



EBA/GL/2018/02

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19 July 2018

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## Final Report

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Guidelines on the management of interest rate risk arising from non-trading book activities

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# 1. Executive summary

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The European Banking Authority (EBA) has updated its Guidelines on the management of interest rate risk arising from non-trading activities, which were published on 22 May 2015<sup>1</sup>.

According to Article 84 of Directive 2013/36/EU (Capital Requirements Directive - CRD)<sup>2</sup>, competent authorities shall ensure that institutions implement systems to identify, evaluate and manage the risk arising from potential changes in interest rates that affect an institution's non-trading activities.

The aim of these guidelines is to set out supervisory expectations regarding the management of interest rate risk arising from non-trading book activities (IRRBB). These guidelines build upon the EBA guidelines published on 22 May 2015 and take account of existing supervisory expectations and practices including the Standards on interest rate risk in the banking book published by the Basel Committee on Banking Supervision (BCBS Standards) in April 2016<sup>3</sup>.

The BCBS Standards will be implemented within the EU in two phases: first, through this update of the EBA guidelines, and, second, through the ongoing revision of the CRD and Regulation (EU) No 575/2013 (Capital Requirements Regulation - CRR) and the enactment of a number of technical standards that are expected to be mandated to the EBA in the revised CRD and CRR.

The updated guidelines are structured into six main sections:

- Subject matter, scope and definitions;
- General provisions;
- Internal capital;
- Governance;
- Measurement; and
- Supervisory outlier test.

The guidelines highlight that institutions should develop and use their own internal arrangements to identify, measure, monitor and control IRRBB, while respecting the supervisory expectations set out in these guidelines.

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<sup>1</sup> EBA/GL/2015/08. Available online: <http://www.eba.europa.eu/regulation-and-policy/supervisory-review-and-evaluation-srep-and-pillar-2/guidelines-on-technical-aspects-of-the-management-of-interest-rate-risk-arising-from-non-trading-activities>.

<sup>2</sup> Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (1) - OJ L 176, 27.6.2013.

<sup>3</sup> Available online: <http://www.bis.org/bcbs/publ/d368.htm>.

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The supervisory outlier test is a supervisory tool whose objective is to inform supervisors about the exposure of institutions to IRRBB by obtaining comparable information for all institutions.

## Next steps

The guidelines will be translated into the official EU languages and published on the EBA website. The deadline for competent authorities to report whether or not they comply with the guidelines will be 2 months after the publication of the translations.

Institutions and competent authorities are expected to apply these guidelines from 30 June 2019, taking into account longer transitional arrangements for the provisions on CSRBB and for the application of the new threshold of 15% of Tier 1 as an 'early warning signal' for the supervisory outlier test, calculated based on the six shock scenarios as set out in Annex III. The existing guidelines on the management of interest rate risk arising from non-trading activities will be repealed at the same time.

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## 2. Background and rationale

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### Background

1. Interest rate risk arising from non-trading book activities (IRRBB) is an important financial risk for credit institutions, which is considered under Pillar 2. The supervisory framework assumes that banks develop their own methodologies and processes for identification, measurement, monitoring and control of this risk. These methodologies and internal processes, including the assumptions used, are subject to the supervisory review and evaluation process carried out by supervisory authorities.
2. In order to set out supervisory expectations regarding the management of IRRBB, the EBA published Guidelines on the management of IRRBB in May 2015. These guidelines took into account existing supervisory expectations and practices including the Principles for the management and supervision of interest rate risk published by the Basel Committee on Banking Supervision (BCBS) in 2004.
3. In April 2016, the BCBS published an updated version of its standards on the management of IRRBB (BCBS Standards) to reflect changes in markets and supervisory practices experienced since 2004. The BCBS Standards have confirmed the Pillar 2 approach to IRRBB and introduced some new elements in the management of IRRBB. The BCBS Standards are expected to be implemented by 2018.
4. In November 2016, the European Commission published its legislative proposals to amend both the CRD and the CRR<sup>4</sup>. The proposals also introduce amendments to the existing provisions on IRRBB. Moreover, it is also proposed that the EBA will be mandated to develop several technical standards on IRRBB.
5. Therefore, the new BCBS Standards will be implemented at EU level through a number of policy products including EBA guidelines and technical standards, which are expected to be mandated to the EBA in the revised CRD/CRR.
6. Given its mandate to foster supervisory convergence, the EBA has decided to implement a transitional and progressive approach in developing different IRRBB-related regulatory products in order to bridge the timing gaps and ensure consistency between those products. In the first phase, the revised EBA guidelines would initiate the implementation of the new BCBS Standards, while also improving the existing guidelines, in particular in those areas where the supervisors feel the need for a more practical approach.

<sup>4</sup> Proposal to amend Directive 2013/36/EU on banking prudential requirements. Proposal to amend Regulation (EU) No 575/2013 on banking prudential requirements. Available online: [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/prudential-requirements\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/prudential-requirements_en).

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7. In the near future, more detailed requirements would be included in the technical standards developed following the enactment of the ongoing CRD/CRR revision. The European Commission's legislative proposals of 23 November 2016<sup>5</sup> include several mandates for the EBA to develop regulatory technical standards with specific reference to the standardised methodology, the parameters for the supervisory outlier test, and disclosure requirements related to IRRBB.

## Update of the guidelines

8. The updated guidelines introduce changes to both the structure of the guidelines and their content.

9. As far as the structure is concerned, two specific amendments have been made. First, the Glossary and Definitions sections have been merged to create a single section of definitions. Second, the existing guidelines are structured as high-level guidelines followed by the detailed guidelines. In this new version the high-level and the detailed guidelines have been merged in order to ensure their internal consistency and any overlaps are eliminated as much as possible.

