



CENTRAL BANK OF  
TRINIDAD & TOBAGO

# **Guideline for the Management of Interest Rate Risk in the Banking Book (IRRBB)**

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## Abbreviations

ALCO	Asset and Liability Management Committee
BCBS	Basel Committee on Banking Supervision
CPR	Conditional Prepayment Rate
CSRBB	Credit Spread Risk in the Banking Book
EVE	Economic Value of Equity
ICAAP	Internal Capital Adequacy Assessment Process
IMS	Internal Measurement System
IRR	Interest Rate Risk
IRRBB	Interest Rate Risk in the Banking Book
LTV	Loan to Value
MIS	Management Information Systems
NII	Net Interest Income
NMD	Non-Maturity Deposit

## 1. INTRODUCTION

- 1.1 The Basel Framework issued by the Basel Committee on Banking Supervision (“BCBS”) provides principles and a standardized framework for Bank’s identification, measurement, monitoring and control of interest rate risk in the banking book (IRRBB).
- 1.2 Interest rate risk in the banking book (IRRBB) refers to the current or prospective risk to an institution’s capital and earnings arising from adverse movements in market interest rates that affect its banking book positions.
- 1.3 Unlike traded interest rate risk<sup>1</sup>, which stems from market activity in an institution’s trading book, **IRRBB is inherent to core banking activities and is therefore a key risk encountered by all banking institutions**. It arises because market interest rates can vary significantly over time, while the business of banking typically involves intermediation activity that produces exposures to both maturity mismatch (e.g. long-maturity assets funded by short-maturity liabilities) and rate mismatch (e.g. variable rate loans funded by fixed rate deposits and vice versa). In addition, there are optionalities embedded in many of the common banking products (e.g. interest rate caps/ floors, prepayments, early withdrawals) that are triggered by changes in interest rates.
- 1.4 IRRBB is derived from three fundamental sources (sub-types) relating to the level and structural characteristics of interest rates and the effects of these changes on yield curves. **The three main sub-types of IRRBB are basis risk, option risk and gap risk.**
- 1.5 All three sub-types of IRRBB potentially change the price/value or earnings/costs of interest rate-sensitive assets, liabilities and/or off-balance sheet items in a way, or at a time, that can adversely affect an institution’s financial condition.

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<sup>1</sup> Traded interest rate risk refers to the exposure to losses resulting from changes in market interest rates specifically within financial instruments that are actively traded. It is the form of interest rate risk that arises from banks’ and financial institutions’ trading books, not their loan books. Minimum requirements for the management of traded interest rate risk are addressed in the Central Bank’s “*Guideline for the Management of Market Risk*”. Additionally, capital charges for interest rate risk in the trading book are captured under the Pillar 1- Minimum Capital Requirements set out in the Financial Institutions (Capital Adequacy) Regulations, 2020.

- 1.6 In addition to IRRBB, financial institutions should also monitor credit spread risk in the banking book (CSRBB). **CSRBB is a risk related to IRRBB that institutions should assess as part of their interest rate risk management framework.** CSRBB refers to any kind of asset/liability spread risk of credit-risky instruments that is not explained by IRRBB nor by the expected credit risk or jump-to-default risk<sup>2</sup>. The impact of CSRBB on earnings and the economic value could be significant for some institutions.
- 1.7 This Guideline sets out guidance for the management of IRRBB, which leverages the principles espoused by the Basel Committee Banking Supervision (BCBS).

## 2. DEFINITIONS

<b>“Banking book”</b>	means all assets, liabilities and off-balance sheet items that are not part of an institution’s trading book <sup>3</sup> .
<b>“Basis risk”</b>	means the risk which refers to the impact of relative changes in interest rates of financial instruments that have similar tenors but are priced using different interest rate indices (e.g. an asset priced off Libor funded by a liability priced off US Treasuries). This risk arises from the imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar rate change characteristics.
<b>“Central Bank”</b>	means the Central Bank of Trinidad and Tobago.

<sup>2</sup> Jump-to-default risk is the risk of instantaneous, discrete loss that occurs when an obligor defaults, rather than a gradual loss driven by spread widening or rating migration. An example of this risk is when a bond price collapses overnight. At default, the instrument’s value ‘jumps’ from a market price to a recovery value that is typically well below par.

<sup>3</sup> The term “trading book” for the purpose of capital adequacy calculations is defined at paragraph 3, Schedule 4, of the Financial Institution’s (Capital Adequacy) Regulations, 2020.

<b>“Commodity”</b>	means a product which is or can be traded on a secondary market, including agricultural products, minerals and precious metals.
<b>“Credit spread risk in the banking book” or “CSRBB”</b>	means risk arising from changes to the market credit spread and market liquidity spread for a given credit quality.
<b>“Earnings based measures”</b>	means measurement techniques that focus on changes to future profitability within a given time horizon.
<b>“Economic value measures”</b>	means measurement techniques that compute a change in the net present value of the institution’s assets, liabilities and off-balance sheet items subject to specific interest rate changes, shocks and stress scenarios.
<b>“Financial institution”/ “institution”</b>	means an institution referred to in section 3 of this Guideline.
<b>“Financial asset”</b>	means any asset that is cash, the right to receive cash or another financial asset or a commodity, or an equity instrument.
<b>“Financial instrument”</b>	means any contract that gives rise to both a financial asset of one entity and a financial liability or equity instrument of another entity. Financial instruments include primary financial instruments (or cash instruments) and derivative financial instruments.
<b>“Financial liability”</b>	means the contractual obligation to deliver cash or another financial asset or a commodity.

