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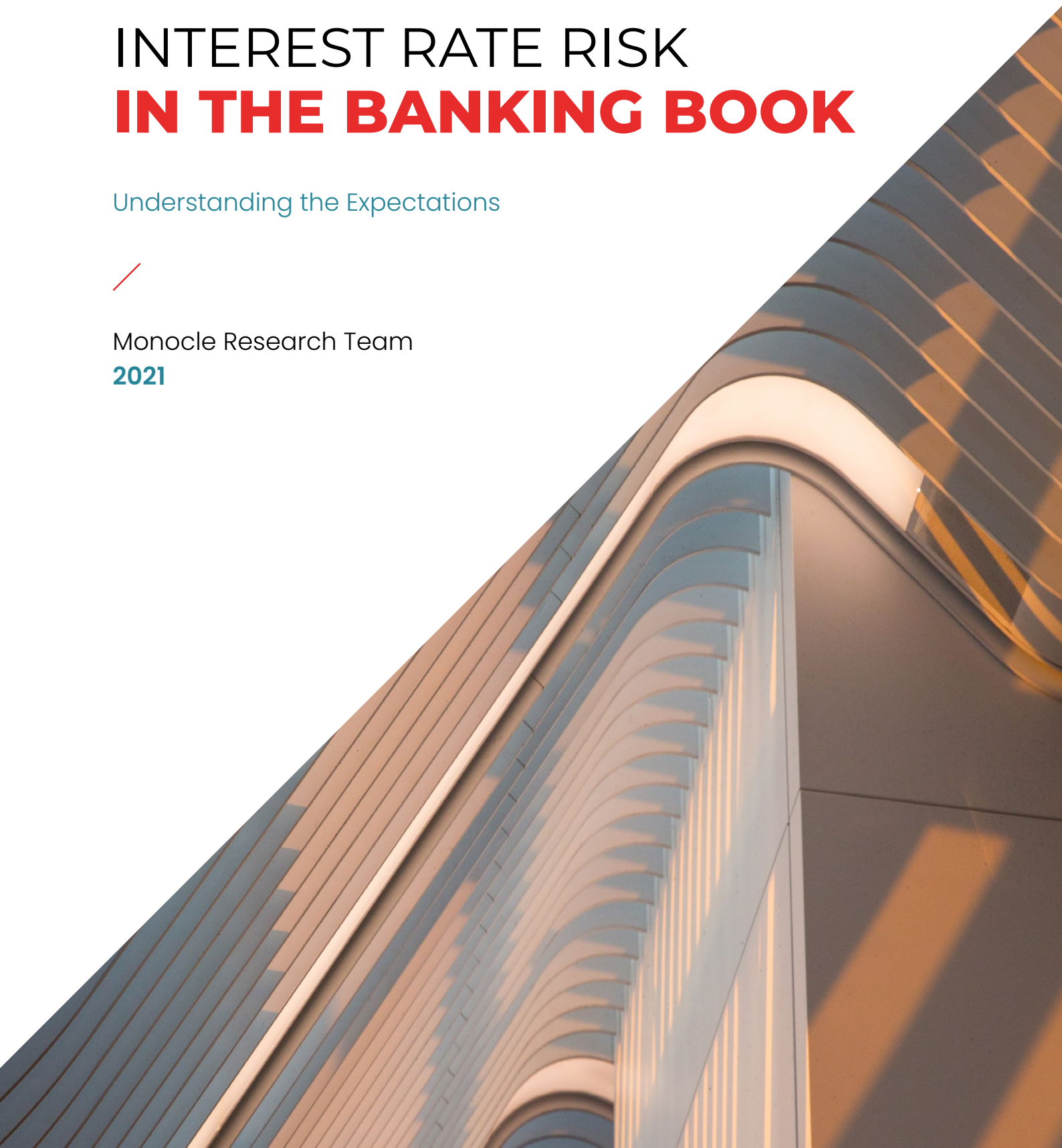
INTEREST RATE RISK
IN THE BANKING BOOK

Understanding the Expectations

Monocle Research Team

2021



AN INTRODUCTION TO **INTEREST RATE RISK** IN THE BANKING BOOK (IRRBB)

Given that banks participate in intermediary activities that produce both maturity and interest rate mismatches and given too that interest rates vary over time, banks are often exposed to interest rate risk in the banking book. In response to the threat of interest rate risk, the Basel Committee on Banking Supervision (BCBS) issued Principles for the Management of Interest Rate Risk in 1997, providing 11 principles for the management of interest rate risk. In 2004, the standard was revised with the publication of Principles for the Management and Supervision of Interest Rate Risk. The revised standard outlined 15 principles to support a Pillar 2 approach to IRRBB under a new capital framework*.