10. While the new BCBS Standards are addressed to both competent authorities and institutions, the approach taken in updating these guidelines was to include the principles addressed to institutions. Principles addressed to competent authorities are included in the revised SREP Guidelines<sup>6</sup>.

11. The main changes have been reflected in the content of the guidelines, which are now structured into six main sections:

- (a) Definitions;
- (b) General provisions;
- (c) Capital identification, calculation and allocation;
- (d) Governance;
- (e) Measurement; and
- (f) Supervisory outlier test.

12. While the current guidelines explicitly state that they do not apply to credit spread risk from non-trading book activities (CSRBB), the scope of these updated guidelines has been expanded, thus also covering CSRBB in line with the BCBS Standards. The updated guidelines provide a

<sup>5</sup> European Commission, Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements and amending Regulation (EU) No 648/2012, 23.11.2016, COM(2016) 850 final.

European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures, 23.11.2016, COM(2016) 854 final.

<sup>6</sup> The EBA SREP Guidelines have been developed in accordance with Article 107(3) of the Capital Requirements Directive (CRD) and aim to promote common procedures and methodologies for the supervisory review and evaluation process (SREP) referred to in Article 97 of the CRD and for the supervisory assessment of the organisation and treatment of risks referred to in Articles 76 to 87 of the CRD (including IRRBB risk referred to in Article 84). The initial guidelines issued in December 2014 were revised in 2017.

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definition of CSRBB and a high-level expectation for institutions to identify their CSRBB exposures and ensure that CSRBB is adequately monitored and assessed.

13. For the section on the internal capital allocation for IRRBB, the existing expectations have been retained. Some more detailed guidance is provided in the updated guidelines on the elements to be taken into account for the capital adequacy assessments of IRRBB. More detailed guidance is also provided for the two measures that should be taken into account for the determination of internal capital adequacy for IRRBB: the risks to economic value and to future earnings that could arise from adverse movements in interest rates.
  14. The section on governance builds upon the existing guidelines as well as on the principles specified in the BCBS Standards. Given this, the updated guidelines bring new guidance on the appropriate assessment of new products and activities in terms of IRRBB, delegation of monitoring and management of IRRBB, risk appetite and policy limits, internal controls, and model validation.
  15. For the section on measurement, the existing guidelines have been retained. In addition, some additional expectations originating in the BCBS Standards have been added, e.g. a provision on currency-specific shocks for material currencies and an explicit provision for institutions to consider negative interest rates in low interest rate environments. Guidance for banks to measure and monitor the IRRBB originated by interest rate derivatives has also been added.
  16. Whereas all of the above sections provide qualitative guidance for institutions to manage their IRRBB exposures following their own internal Pillar 2 approaches, the focus of the guidance for the supervisory outlier test is aimed at increasing comparability of the results. The supervisory outlier test is an important tool for competent authorities to monitor this risk and perform peer reviews.
  17. The supervisory outlier test is a supervisory tool whose objective is to inform supervisors about the exposure of institutions to IRRBB by obtaining comparable information for all institutions. In the interest of increasing the comparability of results among institutions, these guidelines introduce a set of principles that institutions should use when calculating the test:
    - (a) All interest rate sensitive instruments should be included.
    - (b) Small trading book business should be included unless its interest rate risk is captured in another risk measure.
    - (c) CET1 and other perpetual own funds without any call dates should be excluded.
    - (d) Automatic and behavioural options should be considered.
    - (e) Pension obligations should be included unless their interest rate risk is captured in another measure.
    - (f) Repayments and repricing of principal should be considered as well as any interest rate payments.
    - (g) If the NPE ratio is above the materiality threshold of 2%, NPEs should be included net of provisions and should reflect the expected cash flow associated with these assets.
    - (h) Instrument-specific interest rate floors should be considered.
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- (i) The treatment of commercial margins and other spread components in interest payments in terms of their exclusion or inclusion into the cash flows should be in accordance with the institution's internal management and measurement approach.
- (j) Run-off balance sheet is to be applied.
- (k) Lower reference rate of -100 basis points (linear function between -100 (0 year) and 0 basis points (20+ years)) is to be applied.
- (l) Material currencies are to be considered.
- (m) For exposures in various currencies, aggregation of negative and positive changes is to be applied weighting the positive changes by a factor of 50%.
- (n) One risk-free yield curve is to be applied per currency.
- (o) For non-maturity deposits, maximum average maturity of 5 years is to be used.

18. The updated guidelines include two thresholds to measure the change in economic value of equity. The first threshold stems from the CRD and assumes that institutions calculate the impact of parallel changes in interest rates of +/-200 basis points on their own funds. If the decline in economic value is greater than 20% of institution's own funds, the institution should inform the competent authority immediately.

19. The second threshold originates from the BCBS Standards. The institutions are expected to calculate the impact of six predefined shock scenarios on their own funds. If the decline in economic value is greater than 15% of Tier 1, the institution should inform the competent authority.

20. The BCBS threshold of 15% of Tier 1, calculated based on the six shock scenarios as set out in Annex III, will act as an 'early warning signal' on top of the existing threshold of 20% of the institution's own funds initially only for SREP category 1 and 2 institutions<sup>7</sup>.

21. The new threshold of 15% of Tier 1 will apply to SREP category 3 and 4 institutions only 6 months after the guidelines enter into force. This is in line with the transitional approach that allows for a timely preparation for the calculation of the new outlier test and provides the smaller institutions with a longer phase-in period.

22. It is not expected that new regular reporting requirements will be put in place, nor will there be any automatic supervisory measures linked to breaches of the 15% threshold. The 15% threshold is introduced not as a hard threshold but rather as a trigger for an enhanced supervisory dialogue.