<b>“Gap risk”</b>	means the risk which arises from the term structure of banking book instruments and describes the risk arising from the timing of instrument’s rate changes. Since rate resets on different instruments occur at different tenors, the risk to the institution arises when the rate of interest paid on liabilities increases before the rate of interest received on assets, or the rate of interest on assets reduces before liabilities.
<b>“Net interest income (NII)”</b>	means the difference between revenue generated from interest-bearing assets and the expenses paid for its interest-bearing liabilities.
<b>“Option risk”</b>	means the risk which arises from option derivative positions or from optional elements embedded in an institution’s assets, liabilities and/or off-balance sheet items where the institution or its customer can alter the level and timing of their cash flows. Option risk can be further characterized into automatic option risk and behavioural option risk.
<b>“Non-maturity Deposit” or “NMD”</b>	A deposit with no set term of maturity. NMDs are highly liquid and can be withdrawn at any time e.g. savings and chequing accounts.
<b>“Risk appetite”</b>	means in this Guideline, the written articulation of the aggregate level and types of IRRBB risk an institution is willing to assume or avoid, within its risk capacity, to achieve its strategic objectives and business plan;
<b>“Risk tolerance”</b>	means the degree of variance from the institution’s risk appetite that the institution is willing to tolerate.

“Trading book” means financial instruments intended for active trading.  
(see section 4 for more detail).

### 3. PURPOSE, SCOPE AND APPLICATION

3.1 In the exercise of its powers under section 10(1) of the Financial Institutions Act, 2008 (‘FIA’), the Central Bank issues this Guideline for purposes, *inter alia*, of Regulation 6 of the Financial Institutions (Capital Adequacy) Regulations, 2020 and in support of the Internal Capital Adequacy Assessment Process (“ICAAP”) Guideline, 2020.

3.2 This Guideline applies to financial institutions under the FIA<sup>4</sup> in the following manner:

3.2.1 On an individual basis to:

- i. a licensee that is a bank;
- ii. a licensee that is a non-bank financial institution (NFI) where the NFI accepts deposits and/or has banking-book like exposures; and

3.2.2 On a consolidated basis to:

- iii. To a licensee or financial holding company (FHC) that is the parent company of a banking group, to include all the relevant entities in the group.
  - a) Group wide policies must ensure consistency across entities.

3.2.3 The depth and sophistication of the IRRBB framework implemented by financial institutions referred to in this section should be commensurate with:

- i. the size of the institution;
- ii. complexity of products;
- iii. nature of the balance sheet; and
- iv. materiality of the IRRBB exposure.

3.3 This *Guideline for the Management of Interest Rate Risk in the Banking Book* (“Guideline”):

<sup>4</sup> Reference to a statute in the FIA includes subordinate legislation made under the relevant statute and any amendment, re-enactment or modification thereunder.

- 3.3.1 establishes minimum standards and key principles, in line with international best practice, which are to be used by financial institutions for the management and control of IRRBB. The Central Bank expects institutions to align their IRRBB risk management practices and systems with the principles set out in this Guideline, taking into account the nature, scale and complexity of their business operations;
- 3.3.2 requires financial institutions to identify, measure, monitor and control their IRRBB risk in an effective manner;
- 3.3.3 establishes minimum requirements for assessing IRRBB risk for institutions in the ICAAP **and expressly requires the setting aside of capital for IRRBB**<sup>5</sup>;
- 3.3.4 requires that capital adequacy for IRRBB must be considered specifically as part of the Internal Capital Adequacy Assessment Process (ICAAP) approved by the Board and in line with the institution's risk appetite on IRRBB; and
- 3.3.5 requires institutions to analyze and quantify the extent to which CSRBB is a relevant risk for their institution(s) and ensure that any CSRBB is properly monitored and assessed.

## 4. BOUNDARY BETWEEN THE BANKING BOOK AND THE TRADING BOOK<sup>6</sup>

### 4.1 Scope of the Banking Book

4.1.1 Any instrument which is **not** held for the purposes of the trading book as defined in Schedule 4 of the Financial Institutions (Capital Adequacy) Regulations, 2020, **must** be assigned to the banking book. In addition, the following instruments must be assigned to the banking book:

- i. unlisted equities;

<sup>5</sup> Capital for IRRBB is one of the risks that must be considered and assessed under Pillar 2 of the Basel II/III Capital Framework – Internal Capital Adequacy Assessment Process/ Supervisory Review and Evaluation Process.

<sup>6</sup> Basel Committee on Banking Supervision, Boundary between the Banking Book and the Trading Book (RBC25) - January 2023.

- ii. instruments designated for securitisation warehousing;
- iii. real estate holdings, where in the context of assigning instruments to the trading book, real estate holdings relate only to direct holdings of real estate as well as derivatives on direct holdings;
- iv. retail and small or medium-sized enterprise (SME) credit;
- v. equity investments in a fund, unless the bank meets at least one of the following conditions:
  - a) *the bank is able to look-through the fund to its individual components and there is sufficient and frequent information, verified by an independent third party, provided to the bank regarding the fund's composition; or*
  - b) *the bank obtains daily price quotes for the fund and it has access to the information contained in the fund's mandate or in the national regulations governing such investment funds;*
- vi. hedge funds;
- vii. derivative instruments and funds that have as the underlying assets instruments described in subparagraphs i. to vi. above; or
- viii. instruments held for the purpose of hedging a particular risk of a position in the types of instrument above.

### **Instrument designation**

- 4.2 An institution must have **clearly defined and documented policies, procedures and practices** for determining which instruments to include or to exclude from the trading and banking books for the purposes of calculating their regulatory capital; ensuring compliance with the criteria set forth in this section; and taking into account the institution's risk management capabilities and practices.
- 4.3 An institution's **internal control function must conduct an ongoing evaluation of instruments, both in and out of the trading book**, to assess whether its instruments are being properly designated initially as trading or banking book instruments in the context of the institution's trading activities. Compliance with the policies and procedures must be fully documented and subject to periodic internal audit and the results must be available for supervisory review.

