



**Interest Rate Risk in the Banking Book:
2017 Deloitte Survey**

Taking a closer look at the BCBS Standards

Consulting



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Introduction

Interest Rate Risk in the Banking Book (IRRBB) is the risk to earnings or value (and in turn to capital) arising from movements of interest rates that affect banking book positions.

In April 2016, the Basel Committee on Banking Supervision (BCBS) issued Final Standards on IRRBB that replace the 2004 *Principles for the management and supervision of interest rate risk*. The new standards set out the Committee's expectations on the management of IRRBB in terms of identification, measurement, monitoring, control and supervision. The updated IRRBB Principles reflect changes in market and supervisory practices due to the current low interest rate environment, and provide methods and models to be used by banks in a wider and enhanced risk management framework.

In light of the significant changes introduced by the BCBS standards on IRRBB, Deloitte EMEA invited European and South African banks to participate in an online survey. The main objective of the survey was to gauge the readiness of firms to manage the new context of interest rates, and evolve their IRRBB practice towards comprehensive framework of interest rates risk governance, models and systems.

The survey was undertaken between September and December 2016 across 9 European and South African entities. It involved **37 leading banking groups** of different sizes, employing various business models. Balance sheet totals ranged from 30 billion to 500 billion euro and business focus ranged from retail to cooperative, private, investment, commercial and universal services. The survey focused on the assessment of the banks' current practices vis-à-vis the new IRRBB framework through **six detailed sections** and **more than 80 specific questions** on ALM and IRRBB practices.



Key updates to IRR principles

The key enhancements to the 2004 Principles include:

- 
Enhanced disclosure requirements, including the impact of interest rate shocks on the change in economic value of equity (Δ EVE) and net interest income (Δ NII) based on prescribed scenarios. The aim of increased disclosure is to promote greater consistency, transparency and comparability in the measurement and management of IRRBB.
- 
More extensive guidance on expectations for a bank's IRRBB management framework such as: development of interest rate shock scenarios, consideration of behavioural and modelling assumptions, credit spread risk measurement, IRRBB Risk Appetite setting for both economic value and earnings, IRRBB inclusion in the ICAAP by taking account of changes in the economic value of equity and in net interest income.
- 
Definition of a standardised framework to enhance risk capture and promote the use of common concepts: supervisors can require banks to implement the standardised framework as a fall-back (e.g. if they find that a bank does not adequately capture IRRBB). Alternatively, banks can adopt it voluntarily.
- 
Updated supervisory process in terms of factors which supervisors should consider when assessing a bank's level and management of IRRBB exposures.
- 
Stricter threshold for identifying outlier banks which has been reduced from 20% of a bank's total capital to 15% of a bank's Tier 1 capital. Supervisors may implement additional tests and must publish criteria for identifying outlier banks.

Stricter standards, market changes and increased regulatory scrutiny will require many banks to improve their IRRBB measurement tools, and enhance their risk management and governance arrangements. The main challenges are expected to arise from the risk management framework, the governance model and the level of skills/expertise.

The Final Standards do not specify how sophisticated the IRRBB measurement quantitative techniques should be. However, application of the principles will require banks to demonstrate that the measurement approaches they choose are sufficiently sophisticated to capture and measure all material sources of IRRBB. Furthermore, regulators will expect banks to adopt an approach that is proportionate to the nature, scale and complexity of their activities and risks.

Improvement required by the Final Standards

Figure 1. Implications for Banks regarding their IRRBB improvement



The IRRBB survey: framework and key insights

The IRRBB survey framework

The survey has been split into the following key areas:

- **Models:** framework of model risk management and typologies of behavioural models.
- **IRRBB Indicators:** key measures and indicators (EVE, NII) and related approaches in terms of stress scenarios and dynamic analysis.
- **Limit Framework and Internal Capital:** framework of operational limits on IRRBB and related approach for IRRBB internal capital quantification.
- **Governance:** governance of IRRBB practices, key stakeholders (ALCO, Board) and related roles and responsibilities.
- **Reporting:** internal reporting practices and new expected Pillar 3 disclosure requirements.
- **IRRBB systems and processes:** main functionalities and expected evolution on IRRBB systems and processes.

Key insights and results of the survey

The introduction of a dynamic perspective in terms of integration with planning & forecasting departments (57% of the banks).

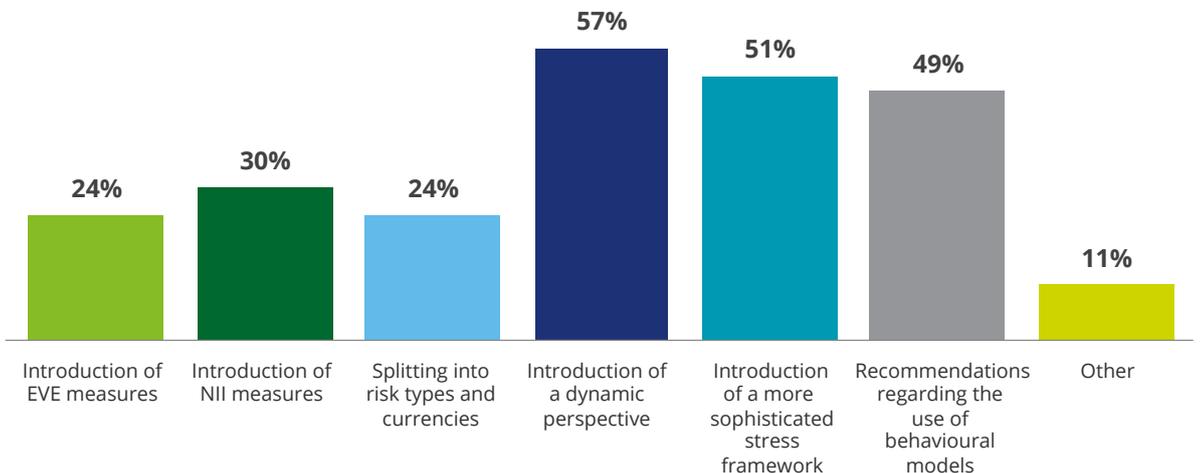
The institution of a more sophisticated stress testing framework with respect to the implementation and management of enhanced shock scenarios and more flexible system solutions (51% of the banks).

The use of the behavioural models both on methodological and modelling sides (49% of the banks).

Most relevant impacts on IRRBB framework

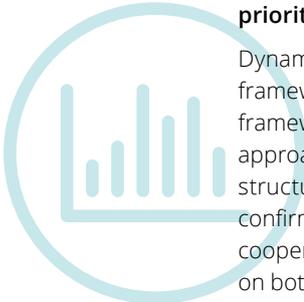
Figure 2. Key questions on expected impacts

Which regulatory recommendations will have the most relevant impacts on the IRRBB methodological framework of your bank? (Multiple answers allowed in the limit of 3)



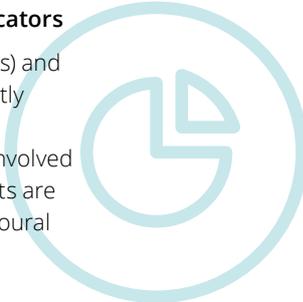
The survey results give much insight into the different topics:

Dynamic Analysis & Stress Scenarios for Models and Methods are among the top priorities



Dynamic balance sheet projections and stress test scenarios required by the new IRRBB framework are a very relevant topic to be addressed by banks within their methodological framework. 51% of the participating banks stated that the introduction of a dynamic approach on NII and EVE sensitivity analysis will have a significant impact on their structure, while only 5% of banks said that they will not adopt a dynamic approach. Banks confirmed that IRRBB management with a dynamic perspective will require a greater cooperation among Risk Management, ALM and Planning & Forecasting departments, on both the definition of a coherent operating model and the implementation of an IT integrated solution.

A move towards heightened scrutiny of behavioural models and of IRRBB Indicators



Behavioural models (e.g. non-maturing deposits, prepayment models, renegotiations) and their integration with banks' IRRBB indicators frameworks are expected to significantly evolve both on the methodological and modelling side, and on the related internal validation approach. For only 60% of banks, the risk department is already actively involved in all validation tasks related to the IRRBB framework. Moreover, some enhancements are expected in the risk management validation process with particular focus on behavioural models (67,1%) and the definition and calibration of IRRBB indicators used in the monitoring process (61,3%).

A significant number of banks will implement the standardized framework



Even though it is not strictly required by the BCBS standards on IRRBB, a significant part of the participating banks (38%) will implement the standardized framework proposed by the Regulator. For a large part of them, the standardized framework will be adopted with a view of benchmarking their internal models for IRRBB purposes. According to a large majority of banks planning to implement the standardized framework for that purpose (71%), it is seen as an opportunity to better explain the outcomes of their internal models to their supervisors and also to anticipate potential future changes of the IRRBB requirements.

Increasing needs for more integration & synergies on systems



The majority of participating banks highlighted the importance of integrating their IRRBB systems into a unique platform able to manage and use input data both from other risk areas (e.g. combined stressed scenarios) and planning & control department (e.g. forecasts and projections for dynamic simulation).

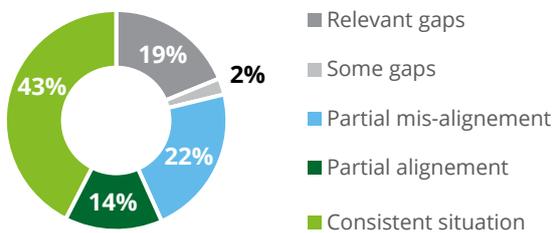
Get ready for much more reporting



The Pillar 3 disclosure requirements provided in the new BCBS standards on IRRBB will require banks to enhance their reporting framework with more granular views. Under the current Pillar 3 framework, a large majority of the participating banks (72%) already provide quantitative and qualitative disclosures on their IRRBB on annual, semi-annual or quarterly basis. However, with the new BCBS standards, the amount of quantitative and qualitative disclosures is expected to significantly increase.

Overall positioning from IRRBB survey

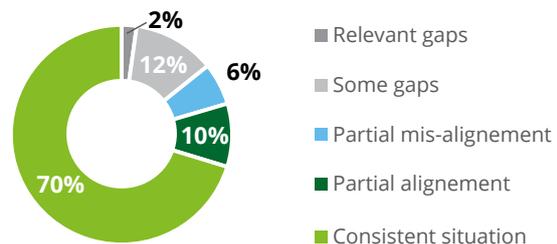
Models



Behavioural models are a key area for future evolutions, especially for the related validation framework.

Banks also expect to enhance the integration and coherence of IRRBB models with other risks.

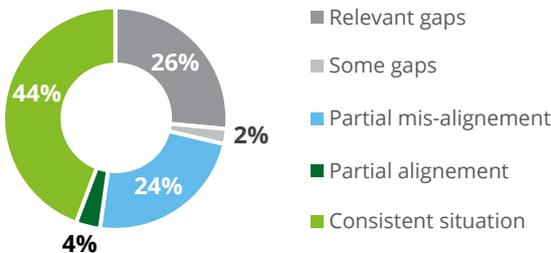
Governance



The IRRBB governance framework is consistent with the new IRRBB principles in most the cases (70%).