<sup>7</sup> As prescribed by the EBA SREP Guidelines, competent authorities should categorise all institutions under their supervisory remit into four categories, based on the institution's size, structure and internal organisation, and the nature, scope and complexity of its activities. **Category 1 institutions** include global systemically important institutions (G-SIIs) and other systemically important institutions (O-SIIs) and, as appropriate, other institutions determined by competent authorities, based on an assessment of their size and internal organisation and the nature, scope and complexity of their activities. **Category 2 institutions** include medium to large institutions other than those included in category 1 that operate domestically or with sizable cross-border activities. **Category 3 institutions** include small to medium institutions that do not qualify for category 1 or 2, operating domestically or with non-significant cross-border operations, and operating in a limited number of business lines. **Category 4 institutions** include all other small non-complex domestic institutions that do not fall into categories 1 to 3 (e.g. with a limited scope of activities and non-significant market shares in their lines of business).

The SREP Guidelines are available on the EBA website: <http://www.eba.europa.eu/regulation-and-policy/supervisory-review-and-evaluation-srep-and-pillar-2/guidelines-for-common-procedures-and-methodologies-for-the-supervisory-review-and-evaluation-process-srep->.

### 3. Guidelines

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EBA/GL/2018/02

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19 July 2018

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## Guidelines

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on the management of interest rate risk  
arising from non-trading book activities

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# Abbreviations

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<b>ALCO</b>	asset and liability management committee
<b>ALM</b>	asset and liability management
<b>BCBS</b>	Basel Committee on Banking Supervision
<b>BSG</b>	Banking Stakeholder Group
<b>CET1</b>	Common Equity Tier 1
<b>CSRBB</b>	credit spread risk from non-trading book activities
<b>CRD</b>	Capital Requirements Directive (Directive 2013/36/EU)
<b>CRR</b>	Capital Requirements Regulation (Regulation (EU) No 575/2013)
<b>EBA</b>	European Banking Authority
<b>EaR</b>	earnings at risk
<b>EV</b>	economic value
<b>EVaR</b>	economic value at risk
<b>EVE</b>	economic value of equity
<b>FVOCI</b>	fair value through other comprehensive income
<b>ICAAP</b>	Internal Capital Adequacy Assessment Process
<b>IFRS 9</b>	International Financial Reporting Standard 9 – Financial instruments
<b>IMS</b>	internal measurement system
<b>IR</b>	interest rate
<b>IRRBB</b>	interest rate risk arising from the banking book (referred to in CRD as interest rate risk arising from non-trading book activities)
<b>IT</b>	information technology
<b>MIS</b>	management information system
<b>NII</b>	net interest income
<b>NMD</b>	non-maturity deposit
<b>NPE</b>	non-performing exposure
<b>P&amp;L</b>	profit and loss
<b>QIS</b>	quantitative impact study
<b>SREP</b>	supervisory review and evaluation process

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# 1. Compliance and reporting obligations

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## Status of these guidelines

1. This document contains guidelines issued pursuant to Article 16 of Regulation (EU) No 1093/2010<sup>8</sup>. In accordance with Article 16(3) of Regulation (EU) No 1093/2010, competent authorities and financial institutions must make every effort to comply with the guidelines.
2. Guidelines set the EBA view of appropriate supervisory practices within the European System of Financial Supervision or of how Union law should be applied in a particular area. Competent authorities as defined in Article 4(2) of Regulation (EU) No 1093/2010 to whom guidelines apply should comply by incorporating them into their practices as appropriate (e.g. by amending their legal framework or their supervisory processes), including where guidelines are directed primarily at institutions.

## Reporting requirements

3. According to Article 16(3) of Regulation (EU) No 1093/2010, competent authorities must notify the EBA whether they comply or intend to comply with these guidelines, or otherwise with reasons for non-compliance, by (dd.mm.yyyy). In the absence of any notification by this deadline, competent authorities will be considered by the EBA to be non-compliant. Notifications should be sent by submitting the form available on the EBA website to [compliance@eba.europa.eu](mailto:compliance@eba.europa.eu) with the reference 'EBA/GL/2018/xx'. Notifications should be submitted by persons with appropriate authority to report compliance on behalf of their competent authorities. Any change in the status of compliance must also be reported to the EBA.
4. Notifications will be published on the EBA website, in line with Article 16(3).

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<sup>8</sup> Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC, (OJ L 331, 15.12.2010, p.12).

## 2. Subject matter, scope and definitions

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### Subject matter and scope of application

5. These guidelines specify:

- (a) the systems to be implemented by institutions for the identification, evaluation and management of the interest rate risk arising from the non-trading book activities, also referred to as interest rate risk arising from the banking book, (IRRBB) referred to in Article 84 of Directive 2013/36/EU;
- (b) institutions' internal governance arrangements in relation to the management of IRRBB;
- (c) sudden and unexpected changes in the interest rate in accordance with Article 98(5) of Directive 2013/36/EU for the purposes of the review and evaluation performed by competent authorities;
- (d) general expectations for the identification and management of credit spread risk in the non-trading book (CSRBB).

### Addressees

6. These guidelines are addressed to competent authorities referred to in point (i) of Article 4(2) of Regulation (EU) No 1093/2010, and to financial institutions referred to in Article 4(1) of that regulation which are also institutions in accordance with point 3 of Article 4(1) of Regulation (EU) No 575/2013.

### Definitions

7. Unless otherwise specified, terms used and defined in Directive 2013/36/EU<sup>9</sup> and in Regulation (EU) No 575/2013<sup>10</sup> have the same meaning in the guidelines. In addition, for the purposes of these guidelines, the following definitions apply:

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Interest rate risk arising from non-trading book activities	The current or prospective risk to both the earnings and the economic value of an institution arising from adverse movements in interest rates that affect interest rate sensitive
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<sup>9</sup> Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (1) - OJ L 176, 27.6.2013.