## Restrictions on moving instruments between regulatory books

- 4.4 There is a strict limit on the ability of institutions to move financial instruments between the trading book and the banking book by their own discretion after initial designation. Such transfers are permitted only under extraordinary circumstances like structural changes or revised accounting standards, otherwise such a transfer can result in regulatory arbitrage. **All transfers of financial instruments between the banking and trading books must be approved by senior management of the financial institution, documented and disclosed, unless permitted under the accounting standards.**
- 4.5 The Central Bank **must** be notified in writing of any transfer of financial instruments between the banking and trading books within 10 business days of it occurring along with the reasons for the transfer and clearly indicating any differences in capital charges resulting from the transfer.
- 4.6 **Capital benefits from any transfer between the banking and trading books are strictly disallowed.** For any transfer, which results in a change in the capital charge, the higher capital charge must be applied for the life of the specified instrument. The Central Bank may require any other action that it deems appropriate to treat with the transfer, including a deduction from capital. Institutions must maintain comprehensive policies to govern reassignment or transfer activity, with annual reviews and updates to reflect any exceptional events.

## 5. IMPLEMENTATION OF A SOUND FRAMEWORK FOR MANAGING IRRBB

### 5.1 General Requirements

- 5.1.1 A financial institution should establish and maintain a robust IRRBB management framework that is aligned with its risk profile, its risk appetite and tolerance. The framework should be:
- i. commensurate with the institution's nature, size and complexity;

- ii. appropriate for the institution's business model, strategy, products, activities, geographic coverage and currencies in which it conducts business;
- iii. sufficiently comprehensive, covering all aspects of IRRBB including gap risk, basis risk and option risk, allowing institutions to actively identify their IRRBB exposures and take appropriate steps to measure, monitor and control it;
- iv. supported by IRRBB stress testing based on scenarios specific to the institution and any scenarios required by the Central Bank or proposed by any other regulatory body; and
- v. a key source of input for an institution's internal capital adequacy assessment process (ICAAP).

5.1.2 The IRRBB management framework of a financial institution should comprise sound mechanisms for identifying, measuring, managing, monitoring and controlling IRRBB for all products and activities. These should include, inter alia:

- i. policies, procedures and controls on IRRBB including specific policies and approvals for exceptions to established limits. Measures for ensuring compliance with these limits and risk management protocols should also be incorporated;
- ii. adequate systems and standards for measuring IRRBB, valuing positions and assessing performance, including procedures for updating interest rate shock and stress scenarios and key underlying assumptions driving the institution's IRRBB analysis;
- iii. a comprehensive IRRBB reporting and review process that is sufficiently frequent and ensures that the Board, senior management, Central Bank and other relevant stakeholders are appropriately apprised;
- iv. regular stress testing to identify and quantify exposure to possible IRRBB stresses;
- v. effective internal controls and management information systems (MIS) that enable accurate and timely reporting and decision making;
- vi. independent review and evaluation of the effectiveness of the IRRBB framework.

5.1.3 Financial institutions should ensure that IRRBB management is not addressed in isolation but is fully integrated into the institution's enterprise-wide risk management framework. Further, the correlation of IRRBB with other risks such as credit, market,

operational and reputational risk should be considered. **Institutions must also consider the impact of IRRBB on capital adequacy and liquidity.**

## 5.2 Governance Framework

### 5.2.1 **The Board of each institution is responsible for the oversight of the IRRBB management framework, and the institution's risk appetite for IRRBB.**

Monitoring and management of IRRBB may be delegated by the Board to senior management, expert individuals, or an asset and liability management committee (henceforth, its delegates). Institutions must have an adequate IRRBB management framework, involving regular independent reviews and evaluations of the effectiveness of the system.

### 5.2.2 Since a financial institution's **Board** has ultimate responsibility for overseeing the prudent management of IRRBB, it must at a minimum:

- i. approve, oversee and review annually the IRRBB risk management framework including all IRRBB policies and procedures;
- ii. ensure compliance with the IRRBB risk management framework, including all IRRBB policies and procedures, and provide approvals where necessary for exceptions;
- iii. **establish and approve the IRRBB risk appetite and tolerance of the institution.** In particular, it should ensure that a defined risk appetite statement is developed, documented, approved and implemented. **The IRRBB risk appetite should be consistent with what is documented within the ICAAP.** Any deviation from the risk appetite should be in accordance with an established risk tolerance.
- iv. establish and approve appropriate IRRBB limits in accordance with the risk appetite and tolerance of the institution and the IRRBB policies and procedures;
- v. have a collective understanding of the institution's IRRBB, the implication of IRRBB strategies and the potential linkages with and impact on other types of risk including market, liquidity, credit and operational risk. While in-depth technical knowledge of complex financial instruments or quantitative risk management techniques may not be necessary for all Board members, the Board should have