However, both the 1997 and 2004 standards largely addressed interest rate risk management independent of whether the positions were related to the banking book or the trading book, enabling banks to take advantage of capital arbitrage between their banking book and trading book exposures. In addition, the post-crisis financial environment has been characterised by low interest rates, with interest rate shocks becoming a growing concern for banks – especially in light of increased levels of maturity transformation and the possibility of central banks moving towards a normalised monetary policy in the medium to long term.

To limit capital arbitrage and ensure that banks have adequate capital to cover potential losses arising from exposures to interest rate risk, the BCBS published Interest Rate Risk in the Banking Book (IRRBB) in April 2016. The revised standard sets out the Committee's expectations for a bank's identification, measurement, monitoring, control and supervision of IRRBB by outlining principles and methods for the management of interest rate risk in the banking book. These updated principles and methods reflect the changes that have occurred in market and supervisory practices since they were first published in 1997 and subsequently revised in 2004.

**See "Part 3: The Second Pillar - Supervisory Review Process", International Convergence of Capital Measurement and Capital Standards: A Revised Framework, June 2004 (available at http://www.11 bis.org/publ/bcbs107.pdf).*

TWO POTENTIAL APPROACHES

The BCBS published a consultative paper in 2015 that set out two approaches for the management of interest rate risk in the banking book. The first, a Pillar 1 approach that provided four standardised options for the calculation of minimum capital requirements, by utilising EVE and NII measures calculated under six prescribed interest rate shock scenarios. The second was a Pillar 2 approach that provided 12 principles to replace the 15 existing principles, as well as allowing banks to use their own internal measurement systems for assessing their capital requirements. The second approach also included a quantitative disclosure component and a fall-back standardised approach.

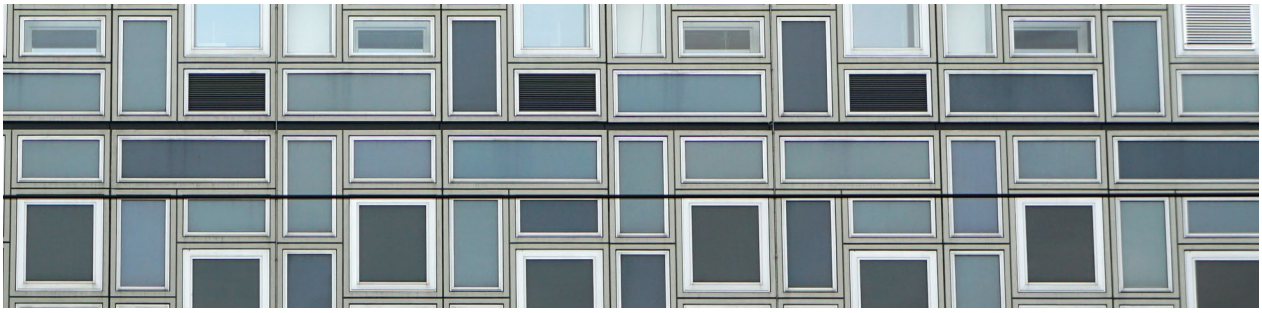
The global banking community, however, rejected the proposed Pillar 1 approach, on the grounds that the adoption of a standardised approach would not accurately capture a bank's unique risks, given different jurisdictions, products and consumers. The consensus during the consultation period was that a mandated Pillar 1 approach would significantly mis-measure any one bank's true interest rate risk position. Consequently, and after conducting a quantitative impact assessment, the BCBS concluded that the revised 2016 standard will be based on the proposed Pillar 2 approach.

The 2016 revision introduced the following key updates to the 2004 principles:

1. Greater guidance on the BCBS's expectations of a bank's IRRBB management process, specifically relating to **shock and stress scenario development** (Principle 4), **behavioural and modelling assumption considerations** (Principle 5) and **internal validation processes** for internal measurement systems and models (Principle 6).
2. The introduction of six prescribed **interest rate shock scenarios** to test the impact of these shocks on a bank's change in economic value of equity (EVE) and net interest income (NII).
3. Updated disclosure requirements to promote **greater consistency**, **transparency** and **comparability** in the measurement and management of IRRBB (Principle 8).
4. An updated **standardised approach** that banks can choose to adopt or that central banks can mandate to be followed.
5. An updated supervisory review process that provides **more detailed criteria** for assessing the quality of a bank's IRRBB management (Principle 11).
6. **Stricter requirements** for the identification of outlier banks, where the threshold for outlier banks is 15% of a bank's change in EVE under a set of prescribed interest rate shock scenarios.

Historical Comparison

BCBS Standard / Comparison Metric	Principles for the Management of Interest Rate Risk (1997 Standard)	Principles for the Management and Supervision of Interest Rate Risk (2004 Standard)	Interest Rate Risk in the Banking Book (2016 Standard)
Number of Principles	11 Principles	15 Principles	12 Principles
Outlier Bank Threshold	Non-Specific	20% of Tier 1 & Tier 2 Capital	15% of Tier 1 Capital
Trading Book/Banking Book	Both	Both	Banking Book
Standardised Approach	No	Yes, but only an example	Yes
Standardised Disclosure	No	No	Yes
Focus Area	The introduction of an interest rate risk management process to guide banks in controlling interest rate risk.	Enhancements to the existing principles and the introduction of two new principles to further support the Pillar 2 approach to interest rate risk management.	Updated principles to reflect the changes in market and supervisory practices since the last publication.