<sup>10</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 – OJ L 176, 27.6.2013.

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	instruments, including gap risk, basis risk and option risk.
Interest rate sensitive instruments	Assets, liabilities and off-balance-sheet items in the non-trading book, excluding assets deducted from CET1 capital, e.g. real estate or intangible assets or equity exposures in the non-trading book.
Gap risk	Risk resulting from the term structure of interest rate sensitive instruments that arises from differences in the timing of their rate changes, covering changes to the term structure of interest rates occurring consistently across the yield curve (parallel risk) or differentially by period (non-parallel risk).
Basis risk	Risk arising from the impact of relative changes in interest rates on interest rate sensitive instruments that have similar tenors but are priced using different interest rate indices. Basis risk arises from the imperfect correlation in the adjustment of the rates earned and paid on different interest rate sensitive instruments with otherwise similar rate change characteristics.
Option risk	Risk arising from options (embedded and explicit), where the institution or its customer can alter the level and timing of their cash flows, namely the risk arising from interest rate sensitive instruments where the holder will almost certainly exercise the option if it is in their financial interest to do so (embedded or explicit automatic options) and the risk arising from flexibility embedded implicitly or within the terms of interest rate sensitive instruments, such that changes in interest rates may affect a change in the behaviour of the client (embedded behavioural option risk).
Credit spread risk from non-trading book activities (CSRBB)	The risk driven by changes in the market perception about the price of credit risk, liquidity premium and potentially other components of credit-risky instruments inducing fluctuations in the price of credit risk, liquidity premium and other potential components, which is not explained by IRRBB or by expected credit/(jump-to-)default risk.
Earnings measures	Measures of changes in expected future profitability within a given time horizon resulting from interest rate movements.

Economic value (EV) measures	Measures of changes in the net present value of the interest rate sensitive instruments over their remaining life resulting from interest rate movements. EV measures reflect changes in value over the remaining life of the interest rate sensitive instruments, i.e. until all positions have run off.
Economic value of equity (EVE) measures	A specific form of EV measure where equity is excluded from the cash flows.
Conditional cash flow modelling	Cash flow modelling under the assumption that the timing and amount of cash flows is dependent on the specific interest rate scenario.
Unconditional cash flow modelling	Cash flow modelling under the assumption that the timing and amount of cash flows is independent of the specific interest rate scenario.
Run-off balance sheet	A balance sheet where existing non-trading book positions amortise and are not replaced by any new business.
Dynamic balance sheet	A balance sheet incorporating future business expectations, adjusted for the relevant scenario in a consistent manner.
Constant balance sheet	A balance sheet including off-balance-sheet items in which the total size and composition are maintained by replacing maturing or repricing cash flows with new cash flows that have identical features with regard to the amount, repricing period and spread components.

## 3. Implementation

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### Date of application

8. Competent authorities should ensure that institutions apply these guidelines from 30 June 2019 and reflect the guidelines in the 2019 ICAAP cycle, i.e. ICAAP reports presented in 2020, based on end-year 2019 data, should take these guidelines into account.

### Transitional provisions

9. These specific provisions of the guidelines are subject to the following transitional arrangements:
  - (a) For institutions that fall under SREP categories 3 and 4 as set out in the EBA *Guidelines on the revised common procedures and methodologies for the supervisory review and evaluation process and supervisory stress testing* (SREP Guidelines)<sup>11</sup>, paragraph 18 will apply as from 31 December 2019 [6 months after the application date of the guidelines].
  - (b) For SREP category 3 and 4 institutions, paragraph 114 will apply as from 31 December 2019 [6 months after the application date of the guidelines].

### Repeal

10. The following guidelines are repealed with effect from 30 June 2019: Guidelines on the management of interest rate risk arising from non-trading activities (EBA/GL/2015/08)<sup>12</sup>.

<sup>11</sup> EBA/GL/2014/13. Available online: <http://www.eba.europa.eu/regulation-and-policy/supervisory-review-and-evaluation-srep-and-pillar-2/guidelines-for-common-procedures-and-methodologies-for-the-supervisory-review-and-evaluation-process-srep>

<sup>12</sup> Available online: <http://www.eba.europa.eu/regulation-and-policy/supervisory-review-and-evaluation-srep-and-pillar-2/guidelines-on-technical-aspects-of-the-management-of-interest-rate-risk-arising-from-non-trading-activities>.

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# 4. Guidelines on the management of interest rate risk arising from non-trading book activities

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## 4.1 General provisions

11. 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. A different approach should be fully documented and justified in the course of the supervisory dialogue.
12. Institutions should identify their IRRBB exposures and ensure that IRRBB is adequately measured, monitored and controlled.
13. Institutions should manage and mitigate risks arising from their IRRBB exposures that affect both their earnings and economic value.
14. When calculating the impact of interest rate movements in the earnings perspective, institutions should consider not only the effects on interest income and expenses, but also the effects of the market value changes of instruments — depending on accounting treatment — either shown in the profit and loss account or directly in equity (e.g. via other comprehensive income). Institutions should take into account the increase or reduction in earnings and capital over short- and medium-term horizons resulting from interest rate movements.
15. The change in earnings should be the difference between expected earnings under a base scenario and expected earnings under an alternative, more adverse shock or stress scenario from a going-concern perspective.
16. Institutions should consider non-performing exposures<sup>13</sup> (net of provisions) as interest rate sensitive instruments reflecting expected cash flows and their timing.
17. Institutions should consider interest rate derivatives, as well as off-balance-sheet items such as interest rate sensitive loan commitments, as interest rate sensitive instruments.
18. Institutions should monitor and assess their CSRBB-affected exposures, by reference to the asset side of the non-trading book, where CSRBB is relevant for the risk profile of the institution.
19. When implementing the guidelines, institutions should identify their existing and prospective exposure to IRRBB in a proportionate manner, depending on the level, complexity and riskiness of the non-trading book positions they face, or an increasing risk profile taking into account their

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<sup>13</sup> Non-performing exposures as defined in Annex V of Regulation (EU) 680/2014.

business model, their strategies and the business environment they operate in or intend to operate in.