- sufficient knowledge to understand the institution's IRRBB management strategies. Further, the Board should comprise members with sufficient technical capacity to challenge the reports submitted to the Board or circulated to the public;
- vi. ensure that senior management:-
    - a) has clear guidance on the acceptable level of IRRBB for the institution given its business strategies;
    - b) has the capability and skills to understand and effectively manage the institution's IRRBB; and
    - c) deploys adequate resources to IRRBB management at the institution;
  - vii. **approve new products and activities in the banking book**, ensuring that the associated interest rate risk is comprehensively assessed before launching and before submission to the Central Bank for approval of a new product. In particular, the Board should ensure that, prior to the institution introducing a new product or new hedging or risk-taking strategy, adequate operational procedures and risk control systems must be in place to mitigate the potential increase in IRRBB;
  - viii. Approve existing banking book products or activities where the IRRBB may be above the risk appetite set for the particular product of activity. In particular, the Board should ensure that breaches of set threshold limits are carefully monitored and reported so as to mitigate the potential risk that excess exposures may cause;
  - ix. **should be informed regularly (at least semi-annually) of the level and trend of the institution's IRRBB exposures**. The Board should regularly review timely information that is sufficiently detailed to allow it to understand and assess the performance of its delegates in monitoring and controlling IRRBB in compliance with policies approved by the Board. Such reviews should be carried out more frequently when the institution runs significant IRRBB exposures or has positions in complex IRRBB instruments.
  - x. avoid potential conflicts of interest by ensuring that there is appropriate and sufficient separation of responsibilities in key functions of the risk management process;
  - xi. ensure that the IRRBB identification, measurement, monitoring and control functions have clearly defined responsibilities that (i) are sufficiently independent

from the risk-taking functions of the institution and (ii) can report IRRBB exposures directly to the Board (or relevant Board Committee);

- xii. ensure that the IRRBB identification, measurement, monitoring and control processes are regularly reviewed by independent functions such as an internal and /or external auditor. Such reviews should also address any significant changes that may affect the effectiveness of controls. Changes may include any new technology, market conditions or personnel.

**5.2.3 The Senior Management of a financial institution, or the delegates determined by the Board, are responsible for the implementation of the institution's IRRBB risk management framework.** To achieve this effectively, Senior Management should, at a minimum:

- i. develop and implement the Board-approved IRRBB management framework (including policies, systems, controls and procedures for the identification, measurement, management and monitoring of IRRBB). They should also ensure there is compliance with the Board-approved IRRBB management framework;
- ii. have sufficient knowledge and expertise to enable them to understand and effectively manage and control IRRBB in the institution's operations;
- iii. ensure that an appropriate and effective management information system that supports the management of IRRBB is implemented and maintained;
- iv. report on the level and trend of the institution's IRRBB exposures to the Board at least semi-annually or more frequently, taking into account the materiality and complexity of exposures and promptly in the event of a sudden material change or interest rate shock;
- v. establish effective IRRBB internal controls including ensuring that:
  - a) appropriately trained and competent personnel are responsible for implementing internal controls;
  - b) persons charged with reviewing the institution's internal controls have sufficient competency, independence and authority to challenge the system;and

- c) competitive and profit-driven pressures are not allowed to compromise the integrity of the control function.
- vi. ensure that quantitative and qualitative disclosures for IRRBB are provided in accordance with the Central Bank's Pillar 3 Guideline; and
- vii. in conjunction with the Board, regularly review and evaluate the overall effectiveness of the IRRBB management framework, making recommendations for improvements and executing changes, where appropriate.

### 5.3 Policies and Procedures

5.3.1 A financial institution should have clearly defined policies and procedures that guide and provide specific details on the institution's IRRBB. These policies and procedures should, at a minimum:

- i. be documented, approved by the Board and sufficiently reflect the IRRBB management goals and tolerances of the institution;
- ii. be proportionate to the nature, size and complexity of the institution;
- iii. aligned with the IRRBB risk appetite articulated by the Board;
- iv. reviewed regularly (at least annually) to ensure continued relevance and appropriateness; and
- v. be comprehensive, covering all key aspects of the institution's IRRBB risk management framework, including, inter alia:
  - a) the process for determining the risk appetite;
  - b) the methods by which IRRBB is to be measured, including procedures under both the economic value-based and earnings-based measures; and
  - c) procedures for managing significant gap risk, basis risk and option risk.
- vi. procedures for engaging in major risk-taking initiatives or hedging in advance of implementation, including details on limits and triggers for monitoring the evolution of hedging strategies (such as derivatives);
- vii. controls including appropriate delineation of responsibilities and limits;
- viii. rules and protocols for limit exceptions; and

- ix. reporting processes for example outlining the information to be produced, the frequency of reporting to senior management and the Board and reporting channels.

## 5.4 Measurement of IRRBB

### 5.4.1 Measurement: Economic Value and Earnings-Based Measures

- i. The measurement of IRRBB should be based on outcomes of both economic value and earnings-based measures, arising from a wide and appropriate range of interest rate shock and stress scenarios.
- ii. Economic value measures the amount by which the net present value of the cash flows arising from a bank's existing asset, liability and off-balance sheet positions under the prevailing term structure of interest rates changes under different future interest rate scenarios. It reflects changes in value over the remaining life of the positions (referred to as a 'run-off' view). When a bank's equity is excluded from the calculation, the result is a measure of the theoretical risk to the economic value of equity (EVE) from a change in interest rates.
- iii. Earnings-based measures estimate the amount by which a bank's expected earnings under current market conditions change under different interest rate scenarios.
- iv. The mix of a financial institution's business lines and the risks associated with its activities should guide the selection of the most appropriate measurement system.
- v. In measuring IRRBB, institutions should ensure that:
  - a) all material IRRBB sources and vulnerabilities are considered by:
    1. identifying the scope of activities and products that expose the institution to IRRBB and the level of inherent risk in those activities. Activities and products may include, but are not limited to:
      - Loans – the determination of interest rates, loan structures, terms to maturity and contractual agreements (particularly those that contain any optionality along with its associated fees and conditions);

