

# Just in Time

## Interest Rate Risk in the Banking Book

### *Overview and Regulatory Evolution*

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# At a Glance



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# 01

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## Executive Summary



# Executive Summary

## Context



- The main purpose of this document is to provide an updated overview of the regulation that sets the measure of **Interest Rate Risk in the Banking Book (IRRBB)**, with particular attention to the concept of **proportionality** and the possibility of **applying advanced calculation models** also for medium-sized banks (classes 2 and 3).
- The current regulation, linked to the integrated framework of **Basel**, places the IRRBB measure in the context of the **Pillar II**.
- Although in a context of **proportionality**, this framework allows the **use of more advanced models and scenarios** (i.e., parallel *shifts* of the curve) for **class 2 and 3 banks**.
- The **guidelines** issued by the **EBA** in **2018** ([EBA/GL/2018/02](#)) and the consequent amendments to the **Bank of Italy Circular** ([285/2013](#)) confirm this orientation and outline a new context.
- **Starting from 2020 conditional cash flow models** are explicitly required and expected, which considers **behaviors** linked to both **rate scenarios** and **optional components** on products.

# 02

## Regulatory Framework



# Regulatory Framework 1/3

## Basel 2



- The **Interest Rate Risk in the Banking Book** (IRRBB) measure is required from **Basel 2 (Directive 2006/49/CE)** as part of the **Pillar II**, inside the Internal Capital Adequacy Assessment Process and Supervisory Review and Evaluation Process (**ICAAP-SREP**). Together with the **Credit Concentration Risk**, IRRBB is the most significant risk and it has a quantitative measure. The practical discipline is represented by the Bank of Italy **Circular no. 263/2006**.
- In this first formulation, some **guidelines** are provided:
  - A **proportionality** principle is established, i.e., the use of advanced models, with related investments, is validated in terms of institutions sizes and/or portfolio complexity. In this way, in a nutshell, banks are divided into **3 classes**: **Class 1** banks with internal models; **Class 2** banks with standardized models and **profit larger than 3.5 mld €**; **Class 3** banks with standardized models and profit lower than 3.5 mld €<sup>(1)</sup>.
  - Based on this principle and especially referring to IRRBB, the Title III, Chapter 1 of 263/2006 states as following for **Class 2 banks**: «[...]with regard to concentration, interest rate and liquidity risks, Class 2 banks shall **assess the advisability of refining the simplified methodologies set out in Annexes B and C** [...]».
  - For IRRBB a **calculation** is established in the mentioned legislation, Annex C, for relevant currencies, in which **a shock of 200 basis points is applied on the net exposure's portfolio**, and the change in value is determined in the worsening case, i.e., assuming positive or negative shocks by time range, based on the exposure sign (long/short). In other words, **the sum of the variations by range in absolute value is determined**. This stress on interest rates must be **less than 20%** of the regulatory capital.

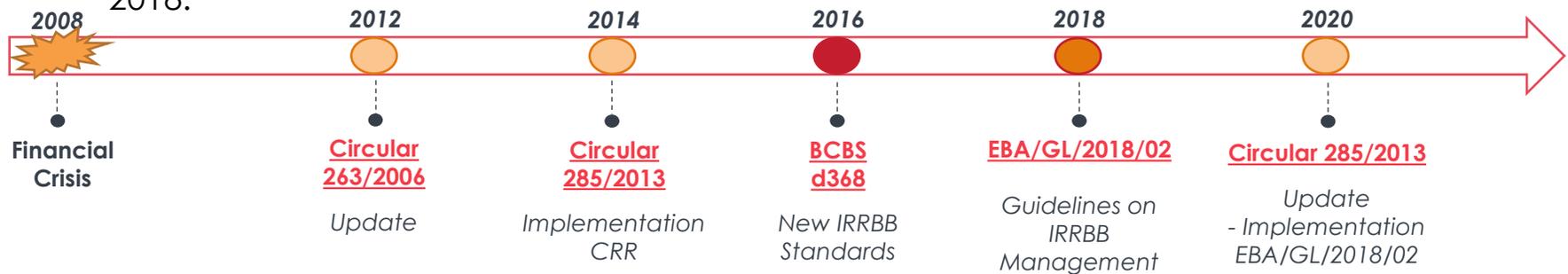
<sup>(1)</sup> Now adguted to 4 mld €

# Regulatory Framework 2/3

## Developments



- **2012: Update of the Bank of Italy Circular 263/2006.** In addition to the shocks of 200 basis points on the net exposures, the chance to implement **percentiles** of rate changes is introduced in order to consider more plausible scenarios; similar considerations are introduced for **stress scenarios**.
- **2014: Bank of Italy Circular 285/2013.** Operational translation to Basel 3 framework (**Regulation EU 575/2013 - CRR**) provides, since its entry into force (January 2014), the **size classes** for the banks and the computation according to **parallel shocks** or **percentiles**.
- **2016: Reform of the Basel framework for IRRBB (BCBS d368).** In general, starting from the financial crisis of 2008 the Basel Committee (BCBS) began a long review to the IRRBB discipline, ended in document 368 of April 2016, aware that for many reasons the "simplified" methods could not be adjusted (see the next slide).
- **2018: EBA guidelines on IRRBB management (EBA/GL/2018/02).**
- **2020: Update of the Bank of Italy Circular 285/2013.** Implementation of EBA guidelines of 2018.