Only minor areas of improvements are expected with respect to business steer through a more active ALCO.

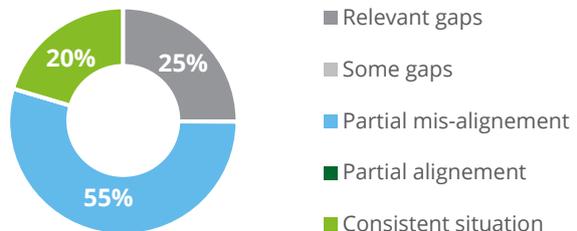
IRRBB indicators



Granularity of indicators and measures (IRR types, subgroup levels, currencies) is a key issue for banks.

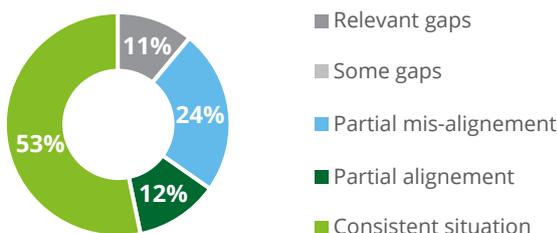
Some evolutions are also expected on methodology (new stress test scenarios and dynamic approach).

Reporting



Pillar 3 disclosure requirements will require banks to enhance their reporting framework, in particular for quantitative disclosures.

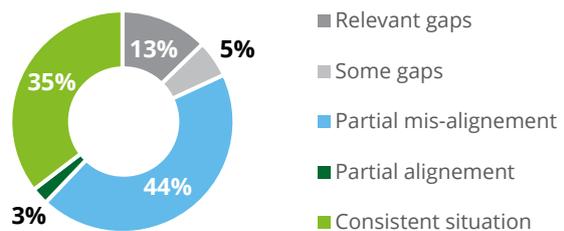
Limit Framework & Internal Capital



The limits monitoring framework is expected to be moderately impacted and may be refined.

Some evolutions are instead expected on the internal capital framework in order to comply with the new IRRBB principles.

IRRBB systems and processes



Two key areas of improvements are foreseen with respect to systems:

- Integration with planning for dynamic balance sheet projection.
- Flexibility and granularity of IRR data and measures.

Chapter 1

IRRBB Indicators

Introduction

An IRRBB framework is commonly articulated around 4 types of indicators : gap, Economic Value of Equity (EVE) sensitivity, Net Interest Income (NII) sensitivity and Stress tests.

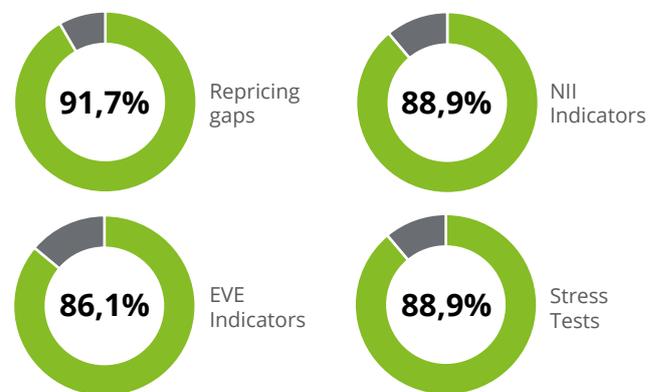
Gap is a traditional measure of risk in ALM representing the outstanding risk position per time bucket. As expected, the monitoring of fixed rate gap is done by most of the banks (92%).

We note that the other types of gaps (floating & basis) are now monitored by more than a half of the institutions, consistent with the BCBS recommendations to monitor carefully the basis risk.

Stress tests are frequently included in the ALM framework, their usage is limited to the calculation of internal capital (ICAAP) for 39% of the banks. For 80% of the institutions, less than six scenarios are used.

Figure 3. IRRBB indicators

Which indicators do you use in your IRRBB framework?



The objective of the following sections is to focus on two specific topics, which we consider the most challenging for banks when implementing the new IRRB framework:

- The inclusion of a dynamic approach, especially for net interest margin projections and sensitivity analysis.
- The objectives of EVE & Net Interest Margin indicators and how both approaches are complementary to build an efficient and comprehensive IRRBB framework.

Main challenges in implementing a dynamic approach

Employing a dynamic projection of NII is a source of concern for banks

For 57% of the participants, the introduction of a dynamic perspective is the IRRBB measure with the largest impact. 75% of the participants have already adopted a dynamic approach, however, only for NII indicators.

A necessary convergence with management information processes and business planning forecasts

First of all, the dynamic projection of NII requires forecasting new production volumes (at least to replace maturing positions and maintain a constant balance sheet size) which is related to the commercial strategy of the bank, the business cycle and future interest rate levels.

For which measures are dynamic approaches used?

75,0%	16,7%	4,2%	4,2%
NII Indicators	Gaps	EVE Indicators	Stress Tests

Determining the new production or business assumptions raises several difficulties:

- First, assumptions for ALM and Management Information purposes can be different. For example, ALM indicators can rely on a constant balance sheet basis and multiple interest rate scenarios in a stress test perspective, whereas management information is more focused on a forward-looking perspective: volume and margin objectives and only a few interest rate scenarios.
- From an organizational point of view, it requires close coordination between Management Information & ALM departments. Most financial institutions acknowledge that the

new production forecasts should be determined by the Management Information department based on an approach combining volumes & commercial margin objectives. In terms of organisation, one of the current trends is to merge Management Information & ALM teams on Net Interest Margin aspects (i.e. other components of the P&L such as fees or operating expenses are still managed by separate teams).

- Another challenge for banks is to integrate dynamic simulations within their usual IRRBB management tools and to industrialise their production.

Which interest rates?

Future production needs to be priced using future interest rates. Estimating these future rates is an important task that affects both NII forecasts and hedging strategies. Pricing based on economic forecasts allows ALM managers to monitor NII in relation to forward rate curves.

Forward rates can be bought or sold in the derivatives market in order to secure margin or enhance profitability. In retail and commercial banking, the ALM function focuses on hedging the margin and hence locking the interest rates at their forward levels. From this perspective, pricing new production based on the forward curve makes more sense.

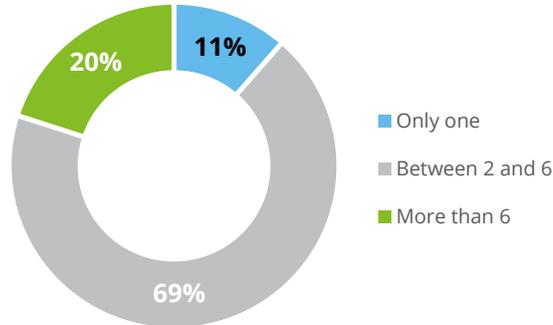
How many scenarios?

Until recently, most institutions calculated their dynamic indicators based on one scenario; generally a parallel shift of +/- 200 bp as recommended by the Basel Committee. Current best practices, however, include setting up dynamic approaches combining multiple interest rate scenarios. From a regulatory perspective, the new IRRBB framework has defined at least six scenarios representing the possible changes in the Interest Rate Curve (parallel shift, steepening, flattening, curvature...).

As we don't know how the rates will evolve, the use of multiple scenarios allows to mitigate risk and efficiently secure the Net Interest Rate Margin or the calibration of the hedging strategies. For example, a bank with an excess of fixed rate assets would currently be keen to transform this fixed rate position into variable rate, if it anticipates a raise in interest rate. On the other hand, it will not hedge at all if it anticipates a decrease in the interest rate. Mixing both scenarios will facilitate more balanced hedging strategies, securing the net interest margin regardless of the evolution of interest rates.

Figure 4. IRR shock scenarios

How many scenarios are used?



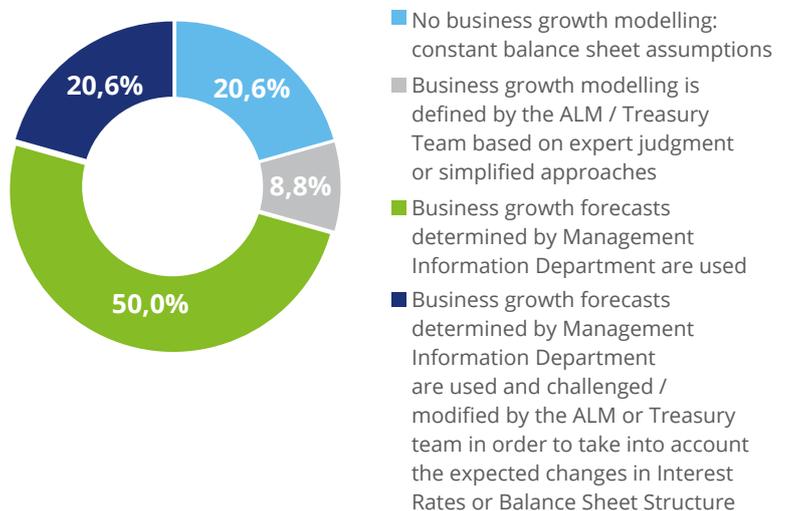
Correlation between IR scenarios and new production volumes

A big challenge the banks are facing right now is increasing granularity at the deal level in their simulations, and simultaneously executing multiple rate scenarios. Furthermore, they need to maintain consistency between shocks on various market data (yield curve, inflation, volatility surfaces, exchange rates...) within a scenario.

For the most advanced institutions, the new production forecasts are adjusted functions of the IR scenario. For example, a bank can assume that sight deposits will decrease, or remain stable at the most, in an increasing IR scenario. The assumption is that individuals will prefer to invest in higher yield investments. This multiple scenario analysis can also be used when calibrating behavioural models, such as the pricing of prepayment options or the projections of cash flows for non maturity deposits.

Figure 5. Correlation between IR scenarios and production volumes

How are the business growth forecast assumptions calibrated?



Articulation between EVE and NII measures

Earnings approach (NII)

In retail or commercial banking activities, Net Interest Margin generally represents the main part of total earnings. Stability of the NIM and its sensitivity to changes in interest rates are scrutinized by Senior Management but also financial analysts and investors. It is also an important indicator in defining the hedging strategy. The hedge objective is then to protect the interest margin from adverse interest rate movements.

Such indicators are generally computed over a relatively short time horizon (one or two years). Indeed, it is difficult to reliably predict interest rate conditions and new production forecasts over a two year time horizon, and not prudent to define a hedging strategy to secure the NIM on a long term horizon.

EVE measures

Value creation for shareholders must also be considered in the long term. Economic value is one of the common ways used to measure the value of an entity. Unlike NII (accruals based indicator), EVE focuses on all cash flows generated by the holdings and duties (interests and principals).

$$EVE = PV(\text{assets cash flows}) - PV(\text{liabilities cash flows})$$

EVE sensitivity analysis is usually aimed at regulatory purposes such as ICAAP and outlier tests. BCBS introduces EVE Sensitivity in the IRRBB framework and suggests the use of this risk measure to monitor banking book risks. Such EVE sensitivity is also often included in the IRRBB limit framework.

