^{CF} \leq 3M$ (0.167Y)	$4Y < t^{CF} \leq 5Y$ (4.5Y)	$9Y < t^{CF} \leq 10Y$ (9.5Y)
$3M < t^{CF} \leq 6M$ (0.375Y)	$5Y < t^{CF} \leq 6Y$ (5.5Y)	$10Y < t^{CF} \leq 15Y$ (12.5Y)
$6M < t^{CF} \leq 9M$ (0.625Y)	$6Y < t^{CF} \leq 7Y$ (6.5Y)	$15Y < t^{CF} \leq 20Y$ (17.5Y)
$9M < t^{CF} \leq 1Y$ (0.875Y)		$t^{CF} > 20Y$ (25.0Y)
$1Y < t^{CF} \leq 1.5Y$ (1.25Y)		
$1.5Y < t^{CF} \leq 2Y$ (1.75Y)		

Notes:

- i. Time bucket intervals (M: months; Y: years)
- ii. The number in brackets is the time bucket's midpoint

APPENDIX 3 Two-step procedure for separation of NMDs

Figure 1: Separation of NMDs to determine the core proportion



APPENDIX 4 A simplified example of the application of CPR

Assume a financial institution has a 100-unit portfolio of interest-only financing at a fixed rate of 10% with a contractual maturity of two periods, and that the financial institution estimates CPR to be at 20% during the first period. The cash flows in the baseline scenario and parallel up interest rate shock scenario (Scenario 1) would be as follows:

Table 5: Example of a fixed rate financing subject to prepayments with two periods, under the baseline and parallel up interest rate shock scenario (Scenario 1)

	Time bucket		
	$k=0$	$k=1$	$k=2$
	Baseline scenario		
Notional loan amount outstanding	100	80	0
Scheduled loan repayments		0	80
Interest payments		10	8
Prepayments (Base CPR: 20%)		20	0
Notional repricing cash flows		30	88
	Interest rate shock scenario (Scenario 1)		
Notional loan amount outstanding	100	84	0
Scheduled loan repayments		0	84
Interest payments		10	8.4
Prepayments (multiplier: 0.8)		16	0
Notional repricing cash flows		26	92.4

APPENDIX 5 Six interest rate shock scenarios for MYR, USD and SGD

Table 6: Interest rate shocks (in bps) for MYR by 19 time buckets.

Time bucket	Parallel up	Parallel down	Steepener	Flattener	Short rate up	Short rate down
Overnight (O/N)	200	-200	-114	140	175	-175
O/N < t ≤ 1M	200	-200	-110	137	173	-173
1M < t ≤ 3M	200	-200	-101	129	168	-168
3M < t ≤ 6M	200	-200	-85	115	159	-159
6M < t ≤ 9M	200	-200	-68	100	150	-150
9M < t ≤ 12M	200	-200	-52	86	141	-141
1Y < t ≤ 1.5Y	200	-200	-29	66	128	-128
1.5Y < t ≤ 2Y	200	-200	-2	43	113	-113
2Y < t ≤ 3Y	200	-200	33	12	94	-94
3Y < t ≤ 4Y	200	-200	71	-20	73	-73
4Y < t ≤ 5Y	200	-200	100	-46	57	-57
5Y < t ≤ 6Y	200	-200	123	-65	44	-44
6Y < t ≤ 7Y	200	-200	140	-81	34	-34
7Y < t ≤ 8Y	200	-200	154	-93	27	-27
8Y < t ≤ 9Y	200	-200	165	-102	21	-21
9Y < t ≤ 10Y	200	-200	173	-109	16	-16
10Y < t ≤ 15Y	200	-200	189	-123	8	-8
15Y < t ≤ 20Y	200	-200	199	-132	2	-2
t > 20Y	200	-200	202	-134	0	0

Table 7: Interest rate shocks (in bps) for USD by 19 time buckets.

