

**Deloitte.**

Tool for managing interest  
rate risk in the banking  
book (Deloitte IRRBB tool)



# Manage interest rate with flexible capabilities in efficient way



Institutions should treat IRRBB as an important risk and always assess it explicitly and comprehensively in their risk management processes and internal capital assessment processes.

**EBA**

Interest rate risk management is significant and important today, in rapidly changing market environment. Institutions should identify their IRRBB exposures and ensure that interest rate risk is adequately measured, monitored and controlled. Exposure to IRRBB should be measured regularly in terms of changes in economic value and earnings, in shock conditions related to different interest rates. The increasing requirements of regulators

mean that banks need to increase the frequency of reporting, which often requires allocation of additional human resources and time, in addition to investing in new technologies and/or applications. Deloitte IRRBB Tool not only supports banks in this process, by helping them optimize the related costs, but may also be used in the day-to-day management of the interest rate risk.



**The regulatory landscape for IRRBB and CSRBB is developing** necessitating banks to accelerate internal discussions regarding IRRBB and CSRBB in terms of its definition and measurement approaches



**BCBS d368 IRRBB**  
04/2016

**BCBS standards on IRRBB**

Provide the basis for IRRBB management under Pillar II, including first definition of CSRBB.



**EBA/GL/2018/02**  
07/2018

**EBA Guidelines on IRRBB**

Banks are required to identify, manage and measure IRRBB as well as incorporate assessment and monitoring of CSRBB exposures in regular management.



**European Parliament and the Council/CRD V**  
12/2020

**CRDV/Articles 84 and 98(5)**

EBA shall develop and issue updated Guidelines and RTS on the management of IRRBB and CSRBB, the standardised approach for IRRBB and revisions of the SOT.



**EBA/GL/2022/14**  
**EBA/RTS/2022/09**  
**EBA/RTS/2022/10**  
10/2022

**EBA new Guidelines and RTS on IRRBB and CSRBB**

EBA defines the measurement of **CSRBB as a separate risk class**. The general governance related aspects are separately defined for CSRBB and are similar to those for IRRBB.

RTS on standardised approach specify criteria to identify a non-satisfactory IRRBB internal measurement system (IMS) that may lead to the **mandatory application of the SA**.

RTS on SOT include two important SOT-related changes: **replacement of the 20% SOT by the 15% SOT for EVE** and the **introduction of the SOT for NII**.

**Implementation of new requirements**  
From mid of 2023



*We assume guarantee compliance with current regulatory requirements as part of the tool's licens*

## IRRBB Measurement - key methodological aspects, problems and challenges



*Institutions should identify their existing and prospective exposure to IRRBB in a proportionate manner, depending on the level, complexity and riskiness of the nontrading book positions they face, or an increasing risk profile taking into account their business model, their strategies and the business environment they operate in or intend to operate in.”*

### EBA

#### All banks must be able to model cash flows

and subsequent market values for all balance sheet and off-balance sheet exposures under different interest rate scenarios, taking into account:

- selection of the yield curve,
- assessment of assumptions for revaluation,
- and modelling of future changes in volume.

**Behavioral assumptions:** all banks need to understand how changes in the interest rate environment change client behavior (prepayments, withdrawals, NMD balances) and measure the embedded option risk as well as the explicit option risk.

In particular, institutions should measure and monitor the overall impact of key modelling assumptions on the measurement of the IRRBB in terms of both **economic value and earnings measures**.



*Following an audit conducted at our bank, we received a series of recommendations to take specific actions. These included regular interest rate risk reporting. Before, we have relied on simple, widely available solutions. The post-audit recommendations mean that **we have to develop a new process, engage more people or invest in elaborate systems. We need something more than the simple solutions we have used thus far, yet we don't have a budget to invest in a sophisticated tool.** What we are looking for is a product that will allow us to manage the interest rate risk and optimize the related purchase and deployment costs at the same time.*

### One of the recurring comments from our clients

## Why is it worth to act now?



**IRRBB Management** poses a significant financial risk, in particular given the rapid changes in interest rates



The **complexity of calculations** is growing, driven both by regulatory requirements and the need to enhance the effectiveness of interest rate risk management



Considering the short implementation phase, **new regulatory package** for IRRBB and CSRBB represents a significant challenge for financial institutions



The **EBA announced that it will closely monitor implementation** of the new IRRBB and CSRBB regulations - we expect increased number of supervisory inspections

## What is our solution? How can we help

Deloitte offers comprehensive services, including advice on designing the entire interest rate risk management process. Complementing our offer is the **Deloitte IRRBB Tool**, which was developed based on many years of cooperation with our clients.

The **Deloitte IRRBB Tool** is a modern, desktop or web application for calculating interest rate risk measures. It allows performing fast and accurate calculations without simplifications and provides many parameterization options. It is not an extensive, complex and expensive system - it calculates only what is needed in terms of interest rate risk. The conversion algorithms implemented in the tool comply with regulatory requirements.