Figure 6. NII indicators

What type of NII indicators are calculated? (Multiple answers allowed)

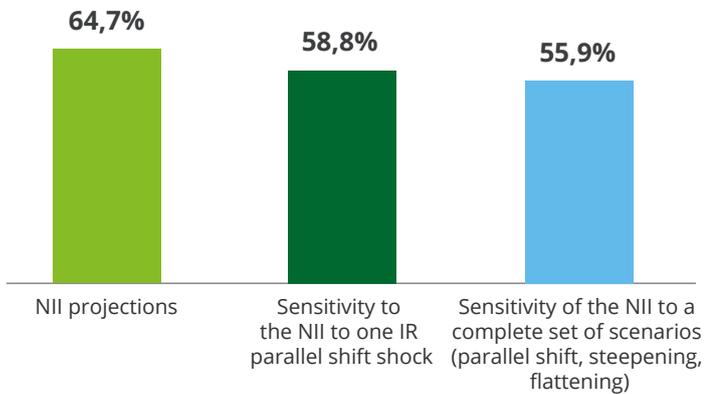
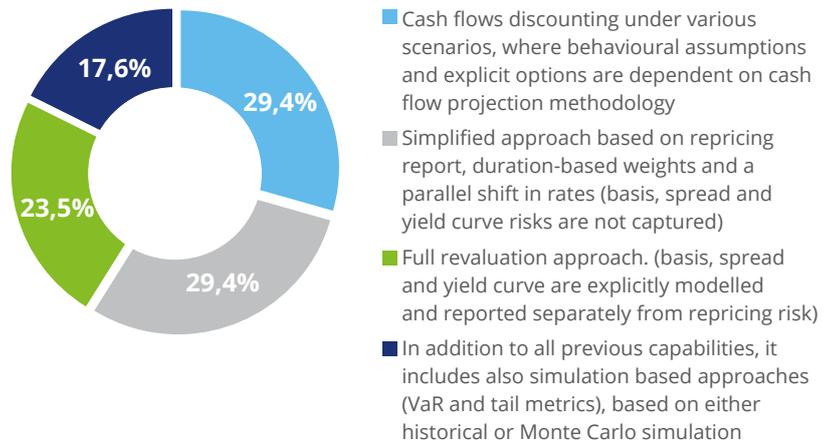


Figure 7. EVE indicators

How is EVE calculated?



Conclusion

From a regulatory standpoint only EVE measures, such as sensitivity analysis to a 200 bp shock, were considered. The new IRRBB framework introduces NII measures and capital requirements calculation based on a mixed NIM/EVE approach.

We consider this approach relevant since both views are complementary. The NIM approach is focused on the P&L with the objective to secure interest margin on a short term horizon whereas EVE approach is Fair Value based considering all cash flows, regardless of their maturity. The objective here is that of maximizing or protecting the balance sheet fair value.

Furthermore, Pillar 3 disclosures by main European banking groups (see table 22 on page 20) indicate that IRRBB current practices differ across banks and countries. However, most of them disclose EVE & NII sensitivity analyses. The challenge in implementing the new IRRBB framework is therefore not on the calculation of indicators, such as EVE & NII, but rather on the set up of multi scenario analysis (very rough approach at this stage based only on one parallel shift scenario).

Chapter 2

Models

Behavioural Modelling main observations and conclusions

Behavioural modelling emerges as a key challenge for many banks. Roughly half the participants indicate that their behavioural models need to be enhanced further, both from a methodological and documentation perspective, in order to comply with the BCBS Standards.

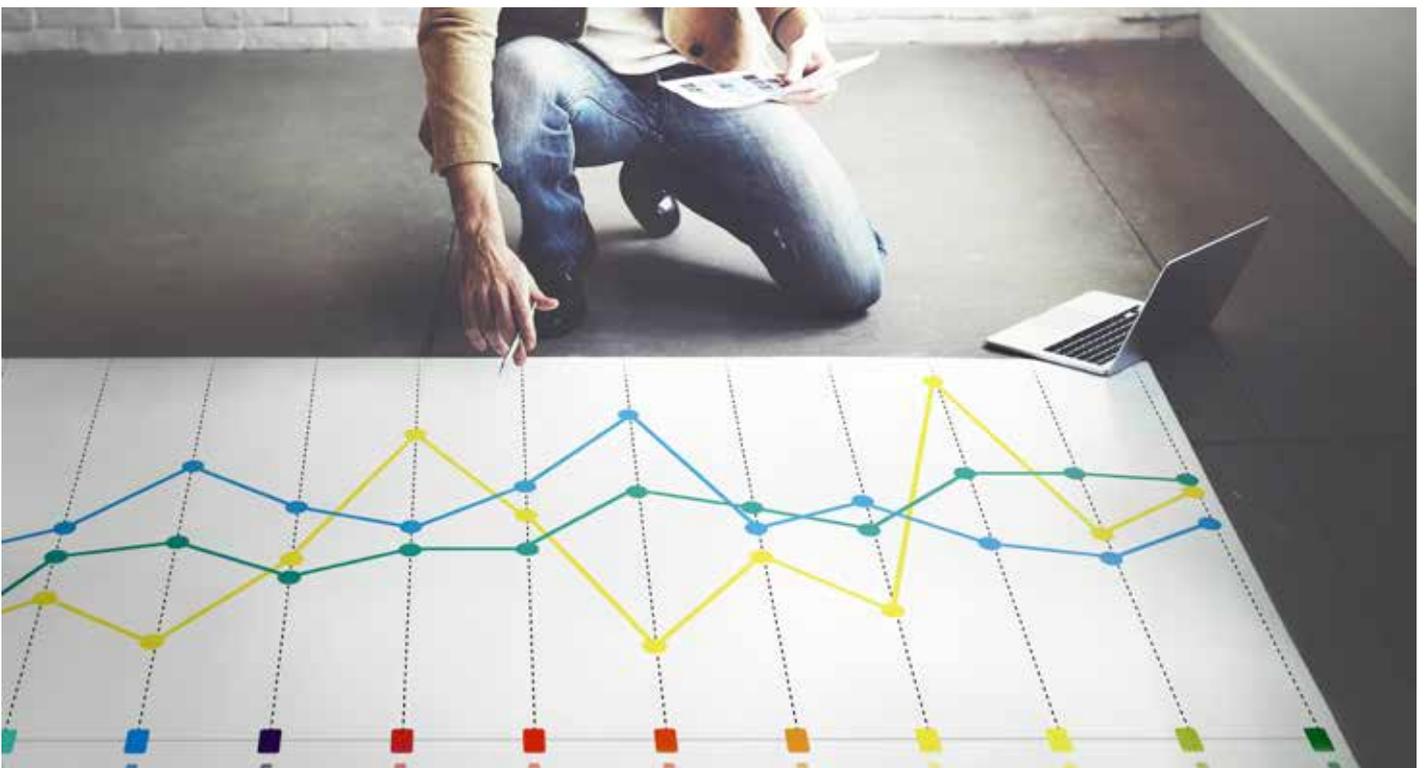
A wide range of modelling practices is evident from the Survey results. This highlights the need for banks to ensure that they fully document their methodologies and undertake sufficient work to justify their decisions. Additionally, they should show the potential limitations inherent in their choices, particularly under stressed conditions.

Some of the key challenges include:

- Absence of well-established processes and resources to perform sufficient analysis and document and validate the models.
- Integration of the models into the broader risk management and limits framework together with associated system integration and governance issues.
- Alignment of IRRBB behavioural models and assumptions to other risk types, in particular liquidity risk.
- The need for significant customer and market data in order to generate

meaningful results and to validate the models. Firms generally will need to invest in quality and granularity of data, and introduce reconciliation processes to get the most reliable results from IRRBB behavioral models.

- The need to recalibrate the parameters as interest rates start to rise, as many of these models have been calibrated in a persistent low interest rate environment.
- Enhancement of model governance around IRRBB models, including sufficient resources to undertake internal validation function and perform Internal Audit review.



Behavioural modelling approaches and methodologies

The first interesting finding is that, whilst some banks (25% of respondents) have a consistent set of behavioural models for IRRBB and liquidity, the majority (75%) do not.

The alignment of IRRBB and liquidity models is not a requirement under the Standards, and there may be valid reasons for maintaining different models (including different management objectives and time horizons). However, as liquidity and IRRBB are often managed by the same or related functions (e.g. Treasury/ALM) and results are usually reported to the same decision-making or oversight bodies (ALCO, Risk Committee), the development of common modelling and data frameworks has a lot of merit.

Additionally, such an approach may lead to efficiencies as reconciliation processes, data cleaning and adjustments and validation of certain model components will need to be performed only once, thereby avoiding duplication of effort.

In addition, two key results from the Survey are worth noticing:

- Not surprisingly, the Survey results indicate a wide range of practices and approaches towards behavioural modelling. For example, the assumed maturity of sight deposits ranges from less than 5 years (50% of respondents) to more than 15 years (6.3% of respondents). Similar divergences exist across many aspects of behavioural modelling. This finding is not inconsistent with the BCBS Standards, which are essentially non-prescriptive and are designed to apply to a wide range of institutions across different jurisdictions. However, the range of observed practices, and the divergent results these are likely to produce, emphasize the need for thorough documentation and justification of the methodologies underpinning the behavioural models. It is crucial to understand and document the potential implications and limitations of the choices made, particularly under stressed market conditions where the validity of the chosen behavioural assumptions may be compromised.
- The second relates to the modelling of prepayments and embedded options. The Survey results indicate that almost one quarter (24.3%) of respondents do not model prepayments/embedded options. For banks in this position, this may suggest a compliance gap and a risk of severe hedging mismatches with an impact on the interest rate margin that will need to be addressed in the near future.

Figure 8. Models for Liquidity and IRRBB

Is there a common modelling set for Liquidity & IRRBB ?

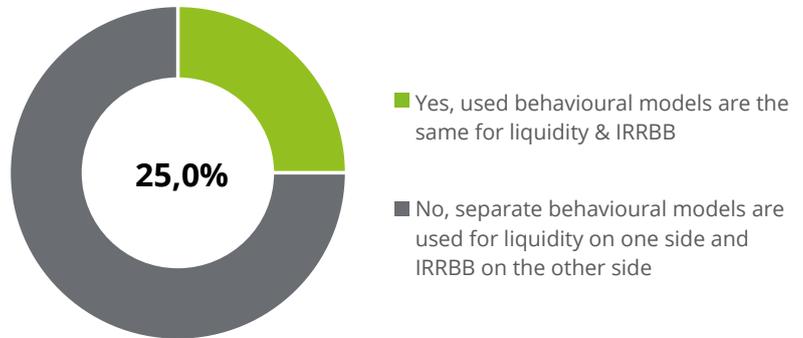


Figure 9. Sight Deposits Models

On which maturity are the sight deposits projected?