WHO IS AFFECTED?

The revised standard is applicable to all internationally active banks on a consolidated basis, although the complexity and range of activities undertaken by individual banks will determine their specific application of the standard's principles. Banks should ensure that these principles are implemented in accordance with the nature, size, complexity and structure of their organisation, as well as their general risk profile and economic significance.

The revised 2016 standard primarily aims to mitigate systemic risk inherent in large, complex, internationally active banks, however, it may also be used by other banks to ensure greater consistency. The standard also aims to level the playing field between domestic and cross-border banks.

Initially, the BCBS proposed that the revised standard be implemented by 2018, however, banks operating in South Africa are only expected to comply June 2022, according to the SARB's Guidance Note 7 of 2020.

NINE REVISED **PRINCIPLES FOR BANKS**

Principles 1 to 9 of the revised standard cover expectations for a bank's IRRBB measurement, management and governance processes, as well as market disclosure and internal assessment of capital adequacy.

PRINCIPLE 1

IRRBB is an important risk for all banks that must be specifically identified, measured, monitored and controlled. In addition, banks should monitor and assess credit spread risk in the banking book (CSRBB).

Sources of Interest Rate Risk:

- ***REPRICING RISK***

This is the primary form of interest rate risk that arises from timing differences in the maturity and repricing of bank assets, liabilities and off-balance sheet positions.

- ***YIELD CURVE RISK***

This form of risk occurs when a bank is exposed to unanticipated shifts in the slope and shape of the yield curve, which, in turn, have adverse effects on a bank's income or underlying economic value.

- ***BASIS RISK***

This risk arises due to an imperfect correlation in the adjustment of rates earned and paid on different instruments with otherwise similar repricing characteristics.

- ***OPTIONALITY RISK***

This risk relates to the embedded options of many banking products. An option provides the buyer with the right but not the obligation to either buy or sell an instrument or financial contract.

The first principle requires that a bank familiarise itself with all elements of IRRBB and take the necessary steps to effectively measure, manage and control such risks. A bank's IRRBB management strategy should be fully integrated with its broader risk management and business planning frameworks. Banks are also required to properly monitor and assess their CSRBB, which relates to any kind of asset/liability spread risk that is not explained by IRRBB. CSRBB will, however, need to be clearly defined by the SARB since the BCBS standard only provides a loose definition of CSRBB.

PRINCIPLE 2

The governing body of each bank is responsible for oversight of the IRRBB management framework, and the bank's risk appetite for IRRBB. Monitoring IRRBB may be delegated by the governing body to senior management, expert individuals or an asset and liability management committee (ALCO). Banks must have an adequate IRRBB management framework, involving regular independent reviews and evaluations of the effectiveness of the system.

The governing body is responsible for understanding the nature and level of a bank's IRRBB exposure, monitoring its exposure on a regular basis and ensuring clear policy guidance regarding the acceptable level of interest rate risk that the bank should take on.

When delegating responsibilities, the governing body should ensure sufficient separation of responsibilities to avoid conflicts of interest, as well as ensuring adequate independence from risk-taking functions. The governing body or its delegates should also ensure that the bank's IRRBB processes are reviewed by an independent auditing function and that the results are made available to the relevant supervisory authority.

PRINCIPLE 3

The bank's risk appetite for IRRBB should be articulated in terms of the risk to both economic value and earnings. Banks must implement policy limits that target maintaining IRRBB exposures consistent with their risk appetite.

A risk appetite framework should provide the relevant policies and procedures for limiting and controlling IRRBB within the bank, as well as outlining delegated powers, lines of responsibility and accountability over IRRBB. Authorised instruments, hedging strategies and risk-taking opportunities should also be clearly defined within the risk appetite framework.

RISK MITIGATION CONSIDERATIONS

When setting policy limits, it is equally important to consider the time required to mitigate interest rate risk exposures. Any positions that exceed, or are likely to exceed, the defined policy limits should be escalated without delay to ensure that they receive prompt management attention. It is therefore imperative to clearly articulate who will be informed, how they will be informed, and what actions will be taken in case of any exceedances.

PRINCIPLE 4

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.

A bank's internal measurement system (IMS) should be capable of capturing all material sources of IRRBB and assessing the effect of interest rate changes on its economic value and on its ability to generate earnings and maintain normal business operations.