- Investments – the composition of the portfolio including maturity dates, yields, pay-outs, currencies and types of instruments;
  - Treasury functions – managing the cost of funding, liquidity (in all currencies) and cash flows;
  - Hedging – decision-making regarding the assets to be hedged and when and by which means (e.g. derivatives, future contracts, swaps);
2. verifying that sources of IRRBB information are accurate and reliable by using well reputed interest rate indexes and measurement techniques that are most appropriate for the scale of operations; and
  3. assessing the effect of market changes on the scope of activities, utilizing the most up to date market data to determine which assets/liabilities are likely to be impacted and to what extent;
- b) in addition to the impact of an interest rate shock on its economic value (assessing the change in net present value) and earnings (changes to future profitability), the policy approach takes into account their ability to generate stable earnings sufficient to maintain its normal business operations;
  - c) attention is paid to the complementary nature of economic value and earnings-based measures in their risk and internal capital assessments, in particular in terms of outcomes<sup>7</sup>, assessment horizons<sup>8</sup> and future business/production<sup>9</sup>. Institutions should be aware of the benefits of each type of measure, where gaps may exist, and how these measures may conflict with each other;
  - d) the data and assumptions used are sufficiently granular, particularly with regards to capturing information related to behavioural options;

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<sup>7</sup> Economic value measures compute a change in the net present value of the institution's assets, liabilities and off-balance sheet items subject to specific interest rate shock and stress scenarios, while earnings-based measures focus on changes to future profitability within a given time horizon eventually affecting future levels of an institution's own equity capital.

<sup>8</sup> Economic value measures reflect changes in value over the remaining life of the institution's assets, liabilities and off-balance sheet items, i.e. until all positions have run off, while earnings-based measures cover only the short to medium term, and therefore do not fully capture those risks that will continue to impact profit and loss accounts beyond the period of estimation.

<sup>9</sup> Economic value measures consider the net present value of repricing cash flows of instruments on the institution's balance sheet or accounted for as an off-balance sheet item (i.e. a run-off view). Earnings measures may, in addition to a run-off view, assume rollover of maturing items (i.e. a constant balance sheet view) and/or assess the scenario-consistent impact on the institution's future earnings inclusive of future business (i.e. a dynamic view).

- e) the IRRBB measurement framework is comprehensively documented to ensure:
  - 1. that the institution's approach to determining its IRRBB capital requirement is transparent; and
  - 2. independent review and validation is conducted. The framework should be reviewed and amended, as appropriate, including a review of the institution's assumptions and stress testing scenarios.

#### 5.4.2 *Interest Rate Shocks and Stress Scenarios*

- i. Institutions' Information Management Systems (IMS) for IRRBB should be able to accommodate the calculation of the impact on economic value and earnings of multiple scenarios, based on:
  - a) internally selected interest rate shock scenarios addressing the institution's risk profile, according to its Internal Capital Adequacy Assessment Process (ICAAP);
  - b) historical and hypothetical interest rate stress scenarios, which tend to be more severe than shock scenarios; and
  - c) any other interest rate shock scenarios required by the Central Bank.
- ii. Stress tests for IRRBB should be conducted at least annually or more frequently, taking into account issues including the level of inherent risk, market conditions, and the systemic importance<sup>10</sup> of the institution;
- iii. When developing interest rate shock and stress scenarios for IRRBB, institutions should consider the following:
  - a) The scenarios should be sufficiently wide-ranging to identify parallel and non-parallel gap risk, basis risk and option risk. Institutions should ensure that the scenarios are both severe and plausible, in light of the existing level of interest rates and the interest rate cycle.

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<sup>10</sup> The systemic importance of financial institutions will be determined by the Central Bank in accordance with its *Framework for Determining a Domestic Systemically Bank and Higher Loss Absorbency Requirement* and formally communicated to the institution.

- b) Special consideration should be given to instruments or markets where concentrations exist, because those positions may be more difficult to liquidate or offset in a stressful market environment.
  - c) Institutions with significant option risk should include scenarios that capture the exercise of such options. For example, institutions that have products with sold caps or floors should include scenarios that assess how the risk positions would change should those caps or floors move into the money. Given that the market value of options also fluctuates with changes in the volatility of interest rates, institutions should develop interest rate assumptions to measure their IRRBB exposures to changes in interest rate volatilities.
  - d) Institutions should specify, in building their interest rate shock and stress scenarios, the term structure of interest rates that will be incorporated and the basis relationship between yield curves, rate indices etc. Institutions should also estimate how interest rates that are administered or managed by management (e.g. prime rates or retail deposit rates, as opposed to those that are purely market-driven) might change. Management should document how these assumptions are derived.
- iv. Further, institutions should perform qualitative and quantitative reverse stress tests in order to (i) identify interest rate scenarios that could severely threaten an institution's capital and earnings; and (ii) reveal vulnerabilities arising from its hedging strategies and the potential behavioural reactions of its customers.

#### *5.4.3 Assumptions*

- i. In measuring IRRBB, key behavioural and modelling assumptions should be fully understood, conceptually sound and documented. Such assumptions should be rigorously tested and aligned with the bank's business strategies.
- ii. Both economic value and earnings-based measures of IRRBB are significantly impacted by a number of assumptions made for the purposes of risk quantification, namely:

- a) expectations for the exercise of interest rate options (explicit and embedded) by both the institution and its customers under specific interest rate shock and stress scenarios;
- b) treatment of balances and interest flows arising from non-maturity deposits (NMDs);
- c) treatment of own equity in economic value measures; and
- d) the implications of accounting practices for IRRBB.

Hence, when assessing its IRRBB exposures, an institution should make judgments and assumptions about how an instrument’s actual maturity or repricing behaviour may vary from the instrument’s contractual terms because of behavioural optionalities.