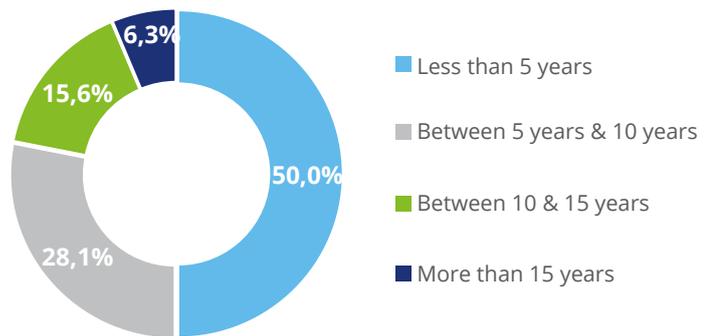


Figure 10. Loans Prepayment Models

How are the loans prepayment options modelled?

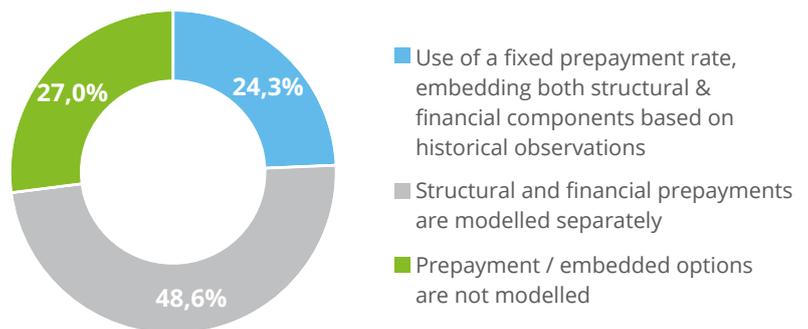


Figure 11. Model Risk Governance

Does the bank have a model risk governance in place?

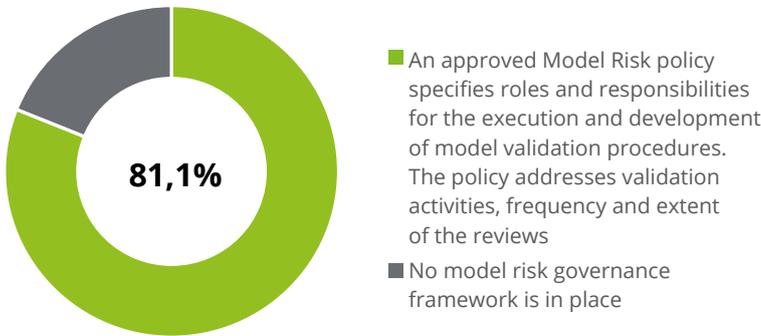


Figure 12. Documentation of Behavioural Models

How are behavioural models documented?

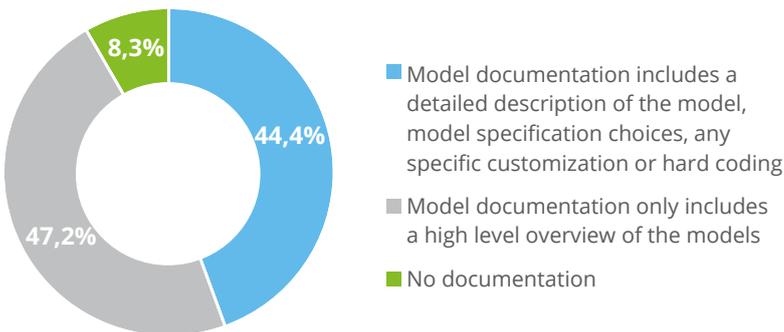
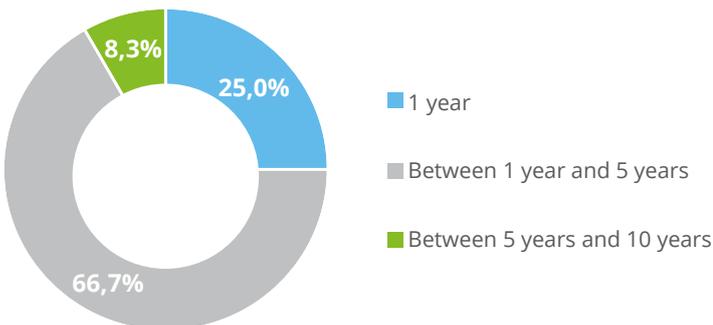


Figure 13. Frequency of behavioural model review

On average, what is the frequency for reviewing the behavioural models (non maturity products, prepayment option)?



Model Risk and Validation policies

81% of respondents reported that they have an approved Model Risk policy that specifies roles and responsibilities for the execution and development of model validation procedures, with the remainder stating that they have no such policy.

Given the emphasis on validation within the Standards, it is imperative that validation policies are developed and approved where these do not exist.

The validation of behavioural models poses different challenges to those that exist for many other types of risk models, which lend themselves more readily to statistical tests or other well-established quantitative procedures.

Therefore, where validation policies exist but have been developed in the context of “statistical” models, banks will need to confirm that the policies adequately address the particular characteristics of behavioural models.

Model Documentation

Over 90% of respondents reported that they have documented their behavioural models, although less than half indicated that the documentation contained a detailed description of the models.

8% reported that they had not documented their behavioural models. The results indicate that most banks have more work to do to in order to improve the quality of their behavioural model documentation.

The Standards require that senior management has a good understanding of IRRBB and associated modelling practices.

Detailed model documentation is one mechanism that helps to demonstrate that this requirement is met. Leading practice is for behavioural models to be documented to a sufficient standard and level of detail that would allow an independent and knowledgeable third party to rebuild the model using the documentation.

Frequency of review and update of models

Over two-thirds of respondents (67%) reported that they review their behavioural models annually, with another 25% reviewing their models every 2-5 years.

8% responded that they do not review their behavioural models.

The results indicate that, for some banks at least, the frequency of review may need to increase going forwards, depending on the materiality and importance of the behavioural models.

Validation of behavioural models

Method and approach

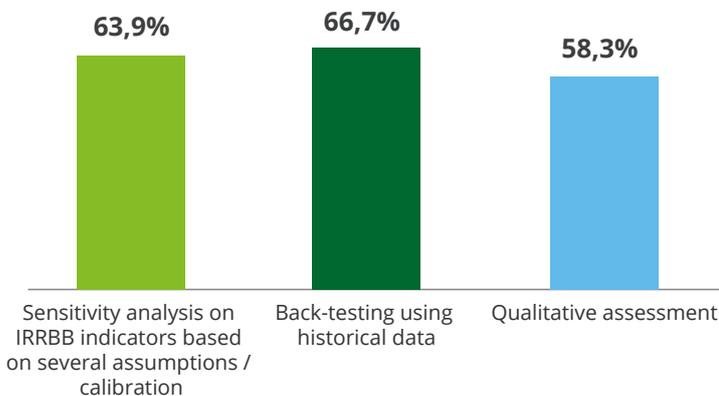
Approximately two thirds of respondents reported that validation involves backtesting using historical data (66.7%) and sensitivity analysis on IRRBB indicators such as gaps, EVE or NII (63.9%), 58% indicated that they use qualitative assessment. The results suggest that around one third of respondents do not use quantitative techniques in their validation and over 40% do not undertake a qualitative assessment. When summarized, these outcomes indicate that many banks will need to enhance the extent and/or depth of validation undertaken. Good practice with respect to model validation is that models should first be assessed for conceptual soundness, largely through a qualitative assessment, followed by appropriate quantitative tests (where these are possible and sufficient data exists) to determine if the model operates as intended under different scenarios.

Responsibility for validation

Most respondents indicate that the Risk department (77.1%) or ALM department (25.7%) are in charge of validating behavioural models, with 17.1% responding that Internal Audit is the main department in charge of this activity. Whilst the BCBS Standards are not prescriptive as to who should perform the validation, accepted good practice is for models to be validated independently from the function or team that developed them. The survey results indicate that some banks at least will need to give additional consideration to which independent function(s) should be responsible for performing validation, and how appropriate segregation and oversight is ensured where models are validated by the function that developed them.

Figure 14. Validation Methods and Approaches

What type of validation work are carried out? (Multiple answers allowed)



Validation reports

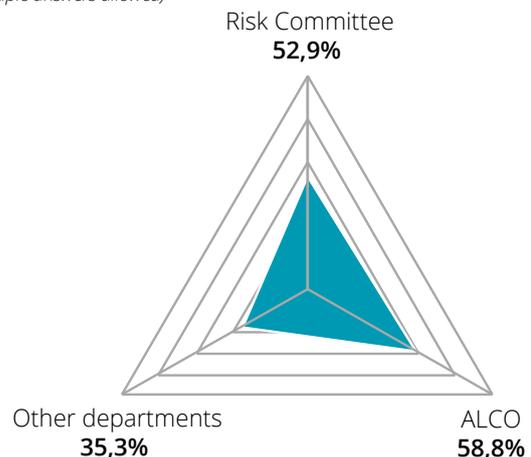
83.3% of respondents reported that validation is documented, with the remaining 16.7% responding that no documentation is produced following validation. A validation report is essential to demonstrate not only that the validation has taken place, but that it has been performed to appropriate standards and to ensure any findings, limitations or conditions have been documented and made available to the relevant stakeholders. The BCBS requirements are not prescriptive with regard to the level of detail and content of validation reports. As a general rule, a validation report for a material model should contain sufficient detail to enable a knowledgeable and independent third party to understand the work that has been carried out and the basis for any conclusions drawn. As only 38.9% of respondents reported that they produced a full validation report, the survey indicates that this is an area requiring further enhancement for most banks.

Reporting of Validation results

The results indicate that the validation reports are provided to ALCO (58.8%), Risk Committee (52.9%) or to other management bodies or stakeholders (35.3%). The BCBS Standards are not prescriptive as to who should receive validation reports. However, the principle that senior management should have a good understanding of IRRBB and associated measurement and modelling techniques is set out clearly in the Standards. The documentation of assumptions and limitations within the model documentation, together with thorough and well-documented validation findings that are broadly circulated to relevant stakeholders and management, provide an important mechanism in helping the bank to demonstrate that senior management understand the potential limitations of behavioural models. Senior decision-making and oversight bodies such as ALCO and Risk Committee should be informed of model limitations, whether self-identified by model developers or through the validation.

Figure 15. Reporting of Validation results

To whom are the outcomes of behavioural models review communicated? (Multiple answers allowed)



Chapter 3

Limit Framework & Capital Adequacy

Limit framework

The renewed IRRBB principles require banks to implement policy limits that keep IRRBB exposures within their risk appetite. This limit framework is a control mechanism and lays the groundwork for IRRBB exposures. The main finding from the survey is that almost 50% of respondents have a structured and detailed limit framework in place, but indicate that it should be significantly improved to comply with new regulations.

Most importantly, a bank must determine policy limits based on its nature, size, complexity and capital adequacy, as well as its ability to measure and manage its risk. Deloitte asked banks how limits are calibrated. Most banks (71.9%) argued that they determine risk limits based on their risk appetite statement. Another significant part (53.1%) express limits as a percentage of their capital. Only a few banks base their limits on historical utilization (see Figure 16).

Furthermore, the BCBS requires risk limits to be applied on a consolidated basis and at the level of individual affiliates. The survey shows that 58,8% of all respondents apply their set of limits on a consolidated level, roughly 65% on an entity level and 11,8% on a business unit level. Depending on the nature of a bank's activities and business model, sub-limits may also be identified for individual business units, portfolios, instrument types or specific instruments. The level of detail of risk limits should reflect the characteristics of the bank's holdings, including the various sources of the bank's IRRBB exposures.