There are two separate but complementary perspectives for assessing a bank's interest rate risk exposure:

- ***EARNINGS PERSPECTIVE***

From an earnings perspective, the focus is on the impact that interest rate changes have on the earnings capability of a bank. There are two measures of IRRBB under the earnings perspective: Gap Analysis and Earnings at Risk. These earnings measures tend to have a short-term view of IRRBB, often not exceeding more than three years. For this reason, the Committee endorses the additional use of economic value measures that provide a longer-term focus on interest rate risk.

- ***ECONOMIC VALUE PERSPECTIVE***

A bank's economic value is the present value of its expected net cash flows derived from expected cash flows on assets, minus the expected cash flows on liabilities, plus the expected net cash flows on off-balance sheet positions (discounted to reflect current market rates). The economic value perspective, therefore, provides a view of the sensitivity of the bank's net worth to interest rate changes. There are three measures of economic value: 1) PV01: present value of a single basis point change in interest rates based on gap analysis, Duration of Equity; 2) Economic Value of Equity; and 3) Economic Value at Risk. These measures only consider assets and liabilities already on the balance sheet and therefore assume a run-off balance sheet.

PRINCIPLE 5

In measuring IRRBB, key behavioural and modelling assumptions should be fully understood and documented and should be rigorously tested and aligned with the bank's business strategies.

When assessing its IRRBB exposure, a bank should ensure the documentation and frequent review of key behavioural assumptions, parameters and judgements relevant to an instrument's actual maturity or repricing behaviour and how it may vary from the contractual terms due to the instrument's embedded behavioural optionalities. Measurement assumptions should be reviewed at least annually to consider changing market conditions, competitive environments and strategies. In case of rapidly changing conditions, banks are required to perform more frequent reviews.

PRINCIPLE 6

Measurement systems and models used for IRRBB should be based on accurate data, and 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.

To ensure the flow of accurate and timely data, a bank should document all major data sources that will be used by its IMS in capturing interest rate risk. Thereafter, data inputs should be automated as much as possible to avoid manual errors. Appropriate controls should also be developed to ensure data accuracy and integrity as the data feeds into the IRRBB measures.

Banks are also required to use a variety of methodologies under both economic value and earnings-based measures, ranging from simple calculations, based on static simulations, to sophisticated dynamic modelling techniques. It is also important to ensure that the IMS can compute economic value and earnings-based measures based on the aforementioned interest rate shock and stress scenarios. It should also embody sufficient flexibility to incorporate supervisory-imposed parameter constraints. Principle 6 also suggests a formal policy process to review and approve the validity of IRRBB measurement methods. The bank's annual internal audit should also review the model risk management process.

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PRINCIPLE 7

Principle 7: Measurement outcomes of IRRBB and hedging strategies should be reported to the governing body or its delegates on a regular basis, at relevant levels of aggregation (by consolidation level and currency).

A bank's management information system (MIS) should provide the IRRBB governing body or its delegates with regular reports of interest rate risk measures. Management information reports should, at minimum, include:

1. Summaries of a bank's aggregate IRRBB exposures and the cash flows that are driving the level and direction of interest rate risk;
2. Comparisons between the bank's current exposures and policy limits;
3. Key modelling assumptions such as behavioural optionalities, currency aggregation and consumer characteristics;
4. Portfolios that tend to be sensitive to interest rate changes;
5. Stress test results based on the required interest rate scenarios, as stipulated under Principle 4;
6. Audit findings regarding the bank's IRRBB policies, procedures and the adequacy of its measurement systems.

PRINCIPLE 8

Information on the level of IRRBB exposure and practices for measuring and controlling IRRBB must be disclosed to the public on a regular basis.

This involves a bank disclosing its measured ΔEVE and ΔNII using its own IMS to calculate the IRRBB exposures. When disclosing ΔEVE, a bank is required to disclose the exposure as calculated under each of the six prescribed interest rate shock scenarios, while the disclosure of ΔNII is only required under the parallel up and parallel down scenarios.

The standard provides two tables for the qualitative and quantitative disclosure of interest rate risk to allow market users to 1) monitor a bank's economic value and earnings sensitivity to interest rate changes; 2) understand the primary assumptions underlying the bank's IMS; and 3) have an insight into a bank's overall IRRBB objective and management.

To improve comparability between banks' disclosed IRRBB levels, exposures should be calculated as:

ΔEVE	ΔNII
1. A bank should exclude its own equity from the calculation of delta EVE. 2. In calculating its EVE exposure, a bank should include all cash flows stemming from interest-sensitive assets, liabilities and offbalance sheet items. 3. Cash flows should be discounted using either a risk-free rate or a risk-free rate that includes commercial margins and other spread components. 4. The calculation of delta EVE should assume a run-off balance sheet, where existing balance sheet positions amortise and are not replaced by new business.	1. In calculating its NII exposure, a bank should include all cash flows stemming from interest-sensitive assets, liabilities and offbalance sheet items. 2. The calculation of delta NII should assume a static balance sheet, where the balance sheet features are maintained by assuming an identical replacement of assets and liabilities as they run off. 3. Delta NII should be disclosed as the difference in future interest income over a rolling 12-month period.