20. Based upon the assessment of their existing and prospective exposure to IRRBB, institutions should consider elements and expectations stipulated in this section and in the sections on capital identification, calculation and allocation (section 4.2.), governance (section 4.3.) and measurement (section 4.4.) and implement them in a way that is commensurate with existing and prospective exposure to IRRBB.
21. In addition to the existing and prospective exposure to IRRBB, when implementing the guidelines, institutions should also consider their general level of sophistication and internal approaches to risk management to make sure that their approaches, processes and systems for the management of IRRBB are coherent with their general approach to risk management and their specific approaches, processes and systems implemented for the purpose of the management of other risks.

## 4.2 Capital identification, calculation and allocation

22. When evaluating the amounts, types and distributions of internal capital pursuant to Article 73 of Directive 2013/36/EU, institutions should base the contribution of IRRBB to the overall internal capital assessment on the institution's internal measurement systems outputs, taking account of key assumptions and risk limits. The overall level of capital should be commensurate with both the institution's actual measured level of risk (including for IRRBB) and its risk appetite, and be duly documented in its report on the Internal Capital Adequacy Assessment Process (ICAAP report).
  23. Institutions should demonstrate that their internal capital is commensurate with the level of IRRBB, taking into account the impact on internal capital of potential changes in the institution's economic value and future earnings resulting from changes in interest rates. Institutions are not expected to double-count their internal capital for EV and earning measures.
  24. In their ICAAP analysis of the amount of internal capital required for IRRBB, institutions should consider:
    - (a) internal capital held for risks to economic value that could arise from adverse movements in interest rates; and
    - (b) internal capital needs arising from the impact of rate changes on future earnings capacity, and the resultant implications for internal capital buffer levels.
  25. Institutions should not only rely on the supervisory assessments of capital adequacy for IRRBB or on the outcome of the supervisory outlier test (see section 4.5.), but should develop and use their own methodologies for capital allocation, based on their risk appetite, level of risk and risk management policies. In determining the appropriate level of capital, institutions should consider both the amount and the quality of capital needed.
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26. Capital adequacy assessments for IRRBB should take into account the following:

- (a) the size and tenor of internal limits on IRRBB exposures, and whether or not these limits are reached at the point of capital calculation;
- (b) the expected cost of hedging open positions that are intended to take advantage of internal expectations of the future level of interest rates;
- (c) the sensitivity of the internal measures of IRRBB to key or imperfect modelling assumptions;
- (d) the impact of shock and stress scenarios on positions priced with different interest rate indices (basis risk);
- (e) the impact on economic value and earnings (including effects on the fair value through other comprehensive income (FVOCI) portfolio) of mismatched positions in different currencies;
- (f) the impact of embedded losses and embedded gains;
- (g) the distribution of capital relative to risks across legal entities included in the group's prudential perimeter of consolidation, in addition to the adequacy of overall capital on a consolidated basis;
- (h) the drivers of the underlying risk; and
- (i) the circumstances under which the risk may materialise.

27. The outcomes of the capital adequacy for IRRBB should be considered in an institution's ICAAP and flow through to the assessments of capital associated with business lines.

28. To calibrate the amount of internal capital to be held for IRRBB, institutions should use measurement systems and a range of interest rate shock and stress scenarios, which are adapted to the risk profile of the institution in order to quantify the potential scale of any IRRBB effects under adverse conditions.

29. Institutions that operate economic capital models should ensure that the internal capital allocation for IRRBB is properly factored into the overall economic capital allocation and that any assumptions on diversification are documented and their reliability as well as stability is verified using historical data appropriate for the individual institution and the markets in which it operates. Economic capital costs may be allocated back to the business units and products to ensure that the full costs of the underlying business units or products are properly understood by those responsible for managing them.

30. In considering whether or not an allocation of internal capital should be made in respect of IRRBB to earnings, institutions should take into account the following:

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- (a) The relative importance of net interest income to total net income, and therefore the impact of significant variations in net interest income from year to year;
- (b) The actual levels of net interest income achievable under different scenarios (i.e. the extent to which margins are wide enough to absorb volatility arising from interest rate positions and changes in the cost of liabilities);
- (c) The potential for actual losses to be incurred under stressed conditions, or as a result of secular changes in the market environment, e.g. where it might become necessary to liquidate positions that are intended as a long-term investment to stabilise earnings;
- (d) The relative importance of interest rate sensitive instruments (including interest rate derivatives) in the non-trading book, with potential effects shown either in the profit and loss account or directly in equity (e.g. via other comprehensive income); and
- (e) The fluctuation of net interest income, the strength and stability of the earnings stream and the level of income needed to generate and maintain normal business operations. Institutions with a high level of IRRBB that could, under a plausible range of market scenarios, result in losses, in curtailing normal dividend distribution, or in a decrease in business operations should ensure that they have sufficient capital to withstand the adverse impact of these scenarios.

31. Institutions should consider internal capital buffer adjustments where the results of their stress testing highlight the potential for reduced earnings (and therefore reduced capital generation capacity) under stress scenarios.

## 4.3 Governance

### 4.3.1 Overall IRRBB strategy

32. The IRRBB strategy of the institution, including the risk appetite for IRRBB and IRRBB mitigation, should be part of the overall strategy, in particular the strategic objectives and risk objectives, which the management body must approve as laid down in subparagraph (2), letter (a) of Article 88(1) of Directive 2013/36/EU.