Lastly, banks should have systems in place to ensure that breaches of limits receive instant management attention and are escalated without delay. It should be clear who will be informed and how communication will take place. More than 75% of survey respondents have a formal escalation and remediation process to the head of Treasury or ALM department and to the ALCO. Only 9.1% of respondents state that they have no formal escalation process and handle limit breaches on a case-by-case basis.

Figure 16. IRRBB Limits Framework application

How are the limits calibrated? (Multiple answers allowed)

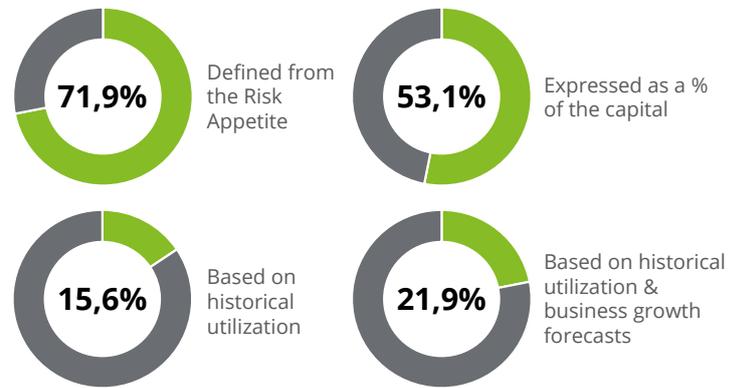
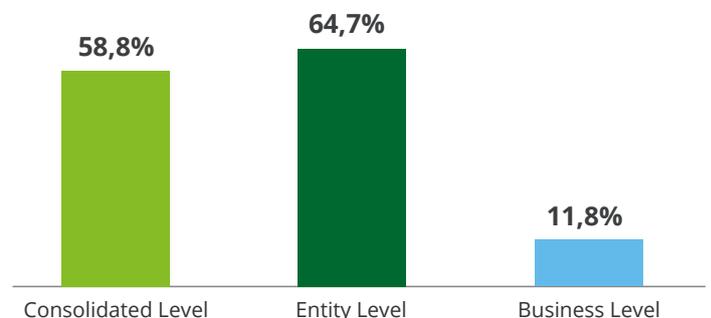


Figure 17. Level of application of IRRBB Limits Framework

At which level are the set of limits applied? (Multiple answers allowed)

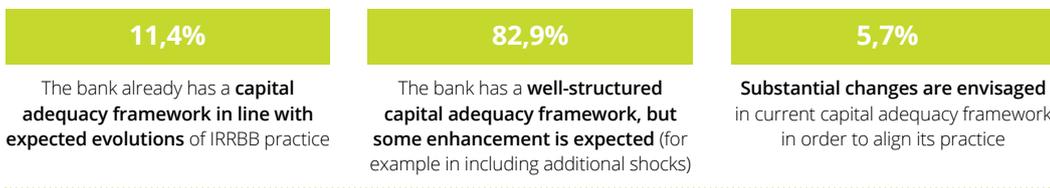


Capital adequacy

Capital adequacy for IRRBB must be specifically considered as part of the Internal Capital Adequacy Assessment Process (ICAAP), in line with the bank's risk appetite on IRRBB. The capital adequacy assessment should take the bank's limit framework of IRRBB exposures into account, as well as whether these limits are reached at the point of capital calculation.

Deloitte asked European banks what the status of a bank's ICAAP process is for the quantification of internal capital for IRRBB risks. Out of all respondents 81.8% indicated they have a well-structured capital adequacy framework, but some enhancements are necessary (i.e. including additional shocks). 12.1% argued that they have a fully compliant capital adequacy framework. The remaining 6.1% of banks indicated that their capital framework is not adequate and not in line with expectations for IRRBB management.

How is the ICAAP process for quantification of internal capital for IRRBB risks expected to evolve in your bank ?

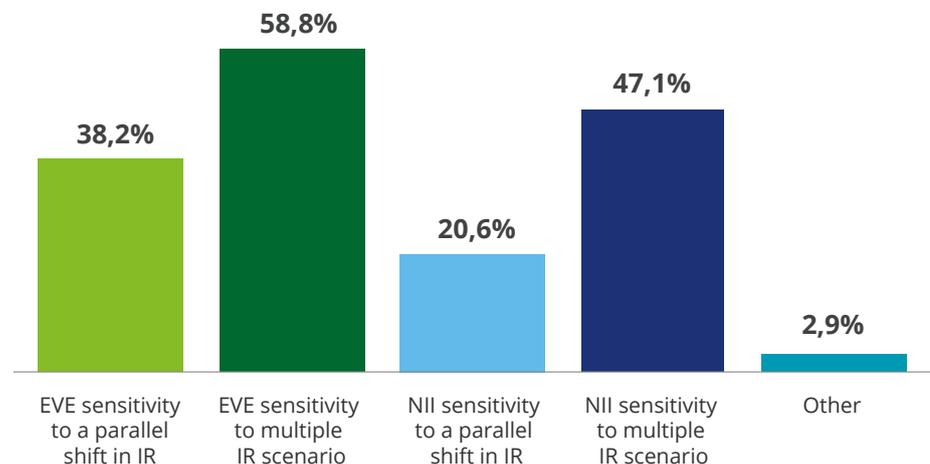


According to the IRRBB guidelines a bank's capital adequacy should be determined in relation to the risks to economic value. Banks should also consider capital buffers in relation to future earnings. Banks were asked which types of measures are used to quantify capital impacts. Figure 18 illustrates that most banks already implemented multiple interest rate scenarios in capital calculations. Furthermore, the majority of banks use EVE sensitivity (58.8%) to quantify capital, while fewer banks use NII sensitivity (47.1%).

The IRRBB guidelines prescribe that the outcomes of the capital adequacy for IRRBB should be considered in a bank's ICAAP and flow through to assessments of capital associated with business lines. The survey results showed that almost all banks (96.8%) include the IRRBB internal capital in the ICAAP report. Also, 22.6% of banks use it for capital allocation per entity or business line. 61.3% use internal capital to define their risk appetite statement relation to IRRBB.

Figure 18. IRRBB Capital Adequacy framework

What types of measures are used to quantify Capital Impacts? (Multiple answers allowed)



Chapter 4 Governance

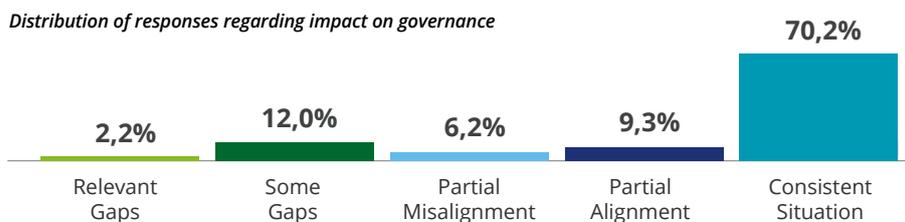
70.2% of participants of Deloitte's ALM & IRRBB survey said that no changes are required to their current governance structure

Changes in the governance structure include mainly a stronger involvement of the management and stricter definitions of responsibilities

The IRRBB framework requires changes for the financial institution's quantitative and qualitative risk management. On the one hand, the improved requirements of the IRRBB will have a major impact on systems & processes (Chapter 6) and models (Chapter 2) for determining the interest rate risks in the banking book. On the other hand, the IRRBB framework clarifies the requirements for the governance structure of the interest rate risk management and liquidity steering. These requirements mainly include stronger involvement of the governing body, ALCO, Treasury and IRRBB steering operating units in their oversight function, a stricter designation of responsibilities and an enhanced definition of the "lines of defence".

Deloitte's EMEA ALM & IRRBB survey addressed these requirements to their participants and analysis the expected efforts in adopting them to the current governance structure. The majority of Deloitte's EMEA ALM & IRRBB survey participants said that the changes of the IRRBB framework would hardly affect them or even not at all. 70.2% of participants explained that their current situation is already consistent with the upcoming changes and 9.3% said that they already have a partial alignment. Nevertheless 2.2% explained that they are facing relevant gaps and 12.0% said they have some gaps concerning their current governance structure.

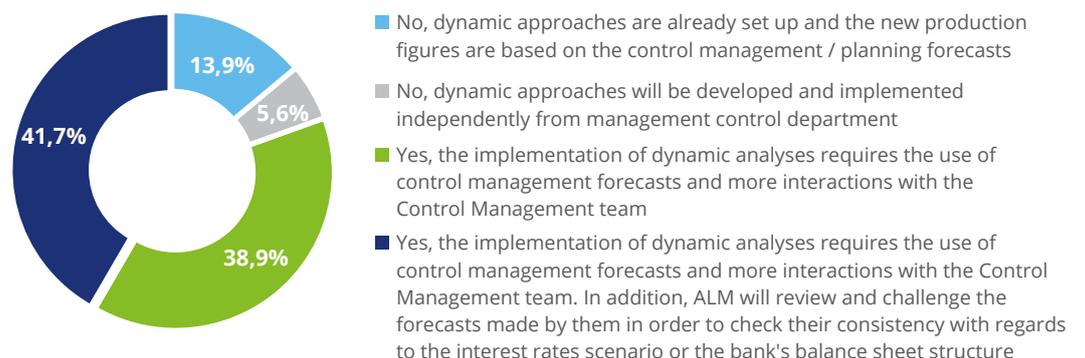
Figure 19. Impacts on governance



Most of the identified gaps between the current situation and future requirements focus on an extended responsibility of the management. One main finding is that the role of ALCO should be more active in the business steering and decision-making. Furthermore ALCO's duties should be better linked to the monitoring of limits and validation of the behavioural models which will extend the responsibility of the committee further.

Figure 20. Operating model for cross-department cooperation

Does the bank expect more cooperation with the management control function in setting up dynamic approaches?



Governance will be a key focus area for enhancing the IRRBB framework

Although the survey has shown that the majority of participating financial institutions are already aligned to the future requirements, the ongoing process of implementing the IRRBB framework will continue having an impact on the governance structure. These effects mainly stem from the strong correlation between the governance framework and other changes. As a result, an enhancement of processes & systems or ALM & IRRBB models will automatically lead to an adjustment of responsibilities.

As revealed by the Deloitte ALM & IRRBB survey, the extension of the key role of ALCO is also likely to lead to those additional interactions. For example, better top-down direction (e.g. ALCO) is only possible if pertinent information is communicated to the relevant committee on a regular basis. Therefore, reporting and disclosure must comprise relevant reporting lines. Furthermore, better management and monitoring of limits will be expected.

Finally, the role of the ALCO for the validation of behavioural models requires a closer interaction between ALCO, ALM & IRRBB models.