These conditions need to be considered as part of the measurement methodologies under Principle 4.

PRINCIPLE 9

Principle 9: Capital adequacy for IRRBB must be considered as part of the Internal Capital Adequacy Assessment Process (ICAAP), approved by the governing body, in line with the bank's risk appetite on IRRBB.

In line with Basel II – which deems a static supervisory capital adequacy measure insufficient for a bank's capital allocation – banks should develop their own methodologies for IRRBB capital allocation, based on their documented risk appetite. Banks are therefore responsible for evaluating their capital level and ensuring it is sufficient to cover IRRBB. The overall level of IRRBB capital should be duly documented in a bank's ICAAP report for review by the governing body or its delegates.

THE STANDARDISED FRAMEWORK

The enhanced standard provides a standardised approach under Pillar 1, but given the BCBS's assessment that banks currently focus significantly on NII measures and less so on EVE, the standardised approach focuses only on calculation of an EVE measure and not on NII.

The steps involved in measuring a bank's IRRBB using the standardised approach are as follows:

STEP 1

Classify all interest rate-sensitive banking book positions as amenable, less amenable and not amenable to standardisation, to identify the appropriate slotting process.

The slotting process for amenable positions allocates notional repricing cash flows into appropriate maturity buckets. Amenable positions can be either fixed or floating rate positions, where fixed rate positions generate known cash flows for the duration of the contract and floating rate positions generate cash flows that are unpredictable past their next reprice date. Amenable positions have embedded automatic interest rate options, but these are ignored when slotting cash flows into maturity buckets. The risk of these optionalities is catered for under Step 4, where delta EVE is increased by an add-on for changes in the value caused by automatic interest rate options.

Positions less amenable to standardisation include explicit or embedded automatic interest rate options (e.g. swaptions or floating rate mortgages with embedded caps/floors). These positions are not slotted into the predetermined maturity buckets and are catered for separately under Step 4.

Non-amenable positions include non-maturity deposits, fixed-rate loans subject to prepayment risk and term loans with a risk of early redemption. These positions are excluded from Step 2 and follow a separate treatment*.

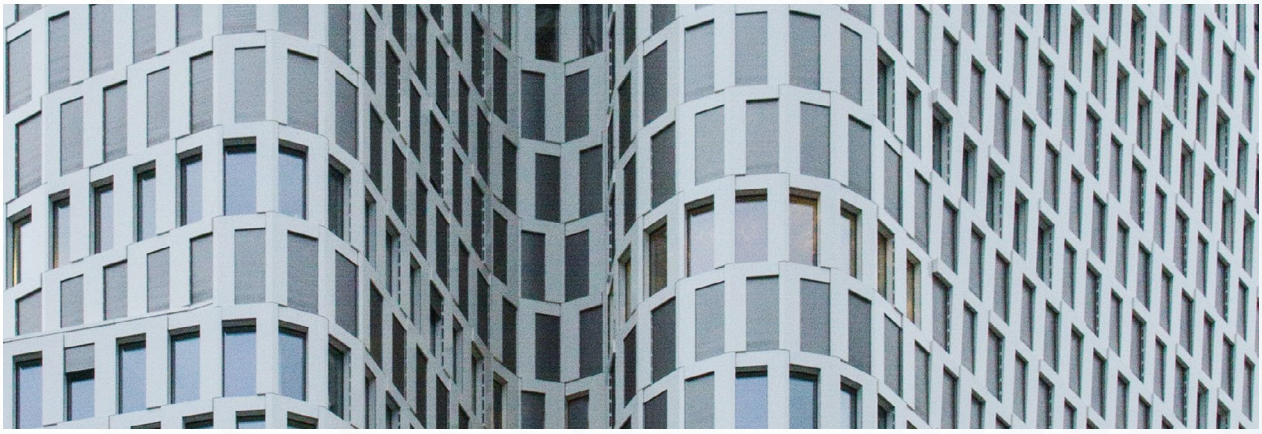
*See paragraphs 109 to 114 and 123 to 128 for more detail on the 'separate treatment'.

STEP 2

Slot future notional repricing cash flows into 19 predetermined maturity buckets according to their maturity profiles and classified amenability.

A bank's notional repricing cash flows – any repayment or repricing of principal or any interest payment on the principal that has not yet been repaid or repriced – are allocated to 19 maturity buckets, depending on maturity profile and amenability.