33. The institution's risk appetite for IRRBB should be expressed in terms of the acceptable impact of fluctuating interest rates on both earnings and economic value and should be reflected in limits. Institutions with significant exposures to gap risk, basis risk or option risk should determine their risk appetite in relation to each of these material sub-types of IRRBB.

34. The overall IRRBB strategy should also include the decision about the extent to which the business model relies on generating earnings by 'riding the yield curve', i.e. funding assets with a comparatively long repricing period with liabilities with a comparatively short repricing period. Where the business model relies heavily on this source of earnings, the management body

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should explain its IRRBB strategy and how it plans to survive periods of flat or inverse yield curves.

35. Institutions should duly assess proposals to use new products, or engage in new activities, risk-taking or hedging strategies, prior to acquisition or implementation to ensure that the resources required to establish sound and effective IRRBB management of the product or activity have been identified, that the proposed activities are in line with the institution's overall risk appetite, and that procedures to identify, measure, monitor and control the risks of the proposed product or activity have been established. It should be ensured that the IRRBB characteristics of these new products and activities are well understood.
36. Institutions using derivative instruments to mitigate IRRBB exposures should possess the necessary knowledge and expertise. Each institution should demonstrate that it understands the consequences of hedging with interest rate derivatives.
37. Institutions using models of customer behaviour as input for the measurement of their IRRBB should possess the necessary knowledge and expertise. Each institution should be able to demonstrate that it understands the consequences of modelling the behaviour of its customer base.
38. When making decisions on hedging activities, institutions should be aware of the effects of accounting policies, but the accounting treatment should not drive their risk management approach. The management of economic risks should therefore be a priority, and the accounting impacts managed as a secondary concern.
39. Consolidating institutions should ensure that internal governance arrangements and processes for the management of IRRBB are consistent and well integrated on a consolidated and a sub-consolidated basis.

#### **4.3.2 Risk management framework and responsibilities**

40. In view of having internal governance arrangements pursuant to Article 74 and 88 of Directive 2013/36/EU, institutions should, in relation to IRRBB, ensure the following:
    - (a) That their management body bears the ultimate responsibility for the oversight of the IRRBB management framework, the institution's risk appetite framework and the amounts, types and distribution of internal capital to adequately cover the risks. The management body should determine the institution's overall IRRBB strategy and approve the corresponding policies and processes. The management body may, however, delegate the monitoring and management of IRRBB to senior management, expert individuals or an asset and liability management committee under the conditions further specified in paragraph 41.
    - (b) That they have in place an IRRBB management framework that establishes clear lines of responsibilities and that consists of a limit system, policies, processes and internal controls
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including regular independent reviews and evaluations of the effectiveness of the framework.

41. The management body should, in particular, be responsible for the following:

- (a) Understanding the nature and the level of the IRRBB exposure. The management body should ensure that there is clear guidance regarding the risk appetite for IRRBB in respect of the institution's business strategies.
  - (b) Establishing that the appropriate actions are taken to identify, measure, monitor and control IRRBB, consistent with the approved strategies and policies. In this regard, the management body or its delegates are responsible for setting:
    - i. appropriate limits on IRRBB, including the definition of specific procedures and approvals necessary for exceptions, and ensuring compliance with those limits;
    - ii. systems and standards for measuring IRRBB, valuing positions and assessing performance, including procedures for updating interest rate shock and stress scenarios and key underlying assumptions driving the institution's IRRBB analysis;
    - iii. a comprehensive IRRBB reporting and review process; and
    - iv. effective internal controls and management information systems (MISs).
  - (c) Approving major hedging or risk-taking initiatives in advance of implementation. Positions related to internal risk transfers between the non-trading book and the trading book should be properly documented.
  - (d) Carrying out the oversight of the approval, implementation and review of IRRBB management policies, procedures and limits. The level of and changes in the institution's IRRBB exposure should be provided regularly to the management body (at least quarterly).
  - (e) Ensuring that the validation of IRRBB measurement methods and assessment of corresponding model risk are included in a formal policy process that should be reviewed and approved by the management body or its delegates.
  - (f) Understanding and assessing the functioning of its delegates in monitoring and controlling IRRBB, consistent with policies approved by the management body, on the basis of regular reviews of timely and sufficiently detailed information.
  - (g) Understanding the implications of the institution's IRRBB strategies and their potential linkages with market, liquidity, credit and operational risk but without requiring all the management body members to be experts in the area. Some of the members should have sufficient technical knowledge to question and challenge the reports made to the management body. The institution should establish that management body members are
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responsible for ensuring that senior management has the competence to understand IRRBB and that IRRBB management is provided with adequate resources.

42. Institutions should have delegation arrangements and procedures in place for any delegation by the management body of the monitoring or management of IRRBB, including, but not limited to, the following:

- (a) Persons or committees to which tasks of the management body are delegated for developing IRRBB policies and practices, such as senior management, expert individuals or an asset and liability management committee (ALCO), should be identified and have objectives clearly set out by the management body.
- (b) The management body should ensure that there is an adequate separation of responsibilities in the risk management process for IRRBB. The IRRBB identification, measurement, monitoring and control functions should have clearly defined responsibilities, should be independent from risk-taking functions on IRRBB and should report IRRBB exposures directly to the management body or its delegates.
- (c) The institution should ensure that the management body's delegates have clear lines of authority over the units responsible for risk taking on IRRBB. The communication channel to convey the delegates' directives to these line units should be clear.
- (d) The management body should establish that the institution's structure enables its delegates to carry out their responsibilities, and facilitates effective decision-making and governance. In this regard, an ALCO should meet regularly and its composition should reflect each major department linked to IRRBB. The management body should foster discussion regarding the IRRBB management process, both between its members and its delegates and between its delegates and others in the institution. The management body should also ensure that regular communication between the risk management and strategic planning areas facilitate the monitoring of the risk arising from future business.