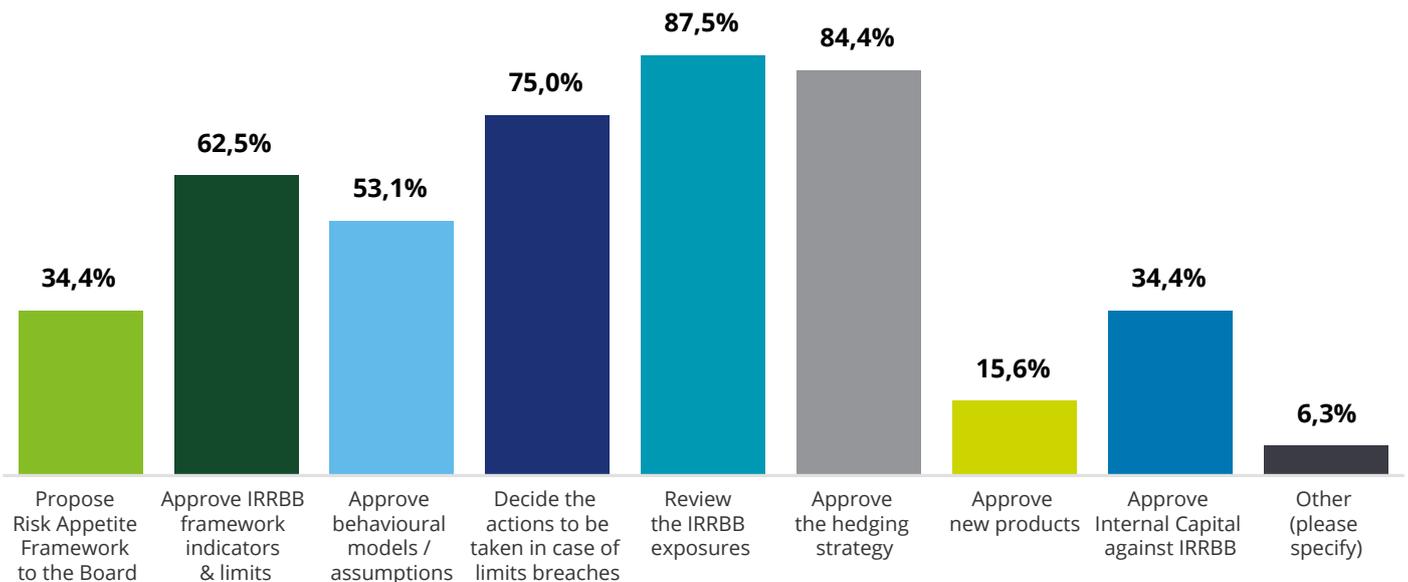
Adopting the governance structure to the new IRRBB framework will be a continuous challenge

Overall, Deloitte’s ALM & IRRBB survey showed that most financial institutions are currently not required to include major changes to their existing governance structure. Regardless, the ongoing process of implementing the IRRBB framework will also lead to an ongoing adjustment of the governance structure as a result of the close connection between governance and other major requirements within the IRRBB framework.

Nevertheless, the extension of responsibilities of the governing body, ALCO, Treasury and IRRBB steering units will include further requirements for improving existing reporting. Detailed plans and documentation regarding integration of reporting in the internal control system as well as interest management practices, models used and risk control will have to be enhanced. Governance structure must be considered and extended in the process by aligning the required rate shock scenarios (dynamic modelling) with business model and planning in a comprehensive framework.

Figure 21. Roles of ALCO

What are the roles of the ALCO? (Multiple answers allowed)



Chapter 5

Internal & external reporting

Pillar 3 **public disclosure** requirements mandate that banks disclose information on their capital position and risk exposures to enable external stakeholders to compare risk profiles across different banks. In light of this, the BCBS has extended disclosure requirements for IRRBB to promote greater consistency, transparency and comparability in the measurement and management of IRRBB. The disclosure requirements for IRRBB were also confirmed and finalised in BCBS Standard entitled *Pillar 3 disclosure requirements* – consolidated and enhanced framework, as published in March 2017.

Extensive quantitative and qualitative public disclosures are required. In short, the new quantitative disclosures require EVE stress results for the six scenarios and NII stress results for the two parallel scenarios. EVE results can be based on either the bank's internal model or the standardised framework, and should be based on a run-off balance sheet and instantaneous shocks. NII results should be based on the bank's internal model, a constant balance sheet over a one year horizon and instantaneous shocks. National supervisors may also specify additional scenarios for which they require regulatory reporting or public disclosure. In addition, the average and longest repricing maturity assigned to NMDs must be disclosed.

The qualitative disclosure requirements include the bank's definition of IRRBB, a description of its IRRBB measurement and reporting approach, IRRBB management and mitigation strategies, as well as the associated accounting treatment. The bank

must also describe the assumptions on which its internal model and quantitative disclosures are based, and explain the methodologies or analyses supporting such assumptions.

In addition to meeting new public disclosure requirements, banks will also need to meet revised local **regulatory reporting requirements**. National supervisors need to ensure they collect sufficient information so as to monitor banks' IRRBB trends, assess the soundness of IRRBB management, identify outlier banks and mandate appropriate remediation measures. The revised Standard encourages national supervisors to look at a long list of factors when assessing quality of the bank's IRRBB management - it is therefore of paramount importance that the banks have the capability to provide granular information that accurately and adequately describes its IRRBB exposures, drivers, assumptions and practices.

In addition to more stringent prescribed IRRBB public disclosures, Principle 7 of the new standard also dictates enhancements to **internal reporting practices**. Banks are still required to report aspects such as risk metrics, risk drivers and limit utilisation, but there is a stronger focus on the level of granularity required (e.g. per currency, per legal entity, etc.). Furthermore, there is still a requirement to report on governance aspects such as audit issues as well as compliance with policies and procedures. Under the new Standard however, there is an additional focus on model assessment results, such as sensitivity testing of assumptions and testing of forecasts vs.

actuals. There is also a stronger emphasis on highlighting the sensitivity of fair value portfolios to changes in market conditions.

Based on our survey, the area of IRRBB reporting requiring the most enhancement for the majority of banks is the quantitative reporting of detailed analyses reflecting changes in IRRBB exposures between different periods at a granular level (e.g. breakdowns per risk type, currency or entity / business line; underlying IRRBB drivers i.e. assets, liabilities and cash flows; behavioural assumptions; etc.). The primary limitations here are banks' existing IRRBB measurement and management systems, processes and data. 40% of participating banks state that the reporting capabilities in their current IRRBB systems are deficient and the majority (55%) raised data quality concerns. Only 50% currently utilise comprehensive datasets on a transactional basis in their IRRBB systems. The remaining 50% could therefore have potential deficiencies in the granularity of data required to meet new reporting requirements. It is clear that many banks may either need to modify their existing IRRBB systems infrastructure, or upgrade to new systems altogether. Computational engines possessing a greater degree of flexibility will be required to efficiently calibrate required parameters, run analyses on multiple interest rate risk scenarios and handle more granular data. Comprehensive data quality and data governance frameworks will also need to be introduced and embedded within IRRBB management to ensure that the data feeding the IRRBB measurement process meets accuracy and consistency standards.

On the bright side however, not all enhancements needed to comply with new internal reporting requirement will be significant, as the majority of respondent banks are already providing their respective ALCOs (or equivalent) with reporting information that includes a combination of:

- Summary of aggregated IRRBB exposures (91%).
- Quantitative detailed analyses on changes in the IRRBB exposures: per type of risk, breakdown by currency or entity / business line (56%).
- Insightful commentary on significant changes in IRRBB exposures or hedging strategies (78%).

- Changes in behavioural models and model audit results (63%).
- Limits usage / breaches (88%).
- Internal capital / ICAAP figures (59%).
- Stress tests results (63%).
- Proposed hedging strategies (63%).

Furthermore, in terms of public disclosures, a large majority of participating banks already provide quantitative and qualitative disclosures on IRRBB on an annual, semi-annual or quarterly basis. These banks indicate that under the new Standard, the amount of disclosures they make in the future is expected to significantly increase.

Table 22. Observed practices related to Pillar 3 public disclosure

Based on "tier 1" banks annual Pillar 3 reports as of December 31, 2016

Banks	IRRBB policies	Financial communication (Pillar 3)					
		EVE sensitivity		NII sensitivity		Value at Risk (VaR)	
		Shock	Effect	Shock	Effect	Shock	Effect
	Monitoring of balance sheet / own funds exposures as well as budgeted financial margin	+/- 100 bp	- 524 € mln for a shift of - 100 bp	+/- 100 bp ; 1 year	- 4.181 € mln for a shift of - 100 bp		
	Mainly by examining the sensitivity of market value of the various positions in the banking book to parallel shift in the interest rate curve Three types of indicators : EVE sensitivity, NII sensitivity & VAR	+/- 100 bp	945 € mln	+/- 50 bp ; 1 year + 100 bp ; 1 year	+ 50 bp : 571 € mln + 100 bp : 1 081 € mln - 50 bp : - 665 € mln	Parametric 99%; 1 day	Averaged : € 76 mln Minimum : € 40 mln Maximum : € 122 mln
	IRRBB is managed and controlled by stabilizing Net Interest Margin	+/- 1 bp per time bucket +/- 200 bp	+ 200 bp: - 1.805 € mln	+/- 100 bp ; 1 year	+ 515 € mln; 1 year		
	IRRBB measured through sensitivities to revenues and limits on gaps	Only for regulatory purposes ; +/- 200 bp	EVE sensitivity represent 7,3% of the own fund for a regulatory threshold of 20%	+/- 50 bp ; 3 years	Y1 : - 100 € mln/ + 112 € mln Y2 : - 343 € mln/ + 405 € mln Y3 : - 656 € mln/ + 719 € mln		
	Monitoring of structural fixed rate position values and interest rate margin sensitivity analysis (three years rolling period)	+/- 100 bp	111 € mln	+ 200 bp ; 3 years - 200 bp ; 3 years + 100 bp ; 3 years - 100 bp ; 3 years Steepening Flattening	+236 € mln - 207 € mln +115 € mln - 64 € mln - 54 € mln +161 € mln		
	Used indicators are threefold: Equity At Risk, Basis Point Value or the delta of Equity, Income at Risk	+/- 100 bp	EVE sensitivity represent 1,4% of the own fund	+/- 200 bp ; 1 year	- € 82 mln / 10 bp decline		
	Monitoring of Earning Sensitivity, NPV at Risk and Basis Point Value	+ 100 bp - 100 bp (floor)	- 1.926 € mln + 61 € mln	+ 100 bp / 1 year - 100 bp (floor) 1 year	+224 € mln - 60 € mln		
	Monitoring of Bank's economic value as well as Bank's Earnings	+ 200 bp - 200 bp (floor)	-0,4 € bln -0,3 € bln	+ 200 bp ; 1 year - 200 bp (floor); 1 year	+ 2,1 € bln - 0,6 € bln		
	Monitoring of Bank's economic value, based on EVE sensitivity	+ 200 bp - 200 bp (floor)	-2 120 € mln -558 € mln				
	IRRBB is measured and monitored using three metrics : non traded VAR, net interest income sensitivity, economic value of equity	+ 200 bp - 200 bp	+1.128 \$ mln -10.408 \$ mln	+ 25 bp - 25 bp	+1.709 \$ mln -2.406 \$ mln	Non traded VAR	Average – Interest Rate: 157 € mln
	IRRBB exposure is monitored monthly using market value sensitivity, interest income sensitivity, market value limit and structural hedge limits	Steepening Flattening	- 20,6 £ mln - 27, 1 £ mln	+ 25 bp ; 1 year - 25 bp ; 1 year + 100 bp ; 1 year - 100 bp; 1 year	+ 176,8 £ mln - 286, 1 £ mln +724,9 £ mln - 408,0 £ mln		

Chapter 6

Processes and IT systems

Despite considering their current IT systems as adequate, most banks in the sample (62% of the respondents) consider the need for some enhancements in order to achieve compliance with the new regulatory recommendations (i.e. scenarios & shocks, dynamic perspective, risk types granularity).