*Products with behavioural optionalities*

- iii. Modelling assumptions should be conceptually sound and reasonable, and consistent with historical experience. Institutions must carefully consider how the exercise of the behavioural optionality will vary not only under the interest rate shock and stress scenario but also across other dimensions. For instance, considerations may include:

<b>Product</b>	<b>Dimensions influencing the exercise of the embedded behavioural options</b>
<i>Fixed rate loans subject to prepayment risk</i>	Loan size, loan-to-value (LTV) ratio, borrower characteristics, contractual interest rates, seasoning, geographical location, original and remaining maturity, and other historical factors.  Other macroeconomic variables such as stock indices, unemployment rates, GDP, inflation and housing price indices should be considered in modelling prepayment behaviour.
<i>Fixed rate loan commitments</i>	Borrower characteristics, geographical location (including competitive environment and local premium conventions), customer relationship with institution as evidenced by cross-

	products, remaining maturity of the commitment, seasoning and remaining term of the mortgage.
<b><i>Term deposits subject to early redemption risk</i></b>	<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>
<b><i>NMDs</i></b>	<p>Responsiveness of product rates to changes in market interest rates, current level of interest rates, spread between an institution's offer rate and market rate, competition from other firms, the institution's geographical location and demographic and other relevant characteristics of its customer base.</p>

- iv. In addition, institutions with positions denominated in different currencies can expose themselves to IRRBB in each of those currencies. Since yield curves vary from currency to currency, institutions generally need to assess exposures in each currency. Institutions with the necessary skills and sophistication, and with material multicurrency exposures, may choose to include, in their IMS, methods to aggregate their IRRBB in different currencies using assumptions about the correlation between interest rates in different currencies.
- v. Institutions should be able to test the appropriateness of key behavioural assumptions, and all changes to the assumptions of key parameters should be documented. Institutions should periodically perform sensitivity analyses for key assumptions to monitor their impact on measured IRRBB. Sensitivity analyses should be performed with reference to both economic value and earnings-based measures.

- vi. As market conditions, competitive environments and strategies change over time, the institution should review significant measurement assumptions at least annually and more frequently during rapidly changing market conditions.

#### 5.4.4 *Systems, Data Integrity and Validation*

- i. Measurement systems and models used for IRRBB should be subject to appropriate documentation, testing and controls to give assurance on the accuracy of calculations. Models used to measure IRRBB should be comprehensive and covered by governance processes for model risk management, including a validation function that is independent of the development process.
- ii. Financial institutions should ensure that measurement systems and models are:
  - a) able to identify and quantify the major sources of IRRBB exposure and be closely integrated into the financial institution's risk management processes;
  - b) selected by taking into account its business lines and the risk characteristics of its activities;
  - c) able to produce accurate IRRBB information in a timely manner, and allow for data retrieval on an ad hoc basis;
  - d) capture interest rate risk data on all the institution's material IRRBB exposures.
  - e) able to incorporate a variety of methodologies including any methodology specified by the Central Bank to quantify IRRBB exposures under both the economic value and earnings-based measures, as well as other measures of IRRBB specified by the Central Bank, based on interest rate shock and stress scenarios. The methodology used should be appropriate for the nature and complexity of the institutions exposures and may range from simple calculations based on static simulations using current holdings to more sophisticated dynamic modelling techniques that reflect potential future business activities;
  - f) include automated data inputs as much as possible to reduce administrative errors. Data mapping should be periodically reviewed and tested to ensure accuracy. Institutions should monitor the type of data extracts and set appropriate controls.

- g) equipped with slotting criteria that should be stable over time to allow for a meaningful comparison of risk figures over different periods, for the purpose of gap analyses where cash flows are slotted into different time buckets or assigned to different vertex points to reflect the different tenors of the interest rate curve.
- h) able to compute economic value and earnings-based measures of IRRBB,
- i) equipped with established trigger events (e.g. limits for variances between expected values and actual values produced by the model) that obligate model reviewers to notify senior management in a timely manner to determine corrective action and/or restriction on model usage.

*Model governance process*

- iii. The validation of IRRBB measurement methods and assessment of corresponding model risk should be included in a formal policy that should be reviewed and approved by the Board or its delegates. The policy should specify the management roles and designate who is responsible for the development, implementation and use of models. In addition, the model oversight responsibilities, as well as policies including the development of initial and ongoing validation procedures, evaluation of results, approval, version control, exception, escalation, modification and decommission processes need to be specified and integrated within the governance processes for model risk management.
- iv. An effective validation framework should include three core elements:
  - a) evaluation of conceptual/methodological soundness, supported by documented evidence;
  - b) ongoing model monitoring, including process verification and benchmarking; and
  - c) outcomes analysis, including back-testing of key internal parameters (e.g. stability of deposits, prepayments, early redemptions or pricing of instruments).
- v. Clear version control authorizations should be designated, where appropriate, to model owners. With the passage of time and due to observations and new information gained over time, an approved model may be modified or

- decommissioned. Financial institutions should articulate policies for model transition, including change and version control authorizations and documentation.
- vi. IRRBB models might include those developed by third-party vendors. Model inputs or assumptions may also be sourced from related modelling processes or sub-models (both in-house and vendor-sourced) and should be included in the validation process. The financial institution should document and explain model specification choices as part of the validation process.
  - vii. If vendors provide input for market data, behavioural assumptions or model settings, the institution should have a process in place to determine if those inputs are reasonable for its business and the risk characteristics of its activities.
  - viii. Internal audit should review the model risk management process as part of its annual risk assessment and audit plans. The audit activity should not duplicate model risk management processes, but should review the integrity and effectiveness of the risk management system and the model risk management process.

## 5.5 Monitoring and Reporting

- 5.5.1 The reporting of IRRBB measures to the Board or its delegates should be regular, timely (at least semi-annually) and should compare current exposures with policy limits. Prompt reporting to the Board is expected in the event of a material change or interest rate shock. In particular, reporting should include the results of the periodic model reviews and audits as well as comparisons of past forecasts or risk estimates with actual results to inform potential modelling shortcomings on a regular basis. Portfolios that may be subject to significant mark-to-market movements should be clearly identified within the bank's MIS and subject to oversight in line with any other portfolios exposed to market risk.