	TIME BUCKET INTERVALS (M: months; Y: years)							
Short-term rates	Overnight (0.0028Y)	O/N < t^{CF} ≦ 1M (0.0417Y)	1M < t^{CF} ≦ 3M (0.1667Y)	3M < t^{CF} ≦ 6M (0.375Y)	6M < t^{CF} ≦ 9M (0.625Y)	9M < t^{CF} ≦ 1Y (0.875Y)	1Y < t^{CF} ≦ 1.5Y (1.25Y)	1.5Y < t^{CF} ≦ 2Y (1.75Y)
Medium term rates	2Y < t^{CF} ≦ 3Y (2.5Y)	3Y < t^{CF} ≦ 4Y (3.5Y)	4Y < t^{CF} ≦ 5Y (4.5Y)	5Y < t^{CF} ≦ 6Y (5.5Y)	6Y < t^{CF} ≦ 7Y (6.5Y)			
Long-term rates	7Y < t^{CF} ≦ 8Y (7.5Y)	8Y < t^{CF} ≦ 9Y (8.5Y)	9Y < t^{CF} ≦ 10Y (9.5Y)	10Y < t^{CF} ≦ 15Y (12.5Y)	15Y < t^{CF} ≦ 20Y (17.5Y)	t^{CF} > 20Y (25Y)		



STEP 3

Calculate the delta EVE for each of the six prescribed interest rate shock scenarios per significant currency.

The delta EVE under each scenario is calculated for each material currency (each currency that accounts for more than 5% of either banking book assets or liabilities).

To calculate the delta EVE, the slotted cash flows are netted to form a single positive or negative position per maturity bucket and currency. Next, the present value of these net positions is calculated by weighting the netted cash flows by a continuously compounded discount factor that reflects the respective shock scenario and currency. The risk-weighted net positions across the 19 buckets are aggregated to determine the EVE per shock scenario and currency. This process is replicated for EVE under the current interest rate term structure and then subtracted from each of the shocked EVEs to calculate the delta EVE per shock scenario and currency.

STEP 4

Increase the delta EVE with add-ons for changes in the value of automatic interest rate options.

For the less amenable positions – automatic interest rate options – an add-on is calculated per shock scenario and for the specific currency. The add-on consists of a value change for all sold options minus the value change for all bought options, where the value change is equal to the estimated value of the options (sold/bought), given a yield curve under the respective interest rate shock scenario minus the estimated value of the options given the yield curve at the valuation date. The estimated value changes must be calculated using a supervisor-approved methodology.

Once the add-on has been calculated per shock scenario and significant currency, it is added to the delta EVE calculated in Step 3.

STEP 5

Perform the IRRBB EVE calculation, which will provide the loss in EVE that needs to be disclosed as per Principle 8.

All delta EVEs per currency are aggregated to provide six EVE measures for each of the shock scenarios. Of the six measures, the maximum EVE loss is considered the EVE risk measure required for disclosure.

BASIC CALCULATION EXAMPLE

Consider a fixed rate loan denominated in ZAR (an amenable position assuming no prepayment risk), that has a remaining term to maturity of ten years and a principal of R500 000. To calculate the current present value of the loan, it is discounted at a rate of 8.50%. According to the standardised approach, the continuously compounded discount factor is equal to 0.427 (e^(-0.085×10)), producing a current economic value of R213 708 (R500 000 x 0.427). Assume a parallel shock up that increases the interest rate by 400 basis points (according to the interest rate shock sizes determined by the BCBS). The re-calculated economic value under the shock scenario is R143 252, thus a delta EVE of -R70 456.

Banks with an IMS that cannot calculate EVE exposures should consider the standardised approach, as it provides an approved model that fulfils the expectations set out in the enhanced principles. The standardised approach is also a relevant option for smaller banks, which might not have the necessary specialist resources to develop complex EVE calculation methodologies.

HOW WE CAN HELP

Monocle has been assisting large South African and international banks with BCBS compliance since 2001. With our experience in this field, as well as our expertise in the areas of data and governance, we are ideally positioned to help banks design and implement a bespoke interest rate risk measurement and management solution that is flexible and can be integrated into the bank's existing data and business infrastructure.

Applying our accelerators and best practice approaches we can assist you to:

1. Evaluate the IRRBB regulatory requirements and translate them into tangible goals.
2. Perform a balance sheet analysis to identify as-is and to-be.
3. Perform gap analyses on data, systems, processes, policies and procedures.
4. Assist with data sourcing, internal control implementation and data quality assurance.
5. Develop an IRRBB risk framework that informs the bank's IRRBB risk appetite, sets IRRBB limits and specifies a comprehensive IRRBB reporting and review process.
6. Assist with the development of IRRBB measurement methodologies, including the required shock and stress scenarios.
7. Develop stress testing and behavioural modelling methodologies.
8. Develop an implementation roadmap and offer project support.