● Bank of Italy 
 ● EU Regulation 
 ● Basel standards

# Regulatory Framework 3/3

## New Basel Integrated Framework



Many reasons led to **Basel reform of IRRBB standards** (2016 – to date in the integrated Basel framework):

- For sight deposits, especially on liabilities, a statistical modelling could be required to evaluate their effective duration.
- The legislation with the deregulation on the mortgages probability, as well as the increase in the share of mortgages with the **rate switch** and other **options**, makes necessary to model these options, with **behavioural logics** on customers reactions to interest rate scenarios. This is often inaccurately summarized with the term **prepayment**.
- Finally, many suppositions, such as the scenarios of 200 basis points, as well as the **static nature** of the portfolio (positions renewal), **are too unrealistic** even for medium-sized institutions.

**Reform** main features:

- IRRBB **remained a Pillar II risk**, in contrast to what was assumed in the first years of the revision.
- IRRBB measurement must consider both the effects of **changes in value** and the effects on the **income statement and profits**, considering the different accounting classifications.
- Precise policies must be provided for the identification, measurement, management of IRRBB in the **ICAAP** process, including issues of **data quality** and **reporting**.
- Both the sub-components of IRRBB and the methodologies for the shock scenarios are structured in detail, as reported in the following slides.

# 03

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## Interest Rate Risk in the Banking Book



# Interest Rate Risk in Banking Book 1/5

## IRRBB Components



**Table 1: Identification of sub-components of interest rate risk in the non-trading book**

Component	Method	Focus
<b>Gap risk</b>	Gap analysis	The volume of mismatches in different time bands
	Partial duration for yield curve risk	The dispersion and concentration of mismatches in different time bands
<b>Basis risk</b>	Inventory of instrument groups based on different interest rates	Use of derivatives and other hedging instruments in terms of different bases, convexity and timing difference neglected by gap analysis
		Behavioural options
<b>Option risk</b> (automatic and behavioural options)	Inventory of all instruments with embedded or explicit options	The volume of mortgages, current accounts, savings and deposits where the customer has the option to deviate from the contractual maturity; the volume of commitments with interest rate sensitive customer drawings
		Automatic interest rate options
		Caps, and floors embedded in assets and liabilities; swaptions or prepayment options embedded in wholesale assets and liabilities; and explicit caps, floors and swaptions

This matrix is used to identify the components and the associated IRRBB measurement. Notice the **relevance of the behavioural aspects**. Concerning the **cash flows** scenarios, both **unconditional** and **conditional** on interest rate scenarios are expected (the latter are therefore behavioural)

Source: [EBA/GL/2018/02](#)

# Interest Rate Risk in Banking Book 2/5

## Interest Rate Scenarios 1/2



- **EBA 2018** guidelines for the **interest rate scenarios**.

*101. In testing vulnerabilities under stressed conditions, institutions should use larger and more extreme shifts and changes in interest rates than those used for the purpose of ongoing management, including at least the following:*

- a) substantial changes in the relationships between key market rates (basis risk);*
- b) sudden and substantial shifts in the yield curve (both parallel and non-parallel);*
- c) breakdowns of key assumptions about the behaviour of asset and liability classes;*
- d) changes in key interest rate correlation assumptions;*
- e) significant changes to current market and macro conditions and to the competitive and economic environment, and their possible development; and*
- f) specific scenarios that relate to the individual business model and profile of the institution.*

Source: [EBA/GL/2018/02](#)

# Interest Rate Risk in Banking Book 3/5

## Interest Rate Scenarios 2/2



- The **shock scenarios of standardized interest rates**, as in the Annex III of [EBA/GL/2018/02](#) guidelines, are instead listed below.