This can be seen, for instance, from the banks' self assessment of their readiness, flexibility and the completeness of their IRRBB systems: only 5.4% of financial institutions state that their systems are already capable of managing all evolutions required by the IRRBB framework.

Main findings from the survey on IRRBB systems and processes are:

- **System Integration & Interfaces**

A number of banks (46%) highlighted that current IRRBB analyses are performed in a unique system,

but the system is not yet integrated with other relevant systems.

- **Data Quality And Reconciliation**

Data quality and reconciliation processes on IRRBB data with other risk data are obstacles to be addressed to improve operating processes and procedures on this side.

- **Calculation Engines**

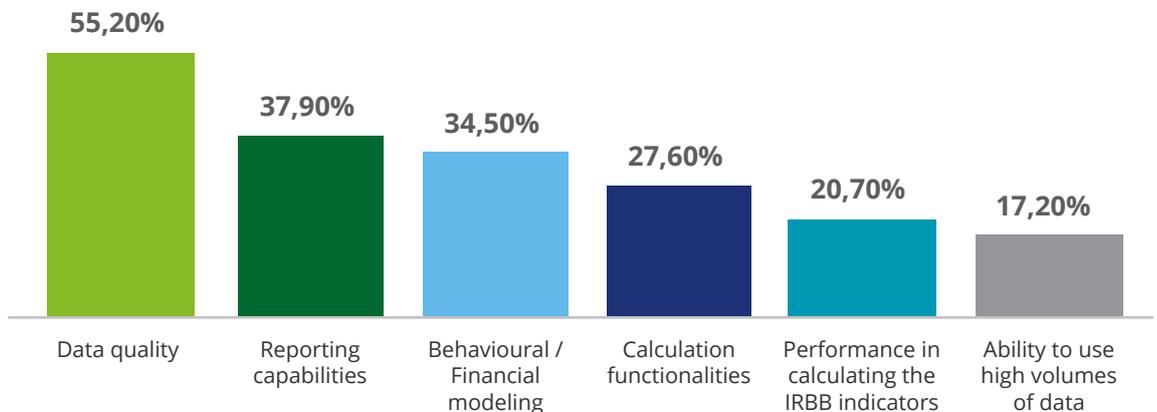
New IRRBB principles related to methodological aspects (shock scenarios, dynamic view, behavioral models) are expected to require more powerful and sophisticated ALM & IRRBB calculation engines.

- **Reporting Functionalities**

Flexibility and granularity are two key elements to deal with for the improvement of expected internal and external reporting functionalities and processes.

Figure 23. Summary table on IT systems and processes

What are the functionalities for which the IRRBB system do not answer to the business needs? (Multiple answers allowed)



System Integration & Interfaces

System integration seems to be a very relevant topic to be addressed by banks given that, even when IRRBB analyses are performed in a unique system, for the 46% of respondents the availability of integrated data and results is not granted to other relevant systems of the bank (46% of respondents).

From an IT architecture point of view, the introduction of a dynamic approach will enable banks to capture the new production assumptions in the ALM system and to perform all related calculations on this new production at the required level of granularity (for example, on a contract basis for lending).

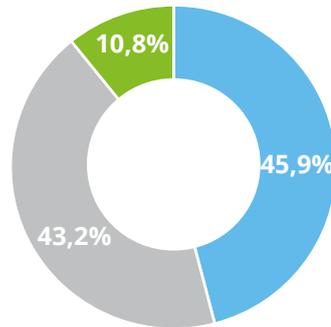
Most of the ALM software vendors are currently improving their capabilities to support the simulation of the new business production (ALM dynamic) and the integration with other tools or system modules which can provide these kinds of input data.

Also on banking practice perspective, some financial institutions are activating specific transformation program, taking this opportunity to:

- Rationalize their IT architecture by migrating their functionalities into only one system both for ALM and Planning & Controls (especially for a dynamic perspective).
- Enable the integration of Finance & Risk data
 - Integration between IRRBB systems with front & position keeping systems will guarantee coherence between IRRBB monitoring (risk) and hedging execution (ALM/Finance).
 - Construction of a common risk Data Warehouse will assure consistency in risk monitoring activities (for example among IRRBB, Liquidity and Market Risk)

Figure 24. Level of IRRBB systems integration with other systems

What is the current level of integration of IRRBB systems with other systems (i.e. planning, performance measurement)?



- IRRBB analyses are performed in multiple systems and a relevant effort of reconciliation among different data is required. No integration between IRRBB systems and other systems is available
- IRRBB analyses are performed in a unique system that is not directly integrated with other relevant systems, but assure the overall coherence of the IRRBB management (risk measurement, limit monitoring, execution/hedging practice)
- IRRBB analyses are performed in a unique system that is not directly integrated with other relevant systems, but assure the overall coherence of the IRRBB management and the reconciliation of data and perimeter with other relevant areas (performance measurement, fund transfer pricing, planning, liquidity and market risk management)



Data Quality And Reconciliation

The majority of participating banks (55.2% of the sample – Figure 23, Page 21) highlight the need to develop an adequate Data Quality process to ensure reliable and coherent input data and information among various departments (i.e. ALM vs other specific functions focus) in order to enable IRRBB systems to work properly (accordingly with BCBS’s IRRBB Principle 6).

In most cases (67.7% of participants - Figure 25) the internal control framework is poor and only high-level reviews are conducted to ensure accuracy (data accessibility and usability) and minimize operational risks.

Given the absence or limited coverage of the internal control framework, business users are facing more and more problems related to multi-contribution of data. In this situation it is not clear which source system provides the most reliable information and banks are often forced to conduct manual reconciliations to identify the cases of multi-contributions, the underlying reasons and the evidence showing which information is correct.

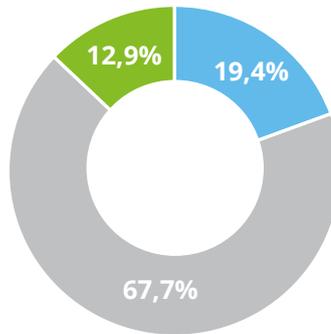
Reconciliations represent another critical and time consuming issue to be addressed to improve operating practices and processes.

These findings comprise relevant issues to be solved in order to comply with BCBS’s IRRBB Principle 2 , which requires banks to:

- Set controls on IT systems to prevent data lost or damage.
- Control the quality of the external information sources.
- Set appropriate mechanisms to verify the quality of aggregation.
- Have adequate procedures to manage discrepancies and irregularities arising during data elaboration by understanding the underlying “reasons” and setting dedicated reconciliation procedures, where necessary.

Figure 25. Internal Controls and data quality framework

Does the bank have adequate and independent internal controls in place to control and challenge results and key information?



- Limited review and challenge of IRRBB results prior to submitting regulatory or management reports
- The bank has a basic internal control framework to ensure the integrity of its IRRBB management process. A high-level review of results and commentary takes place to ensure accuracy. Commentary accompanying the results typically only lists the largest movements, and a breakdown of those movements
- The bank has a full internal control framework to ensure the integrity of its IRRBB management process. The internal controls promote effective and efficient operations, reliable financial and regulatory reporting and compliance with relevant laws, regulations and bank policies. Prior to reporting results to any regulators or governance forums, results are interrogated, reviewed and challenged by senior IRRM team members and an independent internal control function. The quality of commentary is scrutinized to ensure it provides real insight into the market and business drivers behind large movements



Calculation Engines

Although they were considered the 3rd and 4th priorities for IRRBB systems evolution, a relevant part of participating banks recognized the importance to strengthen their ALM & IRRBB management practice. They acknowledged the need to implement more powerful and sophisticated calculation engines, leveraging on new technologies and available IT solutions. In particular, IRRBB systems will have to manage:

- Dynamic view approaches to measure interest rate risk with forward-looking analyses that consider the evolution of bank's balance sheet, strategic planning forecasts and new business simulations on banking book portfolio.
- Quantitative behavioral models, proportional to nature, dimension and complexity of the business, to identify and quantify all interest risk types (i.e. optionality risk, basis risk, repricing risk) related to banking book portfolio.
- Extensive range of shock scenarios (both regulatory and internal – i.e. historical volatility of interest rate and option risks, evolution of administrated rates, spread variations) for identifying the different effects on risks factors and applying stress test scenarios for limits definition and capital adequacy self-evaluation.

Some banks have already identified main directions to move towards in terms of calculation engine evolution;

- Deployment of synergies with market risk to evaluate specific instruments and the related optionality risk (i.e. adopting full revaluating models).
- Enhancing the granularity of IR risk quantification by strengthening and splitting calculation phases in order to provide details on different risk types effects (option, basis, yield curve, repricing).
- Creating flexible functionalities for scenario construction by leveraging on a set of risk factors (i.e. interest rates, volatilities, exchange rates, haircuts, credit spreads, rollover factors) to be stressed in different ways and directly linked to calculation engine for measurement the effects on NII or EVE.

In terms of processes and procedures, the survey pointed out several weaknesses in banks' documentation and operating procedures, which require significant efforts for the majority of participant banks. Main gaps were identified on:

- The formalisation of operational procedures and processes to generate IRRBB indicators & reports.
- The enhancement of the review and validation processes on behavioural models (especially on the formalisation of models' assumptions and validation outcomes).
- The integration and consolidation of the group overall risk position by enhancing system's reporting processes with:
 - A centralised framework, compliant with reporting requirements from Alco or Risk Committees or Authorities.
 - A dedicated support for quantitative and qualitative public disclosure according to Pillar 3 framework.

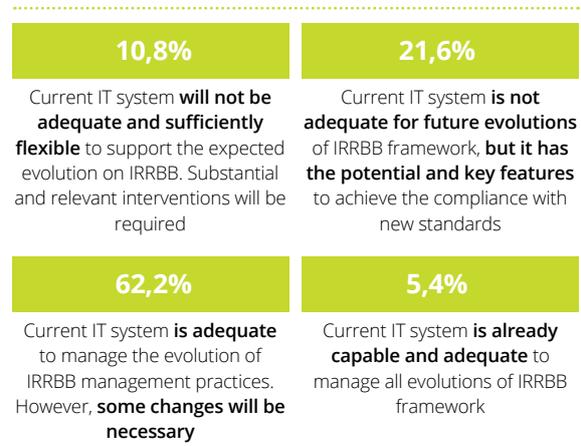


Figure 26. Application of dynamic approaches within IT systems

How will your bank approach the introduction of a dynamic approach to NII and EVE sensitivity analysis?