### **4.3.3 Risk appetite and policy limits**

43. Institutions should articulate their risk appetite for IRRBB in terms of the risk to both economic value and earnings in particular:

- (a) Institutions should have clearly defined risk appetite statements that are approved by their management body and implemented through comprehensive risk appetite frameworks, i.e. policies and procedures for limiting and controlling IRRBB.
  - (b) Their risk appetite frameworks should delineate delegated powers, lines of responsibility and accountability over IRRBB management decisions and should list the instruments, hedging strategies and risk-taking opportunities authorised for IRRBB.
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(c) In defining their risk appetites, institutions should take account of earnings risks that may arise as a consequence of the accounting treatment of transactions in the non-trading book. The risk to earnings may not be limited to interest income and expenses: the effects of changes in interest rates on the market value of instruments that, depending on accounting treatment, are reflected either through the profit and loss account or directly in equity (via other comprehensive income), should be taken into account separately. Institutions should particularly take into account the earnings impact related to embedded optionalities in fair value instruments under ongoing interest rate shocks and stress scenarios. Institutions should also take into account the potential impact on the P&L accounts of hedging interest rate derivatives if their effectiveness was hampered by interest rate changes.

44. Institutions should implement limits that target maintaining IRRBB exposures consistent with their risk appetite and with their overall approach for measuring IRRBB, in particular the following:

- (a) Aggregate risk limits that clearly articulate the amount of IRRBB acceptable to the management body should be applied on a consolidated basis and, as appropriate, at the level of individual affiliates.
- (b) Limits may be associated with specific scenarios of changes in interest rates and term structures, such as their increase or decrease or a change in shape of the yield curve. The interest rate movements used in developing these limits should represent sufficiently adverse shock and stress situations, taking into account historical interest rate volatility and the time required by management to mitigate those risk exposures.
- (c) Policy limits should be appropriate to the nature, size, complexity and capital adequacy of the institution, as well as its ability to measure and manage its risks.
- (d) Depending on the nature of an institution's activities and business model, sub-limits may also be identified for individual business units, portfolios, instrument types, specific instruments or material sub-types of IRRBB risk such as gap risk, basis risk and option risk.
- (e) Systems should be in place to ensure that positions that exceed, or are likely to exceed, limits defined by the management body or its delegates receive prompt management attention and are escalated without delay. There should be a clear policy on who will be informed, how the communication will take place and the actions which will be taken in response.
- (f) The reporting of risk measures to the management body or its delegates should have at least a quarterly frequency and should compare current exposure with policy limits.

45. A framework should be in place to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are accounted for at market value.

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#### 4.3.4 Risk policies, processes and controls

##### a. Risk policies and processes

46. The management body should, based on its overall IRRBB strategy, adopt robust risk policies, processes and systems which should ensure that:

- (a) procedures for updating scenarios for the measurement and assessment of IRRBB are set up;
- (b) the measurement approach and the corresponding assumptions for measuring and assessing IRRBB, including the allocation of internal capital to IRRBB risks, are appropriate and proportional;
- (c) the assumptions of the models used are regularly reviewed and, if necessary, amended;
- (d) standards for the evaluation of positions and the measuring of performance are defined;
- (e) appropriate documentation and control over permissible hedging strategies and hedging instruments exist; and
- (f) the lines of authority and responsibility for managing IRRBB exposures are defined.

47. The policies should be well reasoned, robust and documented and should address all IRRBB components that are important to the institution's individual circumstances. Without prejudice to the proportionality principle, the IRRBB policies should include the following:

- (a) The application of the boundary between 'non-trading book' and 'trading book'. Internal risk transfers between the banking book and the trading book should be properly documented and monitored within the broader monitoring of the IRRBB originated by interest rate derivatives instruments.
  - (b) The more detailed definition of economic value and its consistency with the method used to value assets and liabilities (e.g. based on the discounted value of future cash flows, and on the discounted value of future earnings) adopted for internal use.
  - (c) The more detailed definition of earnings risk and its consistency with the institution's approach to developing financial plans and financial forecasts adopted for internal use.
  - (d) The size and the form of the different interest rate shocks to be used for internal IRRBB calculations.
  - (e) The use of conditional or unconditional cash flow modelling approaches.
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- (f) The treatment of 'pipeline transactions'<sup>14</sup> (including any related hedging).
- (g) The aggregation of multicurrency interest rate exposures.
- (h) The measurement and management of basis risk resulting from different interest rate indexes.
- (i) Whether or not non-interest-bearing assets and liabilities of the non-trading book (including capital and reserves) are included in calculations measuring IRRBB for the ICAAP.
- (j) The behavioural treatment of current and savings accounts (i.e. the maturity assumed for liabilities with short contractual maturity but long behavioural maturity).
- (k) The measurement of IRRBB arising from behavioural and automatic options in assets or liabilities, including convexity effects and non-linear payoff profiles.
- (l) The degree of granularity employed in measurement calculations (e.g. use of time buckets).
- (m) The internal definition of commercial margins and adequate methodology for internal treatment of commercial margins.

48. All IRRBB policies should be reviewed regularly, at least annually, and revised as needed.

49. To ensure that the institution's IRRBB management policies and procedures remain appropriate and sound, the management body or its delegates should review the IRRBB management policies and procedures in the light of the outcomes of regular reports.

50. The management body or its delegates should ensure that analysis and risk management activities related to IRRBB are conducted by sufficient and competent staff with technical knowledge and experience, consistent with the nature and scope of the institution's activities.

#### **b. Internal controls**

51. With regard to IRRBB control policies and procedures, institutions should have appropriate approval processes, exposure limits, reviews and other mechanisms designed to provide a reasonable assurance that risk management objectives are being achieved.