## 5.6 Internal Controls

- 5.6.1 Financial institutions should have adequate internal controls to ensure the integrity of their IRRBB management process. The internal controls should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, Guidelines and bank policies.
- 5.6.2 Financial institutions should have their IRRBB identification, measurement, monitoring and control processes reviewed by an independent auditing function (such as an internal or external auditor) on a regular basis.
- 5.6.3 The internal review process should allow for an evaluation of effectiveness of the various components of the institution's IRRBB management framework including the extent to which the policies, procedures and systems continue to align with the institution's risk profile and business model, the soundness of the IRRBB measurement framework and the robustness of institution's stress tests and sensitivity analysis. The review process should also:
- i. address the impact of any significant changes such as changes in market conditions, technology or organizational structure or any other factor that could impact the continued effectiveness of IRRBB internal controls and other risk management systems;
  - ii. promote the timely implementation of revisions or enhancements to policies, procedures, systems and internal controls;
  - iii. consider the scenarios and assumptions underlying the management of IRRBB to ensure that they are reasonable and appropriate including those associated with stress testing and scenario analysis;
  - iv. allow for compliance with IRRBB policies and procedures to be assessed; and
  - v. where models are used, address the model risk management process including assumptions made in the models and the accuracy and completeness of data sources.
- 5.6.4 Reports of independent reviews should be presented to the Board and senior management to support decision-making. They should also be made available to the Central Bank, upon request.

## 5.7 Capital Adequacy and the ICAAP

- 5.7.1 The outcomes of the capital adequacy for IRRBB should be considered in an institution's ICAAP and flow through to assessments of capital for the institution and their associated business lines.
- 5.7.2 Institutions are responsible for evaluating the level of capital that they should hold, and for ensuring that this is sufficient to cover IRRBB and its related risks. In determining the appropriate level of capital, financial institutions should consider both the amount and the quality of capital needed.
- 5.7.3 Capital adequacy for IRBBB should be considered in relation to the risks to economic value, given that such risks are embedded in the bank's assets, liabilities and off-balance sheet items. Capital adequacy should also be sufficient to cover risks to future earnings, given the possibility that future earnings may be lower than expected.
- 5.7.4 The process for determining the IRRBB capital requirement must be comprehensively documented within the ICAAP report and consistently applied.
- 5.7.5 Capital adequacy assessments for IRRBB should consider:
- i. the size and tenor of internal limits on IRRBB exposures and whether these limits are reached at the point of capital calculation;
  - ii. the effectiveness and expected cost of hedging open positions that are intended to take advantage of internal expectations of the future level of interest rates;
  - iii. the sensitivity of the internal measures of IRRBB to key modelling assumptions;
  - iv. the impact of shock and stress scenarios on positions priced off of different interest rate indices (basis risk);
  - v. the impact on economic value and net interest income (NII) of mismatched positions in different currencies;
  - vi. the impact of embedded losses;
  - vii. the distribution of capital relative to risks across legal entities that form part of a capital consolidation group, in addition to the adequacy of overall capital on a consolidated basis;

- viii. the drivers of the underlying risk; and
- ix. the circumstances under which the risk might crystallize.

5.7.6 In assessing IRRBB for the ICAAP, institutions must apply the specified scenarios set out in Table 1, which will allow the Central Bank to assess the banking sector with a standardized measure of IRRBB. These scenarios must be applied to IRRBB exposures in each currency for which the institution has material positions<sup>11</sup>. Accordingly, institutions must calculate and report the changes in EVE and NII for each of the followings interest rate scenarios:

**Table 1 – Specified Scenarios**

Scenarios	TTD	USD	CAD	GBP	EUR	GBP	INR	Other currencies
(i) Parallel Shock Up	300 bps	200 bps	200 bps	275 bps	225 bps	275 bps	325 bps	400 bps
(ii) Parallel shock Down	300 bps	200 bps	200 bps	275 bps	225 bps	275 bps	325 bps	400 bps

5.7.7 The ICAAP should also reflect the methodologies regularly used within the institution’s IRRBB management framework. Therefore, in **addition** to the methodologies and scenarios referred to in section 5.7.6 institutions should include other methodologies and scenarios that are most appropriate and best aligned to their operations and risk appetite, including but not limited to the following:

- (i) Parallel shock up
- (ii) Parallel shock down
- (iii) Steepener shock (short-term interest rates down and long-term interest rates up)
- (iv) Flattener shock (short-term interest rates up and long-term interest rates down)
- (v) Short-term interest rates shock up
- (vi) Short-term interest rates shock down

5.7.8 All assumptions used in the institution’s internal methodologies and the scenarios specified by the Central Bank and the results must be **explicitly** stated within the ICAAP report.

<sup>11</sup> Material position means a Banking Book exposure in a currency in which the aggregated Banking Book assets or liabilities denominated in that currency amounts to five per cent or more of total Banking Book assets or total Banking Book liabilities respectively.

## 5.8 Disclosure

5.8.1 Information on the level of IRRBB exposure and practices for measuring and controlling IRRBB must be disclosed to the public in accordance with the Central Bank’s Pillar 3 Guideline as indicated in Table A in **Appendix 1**.

## 5.9 The management framework for CSRBB<sup>12</sup>

5.9.1. CSRBB captures a combination of two elements:

- i. The changes of the “market credit spread” or “market price of credit risk” (distinct from the idiosyncratic credit spread) representing the credit risk premium required by market participants for a given credit quality;
- ii. The changes of the “market liquidity spread” representing the liquidity premium that sparks market appetite for investments and presence of willing buyers and sellers.

5.9.2. CSRBB does not include the effect of credit quality changes during the observation period (i.e., rating category downgrade/upgrade of a specific counterparty or instrument) considered as migration risk. In particular, the deterioration of an institution’s credit quality should not have any positive impact on the credit spread risk measure.