### IRRBB Tool:



Allows **quick and accurate calculation without the use of simplifications**



Allows the measurement of interest rate risk process to be fully automated



Allows calculations on large volumes of data - significantly exceeding Excel capabilities



Is not big, complex and expensive systems - **only calculates what you need**



The Client can **perform calculations quickly, meet regulatory requirements, save time and money**



**On the customer request, it can be easily extended** with valuation of financial instruments and other elements of financial risk management, in particular market risk: VaR, economic capital



Provides wide parameterization options. It can also be used to validate current calculations

## Interest risk measures covered by IRRBB tool

The application has built algorithms that allow the calculation of key measures of Interest Rate Risk in the Banking Book (IRRBB), required by regulatory authorities and described in detail in documents of the European Banking Supervision Authority (EBA) and the Basel Committee on Banking Supervision (BCBS):

- Interest Rate Gap (IR Gap)
- Net Interest Income (NII) with constant, run-off and dynamic balance sheet assumption
- Economic Value of Equity (EVE)
- Economic Value of Equity (EVE) calculated for Supervisory Outlier Test (SOT) scenarios
- Stress tests for NII and EVE
- Reversed Stress Tests for Economic Value of Equity (EVE)
- Reversed Stress Tests for Net Interest Income (NII)
- Sensitivity measures (Duration, BPV)

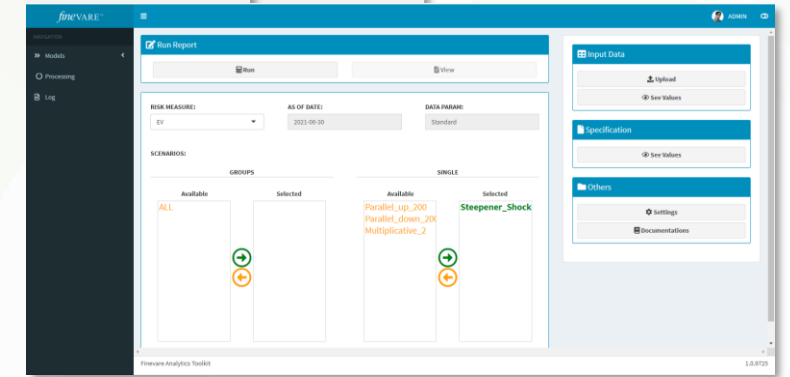
### Key characteristics

- Desktop or web application, used for calculating interest rate risk measures
- User-friendly settings in GUI (Graphical User Interface), easy for customization
- Technologically based on Python, significantly accelerating the determination of measures
- Allows preparation of management and regulatory IRRBB reports
- Meets European regulatory requirements
- Upon client request - allows the calculation of economic capital

## Functionalities of the solution

Calculation of IRRBB measures starts with the parametrization setting performed in a user-friendly GUI. For each calculation user is able to define the required report by the following functionalities:

- 1**  
**Parameterization of batch data** (possibility to use full or partially historical input data for analysis purpose)
- 2**  
**Output aggregation:**
  - per product
  - per time bucket
- 3**  
**Data import and parametrization**  
– flat file (csv, txt) extracted from databases in the specified format
- 4**  
**Data preparation & transformation**
- 5**  
**Portfolio definition** (set of transaction chosen based on currency, product, maturity and more)
- 6**  
**List of scenarios** (defined group of scenarios or single scenario)
- 7**  
**Automatic calculation** of scenarios for the construction of discount and projection curves
- 8**  
**Predefined customer's reports** might be easily added
- 9**  
**Set of parameters and configurations** used in the calculation of risk measures (upon client request - possibility to set up a configurations like day-count convention, interpolation method, etc.)
- 10**  
**Data export to csv files**
- 11**  
**Simulation calculations**
- 12**  
**Automatic recalculation of measures** - upon client request, for a selected date of recalculation and for a defined parameterization of exposures, curves and cash flows, at the level of: transactions, products and time baskets. We assume that the tool should effectively handle calculation on quite large tables with cash flows from bank transactions, even up to about a few million rows with transaction flows, in about 20 parameterizable scenarios, in a reasonable time.



### WEBSITE LINK

The range of balance sheet items supported in the IRRBB Tool includes all standard banking products and linear financial instruments that have defined contractual or modelled payment schedules.

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## Main features of Deloitte IRRBB Tool:

- It has a convenient graphical interface - intuitive for the user and easy to customize
- In terms of technology, it is a Python-based tool
- Tool installed on the Bank's workstation with no additional software needed or a web tool
- Allows the creation of daily reports for management and regulatory purposes
- Ensures conversion compliance with European regulatory requirements for interest rate risk of the banking book



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