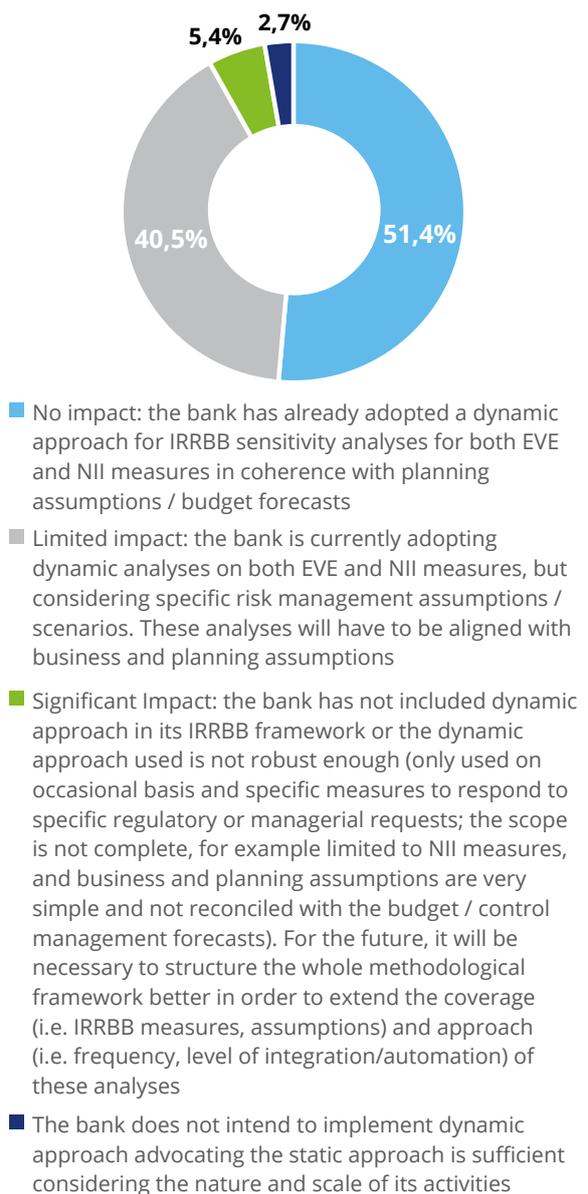
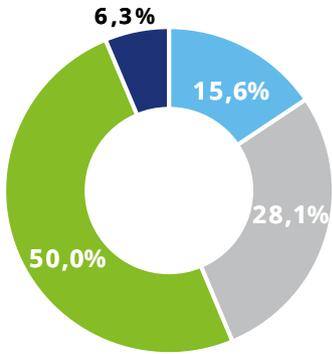


Figure 27. Data granularity

What is the granularity of data used by IRRBB system?



- High level aggregation by group of products
- Aggregation at the product level
- Transactional basis but some key attributes are missing
- Comprehensive datasets available on transactional basis

Reporting Functionalities

On reporting side, participating banks highlight the need and direction towards more flexible and customisable functionalities, able to support the ALM and IRR functions to regularly provide complete information to the management (IRRBB measurement results and hedging strategies effects).

Another two important topics to be addressed on reporting is the granularity (drill-down) and aggregation/consolidation of results at group, sub-group levels:

- Regarding the granularity, it is shown in Figure 27 that only the 50% of interviewed banks attest to have a complete and comprehensive dataset available on transactional basis.
- With respect to level of aggregation, most banks declare that the consolidation of results at Group or sub-Group level is an activity that still requires a relevant effort and manual activities.

It is also worth noting that, although key IRRBB processes seem almost automated, manual adjustments are still frequently needed (93% of the banks in the sample) especially for data correction/completion and reporting purposes.

Due to the implementation of the revised IRRBB principles and the need to provide a much more extensive public disclosure of IRRBB framework, ALM software providers will be required to enhance the usability and flexibility of their solutions in order to at least:

- Minimise manual efforts and related operative risks.
- Introduce more transparency through tracking and audit trail functionalities, which will allow ALM specialists to navigate the system and fully manage the underlying data.

Figure 28. Summary of most relevant gaps highlighted on IRRBB systems and processes

INTERFACES

More integration with up and downstream systems

- For dynamic views based on bank's future business IRRBB systems should be aligned and integrated with planning systems.
- Synergies are expected among IRRBB, liquidity and market risk systems.

DATA

Data quality to be significantly enhanced

- Manual adjustment on data correction / completion is still a big issue.
- Reconciliation processes of IRRBB data parameters with other areas always require increased effort.

REPORT

Flexibility and granularity are key prerequisites

- Flexibility and customization of reporting is a key requirement for IRRBB analyses.
- In addition, both internal needs and IRRBB principles require a maximum level of granularity (deal level effects & split of IRR types).

ENGINE

More powerful calculation engines are required

- Dynamic analyses and behavioural models with full revaluation of economic values and earnings will require powerful engines.
- More complex scenarios for IRR shocks also demand more calculation phases in IRRBB engines.

Proposed actions and recommendations

Both the new BCBS standards on IRRBB and the banking industry's view emphasize some interesting paths for the future of Asset and Liability Management and Interest Rates Risk management practices.

Given the short timeframe for the alignment of the IRRBB practices with the BCBS revised principles and the underlying challenges, banks are expected to give high priority to this topic in order to be compliant by 2018.

The changes required to the IRRBB framework will encompass all the main aspects of the IRRBB framework: the introduction of new methodologies will require more granular data of quality and also more flexible systems; the IRRBB governance and the target operating model will be the key junction point between the IRRBB and ALM specialists, the bank's top management and its key stakeholders.



A revised Target Operating Model to better support the needed changes

Overall, the surveyed banks' view is that relatively minor impacts are expected on governance and processes, since banks consider their level of compliance with the revised BCBS IRRBB standards to be high already. Nevertheless, the survey highlights that some strategic interventions are still required in order to effectively implement and oversee the changes to the methodologies and systems required by the new standards.

The key expected actions are to integrate the bank's target operating model and related processes with the new roles and enhanced responsibilities. For example, where this is not yet the case, **relevant functions and the appropriate related governance framework will need to be implemented** for:

- The definition of the relevant IRRBB scenarios.
- Enhanced internal validation of IRRBB models, projection analyses.
- Simulation activities.

In a number of cases, the current practices and internal documentation of risk strategy, risk appetite, internal controls, hedging practices, model risk management and model calibration, as well as risk reporting, will need to be improved.

IRRBB Methodology – The integration of new perspectives into the IRRBB framework

Dynamic and stressed scenario analyses are expected to be the two most significant areas where changes are needed.

Dynamic analyses will require forecasting future production but also commercial margin targets, in coherence with the bank's strategic and business planning. In order to properly analyse all effects of the changes in interest rates and of balance-sheet structure, the granularity of forecasts should be consistent with that of modelling (generally, at product level).

A review of the behavioural models will also be required to ensure their compliance with the prescriptions of the new BCBS IRRBB standards, and to properly capture behaviours in specific market conditions (i.e. low/negative interest rates).

More mature banks are moving towards the **enhancement of their methodological framework by improving their approaches to interest-rate risk scenarios** (e.g. use of forwards rates and of bespoke scenarios) and by **defining more robust methods to allocate their balance-sheet planning forecasts to IRRBB product granularity and aligning behavioural models assumptions with the IRRBB prescriptions.**

IT systems – Evolution will come from technological opportunities and systems integration

While considering their IT systems adequate to manage the changes required in the IRRBB management practices, a majority of banks (62%) confirm the need for some improvements. In addition, 32% of respondents have stated that their IT systems will need to be upgraded since they will not be able to cope with the required functionalities under the new BCBS standards.

Even though, in many cases, the IRRBB analyses and monitoring are performed through a unified platform, the IRRBB IT systems are not yet properly integrated or interconnected with the other relevant ones (e.g. liquidity risk management systems, ALM systems). Moreover, reconciliations remain a key issue since only 46% of banks are able to comprehensively reconcile their IRRBB data with those of other relevant functions (e.g. accounting, other risks).

The Deloitte IRRBB survey highlights a clear direction, insisting on the implementation of a common and integrated risk data model to reduce reconciliation costs (e.g. IRRBB, liquidity and possibly accounting and credit risk), **the deployment of new technologies and systems** (e.g. powerful engines and more flexible solutions for scenarios analyses, enabling the handling of more granular data) and the introduction of a **complete and sound data quality and governance framework.**

Some banks have also underlined the launch of **dedicated transformation programmes that interact with other key initiatives**, such as BCBS 239 on risk data aggregation and reporting, Big Data, EBA Stress Tests and FRTB (Fundamental Review of the Trading-Book), in order to benefit from synergies and allow more integration of key processes.

For more details on the survey

Additional insights and detailed reports related to the Deloitte 2017 ALM & IRRBB survey are available upon request.

The Deloitte's EMEA ALM & IRRBB group consists of senior professionals and consultants with substantial experience consulting on a variety of ALM and IRRBB issues. This group draws on the Deloitte's global network of partners and industry and management experts.

How Deloitte can help

Deloitte's ALM & IRRBB Management solutions have evolved along with the concurrent financial markets' and regulatory challenges for improving interest rate risk identification, measurement, valuation, reporting and monitoring, hedging strategies and management governance.

We can help you by applying the following interest rate risk management solutions in the banking book activities:

IRRBB Identification

- Define banking book boundaries in coherence with the Final Basel Standards on IRRBB and on the Fundamental Review of the Trading Book (FRTB).
- Identify on- and off-balance sheet interest rate risk exposures.
- Establish IRRBB rate and risk repositories.

IRRBB Measurement and Mitigation

- Design IRRBB measurement methodologies (e.g. economic value, maturity gap, duration gap, earning at risk, net interest income and Value at Risk).
- Establish behavioural assumption mechanism and conduct behavioural model validations.
- Assess the impacts of interest rates strategy.
- Design and implement IRRBB stress testing methodologies (e.g. parallel yield curve shifts, non-parallel flattened and steepened yield curve shifts, and firm-wide enterprise scenario stress tests).
- Identify hedging strategies to mitigate interest rate risk by identifying appropriate debt and derivative instruments and strategies considering risk appetite, hedging costs and benefits, and liquidity constraints.
- Design and validate interest rate derivative valuation and modelling assumptions to help build and assess interest rate risk or valuation assumptions (considering defined peer results, industry-accepted ranges, or independent projections).

IRRBB Governance

- Define IRRBB strategy and design IRRBB risk appetite framework.
- Establish, embed and monitor IRRBB risk appetite and tolerance metrics.
- Design and consolidate IRRBB reporting and documentation to streamline the oversight of interest rate risk.
- Provide accounting assistance in relation to interest rate risk to address derivative accounting issues and compliance requirements, e.g. IFRS9 financial instruments.
- Validate IRRBB models and internal controls to address independence and governance controls.
- Assist in developing IRRBB policies, processes and procedures.
- Evaluate IRRBB capital allocation and monitor capital adequacy.
- Provide assistance in the implementation of the interest rate risk management infrastructure, including IT architecture, systems and data quality framework.
- Assist in the projection of macro-economic scenarios and the optimization of the interest rate mismatches.

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