Time bucket	Parallel up	Parallel down	Steepener	Flattener	Short rate up	Short rate down
Overnight (O/N)	200	-200	-195	240	300	-300
O/N < t ≤ 1M	200	-200	-191	236	297	-297
1M < t ≤ 3M	200	-200	-179	225	288	-288
3M < t ≤ 6M	200	-200	-159	206	273	-273
6M < t ≤ 9M	200	-200	-137	186	257	-257
9M < t ≤ 12M	200	-200	-117	166	241	-241
1Y < t ≤ 1.5Y	200	-200	-88	139	219	-219
1.5Y < t ≤ 2Y	200	-200	-54	107	194	-194
2Y < t ≤ 3Y	200	-200	-10	66	161	-161
3Y < t ≤ 4Y	200	-200	37	21	125	-125
4Y < t ≤ 5Y	200	-200	73	-13	97	-97
5Y < t ≤ 6Y	200	-200	102	-40	76	-76
6Y < t ≤ 7Y	200	-200	124	-61	59	-59
7Y < t ≤ 8Y	200	-200	142	-77	46	-46
8Y < t ≤ 9Y	200	-200	155	-90	36	-36
9Y < t ≤ 10Y	200	-200	166	-100	28	-28
10Y < t ≤ 15Y	200	-200	185	-119	13	-13
15Y < t ≤ 20Y	200	-200	197	-130	4	-4
t > 20Y	200	-200	202	-134	1	-1

Table 8: Interest rate shocks (in bps) for SGD by 19 time buckets.

Time bucket	Parallel up	Parallel down	Steepener	Flattener	Short rate up	Short rate down
Overnight (O/N)	175	-175	-162	200	250	-250
O/N < t ≤ 1M	175	-175	-159	197	247	-247
1M < t ≤ 3M	175	-175	-148	186	240	-240
3M < t ≤ 6M	175	-175	-130	170	228	-228
6M < t ≤ 9M	175	-175	-110	152	214	-214
9M < t ≤ 12M	175	-175	-91	134	201	-201
1Y < t ≤ 1.5Y	175	-175	-65	110	183	-183
1.5Y < t ≤ 2Y	175	-175	-33	81	161	-161
2Y < t ≤ 3Y	175	-175	7	44	134	-134
3Y < t ≤ 4Y	175	-175	50	5	104	-104
4Y < t ≤ 5Y	175	-175	84	-26	81	-81
5Y < t ≤ 6Y	175	-175	110	-50	63	-63
6Y < t ≤ 7Y	175	-175	131	-69	49	-49
7Y < t ≤ 8Y	175	-175	147	-84	38	-38
8Y < t ≤ 9Y	175	-175	159	-95	30	-30
9Y < t ≤ 10Y	175	-175	169	-104	23	-23
10Y < t ≤ 15Y	175	-175	186	-120	11	-11
15Y < t ≤ 20Y	175	-175	198	-131	3	-3
t > 20Y	175	-175	202	-134	0	0

APPENDIX 6 Illustrative example of Standardised Framework EVE calculation

For a financial institution with exposures in MYR, USD, and SGD, the following steps should be taken to calculate the Standardised Framework EVE:

Step 1: For each of the specified scenarios, aggregate EVE losses across currencies. EVE gains are treated as zero.

Step 2: Take the maximum EVE loss among the specified scenarios.

Table 9: Hypothetical example of exposures in MYR, USD, and SGD

Scenario	EVE gain/(loss)			
	MYR	USD	SGD	Aggregate
Parallel up	-100	10	-20	-120
Parallel down	50	5	5	0
Steeper	-30	-5	-5	-40
Flattener	60	30	20	0
Short rate up	-50	-5	-5	-60
Short rate down	30	5	5	0

In this example, the parallel up scenario results in a loss of $100 + 20 = 120$. The parallel up scenario also happens to result in the largest EVE loss, and hence this is the Standardised Framework EVE metric.