IN
SUMMARY

THEMES	BANKS								
	PRINCIPLES								
	PRINCIPLE 1	PRINCIPLE 2	PRINCIPLE 3	PRINCIPLE 4	PRINCIPLE 5	PRINCIPLE 6	PRINCIPLE 7	PRINCIPLE 8	PRINCIPLE 9
	Scope and Risk Elements	Governance and Oversight	Governance and Oversight	Measurement	Measurement Assumptions	Data Requirements, Model Coverage and Validation	Management Information (MI) Reporting	Disclosure	Capital
FOCUS AREA(S)	1. Sources of IRRBB 2. Full integration into the broader risk management framework 3. Pre-acquisition review of new products 4. Assess and monitor CSRBB	1. IRRBB oversight 2. Monitoring and management of IRRBB 3. Delegation of responsibilities i.e. ALCO 4. Independent review and evaluation	1. IRRBB risk appetite 2. Limiting and controlling IRRBB 3. Mitigating interest rate risk exposures 4. IRRBB policy review and revision	1. Material sources of IRRBB 2. Capabilities of a bank's IMS 3. Interest rate shock and stress scenarios 4. Understanding the inherent interest rate risks of product and service offerings	1. IRRBB measurement assumptions e.g. prepayment risk assumptions 2. Currency consideration of IRRBB exposures 3. Changing market conditions, competitive environments and strategies	1. Accurate and timely data 2. Data input automation 3. Comprehensive coverage of IRRBB 4. Data and model validation	1. Regular internal reporting of IRRBB measures 2. Model shortcomings identification 3. Minimum reporting requirements	1. 1. Regular IRRBB disclosure 2. Qualitative and quantitative disclosure 3. Improved comparability of IRRBB amongst banks	1. Capital adequacy
PRACTICAL CHALLENGES	1. Correctly identifying the elements of IRRBB 2. Development of a pre-acquisition review process 3. Risk management framework flexibility	1. Understanding the nature and level of IRRBB exposures 2. Avoiding conflicts of interest when delegating responsibilities 3. Assuring the achievement of IRRBB objectives	1. Specifying relevant requirements for a risk appetite framework. 2. Setting appropriate policy limits 3. Who, what and how in case of exceedances	1. Earnings perspective (i.e. short-term risk) vs economic value perspective (i.e. long-term risk) 2. Assessing the effect of interest rate changes on income and economic value 3. Determining sufficiently wide-ranging shock and stress scenarios, including reverse stress tests	1. Fully understanding and documenting behavioural and modelling assumptions 2. Rigorous testing and review of measurement assumptions	1. Assuring data accuracy and timeliness 2. Data granularity e.g. product and currency level 3. Avoiding manual errors 4. Simple vs dynamic modelling techniques 5. Model governance	1. Aggregation level for reporting i.e. currency aggregation 2. Identification of relevant interest rate risk measures that need to be reported 3. Historical data requirements	1. Data granularity required for disclosure 2. Model flexibility for interest rate shock scenarios 3. Automation of standard disclosure templates	1. Incorporating IRRBB capital adequacy into the Internal Capital Adequacy Process (ICAAP) 2. Documentation of IRRBB capital levels 3. Development of a bank's own methodologies for IRRBB capital allocation 4. Monitoring capital adequacy
REQUIRED CAPABILITIES, PROCESSES & SKILLS	1. Risk identification process to identify balance sheet interest rate risk exposures 2. Risk control systems 3. IRRBB management strategy	1. IRRBB management strategy 2. Separation of management responsibilities 3. Internal controls 4. Independent audit function	1. Risk appetite framework (component of the broader IRRBB management strategy) 2. Formal escalation process	1. Capable and effective IMS 2. IRRBB measurement methodologies e.g. gap analysis, earnings at risk, economic value at risk 3. Shock and stress testing framework that also considers negative interest rate environments (component of the broader IRRBB management strategy) A dedicated and experienced stress testing team	1. Policy document on reasonable and historically consistent assumptions 2. Currency aggregation methodology to aggregate minor currency exposures appropriately 3. Formal assumptions review process	1. Data integration, centralisation and cleaning processes 2. Sufficiently granular data 3. Data and modelling quality controls 4. Formal modelling review, validation and approval process 5. IRRBB data architecture that provides the required data models and policies	1. MI tools and development skills 2. Sufficiently granular, accurate and timely data 3. Availability of historical data for comparison purposes 4. Agreed set of MI reports that constitute part of the broader IRRBB management strategy	1. Flexible IMS 2. Disclosure management software 3. Sufficiently granular data 4. Availability of historical data for disclosure purposes 5. Agreed responses to the qualitative disclosure requirements	1. Documented risk appetite as part of the broader IRRBB management strategy 2. Formal IRRBB capital evaluation and approval process 3. Capital allocation methodology to complement any static supervisory capital adequacy assessments

SUPERVISORY PRINCIPLES CONSIDERATIONS

PRINCIPLE 10 & PRINCIPLE 11

Both these principles require supervisory authorities to have access to sufficient information on banks' IRRBB exposures to monitor IRRBB trends, assess the soundness of IRRBB management and identify outlier banks. Consequently, banks will be required to provide relevant and accurate information to their regulator in a timely manner, requiring further considerations regarding the consolidation and provisioning of such information. Granularity of information will also become an important consideration as regulators could require any form of information essential for an effective assessment e.g. a bank's modelling of non-maturity deposits for IMS purposes and the sensitivity of a bank's EVE and NII to changes in modelling assumptions. This also brings into focus the flexibility a bank's IMS.