5.9.3. CSRBB excludes non-performing exposures.

5.9.4. When assessing changes in credit risk premium and liquidity premium movements, institutions can consider currency specific dimensions (i.e. EUR, USD, etc.) as a relevant dimension for market credit spread and market liquidity spread.

5.9.5. Institutions should not exclude any instrument in the banking book from the scope of CSRBB *ex ante*, including assets, liabilities, derivatives and other off-balance sheet items such as loan commitments, irrespective of their accounting treatment. Any potential exclusion of instruments from the relevant scope should be done in the case

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<sup>12</sup> Based on the European Banking Authority, October 2022, Guidelines for IRRBB and CSRBB.

- of the absence of sensitivity to credit spread risk and should be appropriately documented and justified. In any case, institutions should not exclude assets accounted at fair value.
- 5.9.6. The CSRBB strategy of the institution, including the risk appetite for CSRBB should be part of the overall strategy, in particular the strategic objectives and risk objectives, which the Board must approve.
- 5.9.7. The institution's risk appetite for CSRBB should be expressed in terms of the impact of fluctuating credit spreads on the different CSRBB measures. Institutions significantly exposed to CSRBB should reflect this appropriately within their risk appetite.
- 5.9.8. Institutions should ensure that procedures to identify, measure and monitor CSRBB have been established when developing new products and prior to their launch or when proposing new activities. It should be ensured that the CSRBB characteristics of these new products and activities are well understood.
- 5.9.9. Institutions should, ensure that a sound risk management framework for CSRBB is in place. In particular, institutions should ensure that:
- i. The Board and its delegates bear the ultimate responsibility for the oversight of the CSRBB management framework and the institution's risk appetite framework to adequately cover the risk.
  - ii. The CSRBB management framework establishes clear lines of responsibilities and that consists of policies, processes and internal controls including regular independent reviews and evaluations of the effectiveness of the framework.
  - iii. The arrangements, processes and mechanisms used for the assessment of CSRBB are comprehensive and proportionate to the nature, scale and complexity of the risks inherent in the business model and the institution's activities.
- 5.9.10. The Board (or its delegates) should be responsible for overseeing the institution's CSRBB by ensuring a clear understanding of its exposure and defining an appropriate risk appetite aligned with business strategy. They must implement robust systems to assess, monitor, and report CSRBB, validate measurement methods, and maintain strong internal controls and MIS. Board members should have the technical ability to

challenge reports and ensure adequate resourcing and competence in CSRBB management. Additionally, the Board should establish well-defined risk policies, update scenarios and models regularly, and clearly assign authority and accountability for managing CSRBB.

## 6. ROLE OF THE CENTRAL BANK

- 6.1 In accordance with its supervisory functions, the Central Bank will assess the sufficiency of the IRRBB management framework instituted by financial institutions via off site monitoring and reporting or on-site examinations. The requirements of this Guideline together with any other requirement on IRRBB imposed by the Central Bank will form the baseline for the assessment.
- 6.2 The Central Bank may collect information from institutions to be able to monitor trends in institutions' IRRBB exposures, assess the soundness of institutions' IRRBB management, and evaluate the sensitivity of IRRBB calculations to changes in key assumptions. The Central Bank shall identify and monitor outlier institutions or institutions that should be subject to review and/or expected to hold additional regulatory capital.
- 6.3 The Central Bank will, as part of the assessment of capital adequacy, receive and analyze reports on IRRBB in its review of an institution's ICAAP. However, when necessary, as part of its ongoing monitoring, the Bank may request information regarding an institution's IRRBB, outside of the stipulated ICAAP schedule.
- 6.4 When the Central Bank concludes that an institution's management of IRRBB is inadequate or that it has excessive risk relative to its capital or earnings, or its general risk profile, the Central Bank may require the institution to take one or more of the following actions:
- reduce its IRRBB exposures;
  - raise additional capital;
  - set constraints on the internal risk parameters used; and/or
  - improve its risk management framework.

## 7. EFFECTIVE DATE

7.1 This Guideline comes into effect on the date of issue. Financial institutions are expected to review this Guideline and take the necessary measures to ensure compliance with its contents within six (6) months of the coming into force of this Guideline. In doing this, institutions should take into consideration the materiality of their IRRBB exposures.

7.2 Institutions should conduct a self-assessment against the requirements of the Guideline to determine gaps in compliance. Where gaps are identified, institutions should develop an action plan to achieve compliance with the tenets of the Guideline within the above-mentioned six (6) months, which should be approved by the institutions' Board.

**APPENDIX I**  
**DISCLOSURE OF IRRBB**

**Table A**

<b>Purpose</b>	To provide details on the management and measurement of interest rate risk in the banking book
<b>Format</b>	Flexible-Financial institutions may present the information in any format deemed appropriate
<b>Frequency</b>	<b>Semi-Annual</b>

<b>Qualitative disclosures</b>	(a)	<p>The risk management objectives and policies, including the:</p> <ul style="list-style-type: none"> <li>• strategies and processes for managing such risks;</li> <li>• structure and organization of the relevant risk management function;</li> <li>• scope and nature of risk measurement and reporting systems;</li> <li>• policies for hedging and mitigating risk as well as strategies and processes for monitoring their continuing effectiveness.</li> <li>• the nature of IRRBB and key assumptions, including assumptions regarding loan prepayments and behaviour of non-maturity deposits, and frequency of IRRBB measurement.</li> </ul>
<b>Quantitative disclosures</b>	(b)	<p>The increase (decline) in earnings or economic value (or relevant measure used by management) for upward and downward rate shocks according to management’s method for measuring IRRBB, broken down by currency (as relevant).</p>