*The six interest rate shock scenarios for measuring EVE under the standard EVE outlier test are:*

- i. parallel shock up;*
- ii. parallel shock down;*
- iii. steeper shock (short rates down and long rates up);*
- iv. flattener shock (short rates up and long rates down);*
- v. short rates shock up; and*
- vi. short rates shock down.*

*Institutions should apply the six above-mentioned interest rate shock scenarios to capture parallel*

*and non-parallel gap risks for EVE. These scenarios are applied to IRRBB exposures in each currency*

*separately for which the institution has material positions\*.*

*\*Material positions are defined in section 4.5, 'Supervisory outlier test'.*

# Interest Rate Risk in Banking Book 4/5

## Proportionality 1/2



- For the purpose of applying the different methodologies, EBA guidelines established the **Sophistication Matrix**, which provides the categorization in 4 categories of institutions laid down in the EBA SREP guidelines of 2014 ([EBA/GL/2014/13](#))

FINAL REPORT ON GUIDELINES ON THE MANAGEMENT OF INTEREST RATE RISK ARISING FROM NON-TRADING BOOK ACTIVITIES

EBA EUROPEAN BANKING AUTHORITY

IRRBB metric and modelling		Indicative supervisory expectations regarding IRRBB metric and modelling depending on the institution's sophistication category			
Cash flow modelling	Metric	Category 4 institution	Category 3 institution	Category 2 institution	Category 1 institution
Unconditional cash flows (it is assumed that the <i>timing</i> of cash flows is independent of the specific interest rate scenario)	<b>Earnings-based:</b> Gap analysis: • Repricing gap	Time buckets advised in the Basel Committee on Banking Supervision's Standards 'Principles for the Management and Supervision of Interest Rate Risk in the banking book' from April 2016 BCBS Standards).		[Gap based on evolving size and composition of the banking book due to business responses to differing interest rate environments. Including projected commercial margins consistent with the interest rate scenario (see section 4.4, 'Measurement').]*	
	<b>Economic value:</b> Duration analysis: • Modified duration/PV01 of equity • Partial modified duration/partial PV01	Time buckets advised in BCBS Standards. Application of standard shocks. Yield curve model with tenors corresponding to the time buckets.	Time buckets advised in BCBS Standards, application of partial duration weights. Application of standard shocks and other interest rate shock and stress scenarios (see section 4.4, 'Measurement'). Yield curve model with tenors corresponding to the time buckets.	[Partial duration computed per instrument type and time bucket. Application of standard and other interest rate shock and stress scenarios (see section 4.4, 'Measurement'). Yield curve model with tenors corresponding to the time buckets.]*	[Partial duration computed per transaction and time bucket. Application of standard and other interest rate shock and stress scenarios (see section 4.4, 'Measurement'). Yield curve model with tenors corresponding to the time buckets.]*

Also for **category 2 and 3** banks there is the possibility to **use their own scenarios** besides the standard ones.

# Interest Rate Risk in Banking Book 5/5

## Proportionality 2/2



- Bank of Italy Circular [285/2013](#), in its latest update, maintains the banks division into 3 groups. The **concept of proportionality** is thus represented:

*«In measuring the interest rate risk from the profit point of view, banks consider, **on a best effort basis**, both the impacts of interest rate changes on the interest margin, and the changes in the items value at Fair Value recognized in equity, still considering different reference scenarios [...]»\**

- Again, on the possibility to adopt proprietary internal models:

*«**Class 1 and 2 banks** adopting standardized measures, relating to concentration and interest rate risks on the banking book in terms of economic value changes, **consider weather to improve the simplified methodologies proposed in Annex B and C (6)**. Relating to the interest rate risk on banking book in terms of economic value changes, banks can refer to the indications contained in Annex II of the EBA guidelines (7). In order to measure the interest rate risk on the banking book in terms of interest margin changes, **class 1 and 2 banks which use standardized methodologies can adopt, even refining it, the methodology described in Annex C-bis, or they can implement different methodologies**, in line with the sophistication matrix contained in Annex II of the EBA guidelines [...]»\**

*\*Translated from Bank of Italy Circular [285/2013](#)*

# Sources and Literature

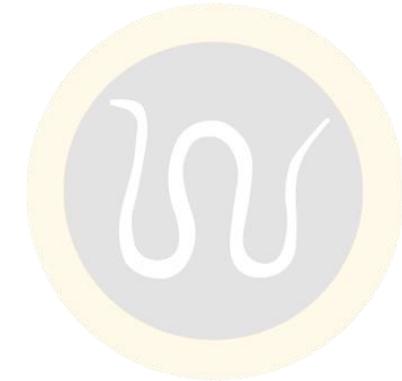
[01] **Bank of Italy.** [Circular 285/2013](#). Bank of Italy, September 2020.

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[02] **European Banking Authority.** [Final Report on guidelines on the management of interest rate risk arising from non-trading book activities](#). European Banking Authority, July 2018.

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[03] **European Banking Authority.** [Guidelines on common procedures and methodologies for the supervisory review and evaluation process \(SREP\)](#). European Banking Authority, December 2014.



# Company Profile

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