PRINCIPLE 12

Principle 12 provides expectations regarding the identification of outlier banks. Previously, outliers were identified by a decline of EVE of more than 20% of the sum of a bank's Tier 1 and Tier 2 capital. The new standard tightens this identification criteria to 15% of a bank's Tier 1 capital. It also makes provision for local regulators to impose their own outlier criteria, but such criteria must be at least as stringent as 15% of Tier 1 capital. Any bank identified as an outlier will face mitigating actions and additional capital requirements by its local regulator.

THE STANDARDISED FRAMEWORK

1 Classification

Classify banking book exposures as amenable, less amenable and not amenable to standardisation.

2 Slotting

Slot future notional repricing cash flows into 19 predetermined maturity buckets according to their maturity profiles and classified amenability.

3 Delta EVE

Calculate the delta EVE for each of the six prescribed interest rate shock scenarios per significant currency.

4 Add-ons

Increase the delta EVE with add-ons for changes in the value of automatic interest rate options.

5 Maximum EVE Loss

Calculate the maximum EVE loss across the prescribed shock scenarios.

Basic Example of an Amenable Exposure

Consider a fixed rate loan denominated in ZAR (assuming no prepayment risk), that has a remaining term to maturity of ten years and a principal of R500 000. To calculate the current present value of the loan, it is discounted at a rate of 8.50%. According to the standardised approach, the continuously compounded discount factor is equal to 0.427 (^(-0.085×10)), which gives a current economic value of R213 708 (R500 000 x 0.427). Now assume a parallel shock up which, according to the interest rate shock sizes determined by the BCBS, increases the interest rate by 400 basis points. The re-calculated economic value under the shock scenario is R143 252, thus a delta EVE of -R70 456.

FINAL CONSIDERATIONS

1. Ongoing data centralisation for IFRS 9 and Basel III purposes can be leveraged for IRRBB measurement and management.
2. As banks' balance sheets increase in size, balance sheet validation becomes an essential component to accurately measure IRRBB.
3. Banks should ensure competent and skilled staff are involved in their interest rate risk management, as well as other risk management activities.
4. The proposed standardised approach serves as an effective benchmark for a bank's internal IRRBB models.
5. When determining appropriate shock and stress scenarios, collaboration should take place between a bank's different experts i.e. traders, economists, risk managers and ALCO.
6. Enhanced behavioural modelling will form an important part of a bank's compliance to BCBS standards on IRRBB management.
7. IRRBB model validation requires both qualitative assessments and quantitative testing.
8. Banks will need to perform a self-assessment of their IT systems level of preparedness and flexibility to determine the required enhancements for compliance.
9. Effective input data consolidation will be key to the success of a bank's overall risk management framework, as it will eliminate the problems (i.e. manual reconciliation) associated with multi-source contribution of data.
10. Though the SARB has proposed a revised implementation date of 01 June 2021, industry engagement is still underway to finalise a regulatory response to the BCBS IRRBB standard.

WHERE TO START WITH YOUR IMPLEMENTATION

1. Perform an in-depth evaluation of the new IRRBB principles to clearly understand the requirements from a measurement, management, reporting, disclosure, governance and capital adequacy perspective. The SARB's finalised directive should also form part of this evaluation, once available.
2. Perform a gap analysis of the bank's current asset and liability management and broader risk management processes to identify potential data, system and process deficiencies. This should also inform the required framework, policy and procedure changes required to adapt to the new BCBS standard.
3. Perform an assessment of the bank's balance sheet to identify all on- and off-balance sheet interest rate risk exposures.
4. Review and assess the bank's current governance processes relating to IRRBB management and identify potential governance improvements that might be required to ensure compliance.
5. Develop an implementation roadmap to align the bank's IRRBB management processes with expectations as set out in the BCBS standard.

We recommend that banks fervently start work on these regulations as they will require significant changes to an organisation's data, modelling capabilities and governance.

ABOUT MONOCLE

Monocle is an independent, results-focused management consulting firm, specialising in banking and insurance, with almost two decades of experience working alongside industry leading banks and insurance companies around the world. With offices in London, Amsterdam, Cape Town and Johannesburg we service our clients across the United Kingdom, Europe, Scandinavia, Asia, South Africa and much of Sub-Saharan Africa.

We design and execute bespoke change projects, from start to finish, bridging the divide between business stakeholders' needs and the complex systems, processes and data that sit under the hood. We offer several unique capabilities to our clients, which have been forged over time through the combination of a highly specialised skillset and extensive experience working with the systems, processes and people that are at the heart of the financial services industry.

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