52. Institutions should undertake regular reviews and evaluations of their internal control systems and risk management processes, seeking assurance that personnel comply with established policies and procedures. Such reviews should also address any significant changes that may affect the effectiveness of controls, including changes in market conditions, personnel, technology and structures of compliance with exposure limits, and ensure that there are

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<sup>14</sup> Pipeline exposures (e.g. where a loan has been agreed and the customer can choose whether to draw down or not) effectively provide the customer with an option that will most likely be exercised when market conditions least suit the institution (negative convexity). Management of pipeline exposures relies on accurate data on applications received, and modelling of expected drawdowns.

appropriate escalation procedures for any exceeded limits. The reviews and evaluations should be conducted regularly by individuals or units that are independent of the function under review. When revisions or enhancements to internal controls are warranted, there should be an internal review mechanism in place to ensure that these are implemented in a timely manner.

53. Institutions should have their IRRBB identification, measurement, monitoring and control processes reviewed by an independent auditing function, which may be an internal or external auditor, on a regular basis. In such cases, reports written by internal or external auditors or other equivalent external parties should be made available to relevant competent authorities.

**c. IRRBB IT system and data quality**

54. The IT systems and applications used by the institution to carry out, process and record operations, to identify, measure and aggregate IRRBB exposures, and to generate reports should be capable of supporting the management of IRRBB in a timely and accurate manner. In particular, the systems should:

- (a) Capture interest rate risk data on all the institution's material IRRBB exposures including exposures to gap, basis, and option risk. This should support the institution's measurement system to identify, measure and aggregate the major sources of IRRBB exposures.
- (b) Be capable of fully and clearly recording all transactions made by the institution, taking into account their IRRBB characteristics.
- (c) Be tailored to the complexity and number of transactions creating IRRBB.
- (d) Offer sufficient flexibility to accommodate a reasonable range of shock and stress scenarios and any additional scenarios.
- (e) Enable the institutions to fully measure, assess and monitor the contribution of individual transactions to their overall exposure.
- (f) Be able to compute economic value and earnings-based measures of IRRBB, as well as other measures of IRRBB prescribed by their competent authorities, based on the interest rate shock and stress scenarios set out in sections 4.4.3 and 4.4.4.
- (g) Be sufficiently flexible to incorporate supervisory-imposed constraints on institutions' internal risk parameter assumptions.

55. The IT system and transaction system should be capable of recording the repricing profile, interest rate characteristics (including spread) and option characteristics of the products to enable measurement of gap risk, basis risk and option risk. In particular, the transaction system should be able to gather detailed information on the repricing date(s) of a given transaction, interest rate type or index, any options (including early repayment or redemption) and the fees relating to the exercise of these options.

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56. The systems used to measure IRRBB should be capable of capturing the IRRBB characteristics of all products. The systems should also allow the disaggregation of the impact of individual IRRBB instruments and portfolios at the risk level of the non-trading book.
57. For complex, structured products in particular, the transaction system should be able to gather information about the separate parts of the product and to capture their IRRBB characteristics (e.g. the characteristics of assets and liabilities grouped by certain characteristics such as repricing dates or optionality elements). The institution should ensure that the IT system is able to keep pace with the introduction of new products.
58. Adequate organisational controls of IT systems should be in place to prevent the corruption of data used by IRRBB computer systems and applications, and to control changes to the coding used in those applications, so as to ensure, in particular:
- (a) the reliability of data used as input, and the integrity of processing systems for IRRBB models;
  - (b) that the likelihood of errors occurring in the IT system, including those occurring during data processing and aggregation, is minimised; and
  - (c) that adequate measures are taken if market disruptions or slumps occur.
59. Risk measures should be based on reliable market and internal data. Institutions should scrutinise the quality of external sources of information used to establish the historical databases of interest rates, as well as the frequency at which databases are updated.
60. To ensure the high quality of data, institutions should implement appropriate processes that ensure that the data entered into the IT system is correct. Data inputs should be automated as much as possible to reduce administrative errors, and data mapping should be periodically reviewed and tested against an approved model version. In addition, there should be sufficient documentation of the major data sources used in the institution's risk measurement process. Institutions should also establish appropriate mechanisms to verify the correctness of the aggregation process and the reliability of model results. These mechanisms should confirm the accuracy and reliability of data.
61. Where institutions slot cash flows into different time buckets (e.g. for gap analyses) or assign the cash flows to different vertex points to reflect the different tenors of the interest rate curve, the slotting criteria should be stable over time to allow a meaningful comparison of risk figures over different periods.
62. Institutions should identify potential reasons for discrepancies and irregularities that may arise at the time of data processing. Institutions should have procedures in place to handle those discrepancies and irregularities, including procedures for the mutual reconciliation of positions to enable these discrepancies and irregularities to be eliminated.
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63. Institutions should set up appropriate processes to ensure that the data used to feed models measuring the IRRBB across the group — e.g. for simulating earnings — is consistent with the data used for financial planning.

d. **Internal reporting**

64. Institutions' internal risk-reporting systems should provide timely, accurate and comprehensive information about their exposures to IRRBB. The frequency of internal reports should be at least quarterly.

65. The internal reports should be provided to the management body or its delegates with information at relevant levels of aggregation (by consolidation level and currency), and reviewed regularly. The reports should contain a level of information adapted to the particular management level (e.g. management body, senior management) and to the specific situation of the institution and the economic environment.

66. The IRRBB reports should provide aggregate information as well as sufficient supporting detail to enable the management body or its delegates to assess the sensitivity of the institution to changes in market conditions and other important risk factors. The content of the reports should reflect changes in the risk profile of the institution and in the economic environment, and compare current exposure with policy limits.

67. The IRRBB reports should, on a regular basis, include the results of the model reviews and audits as well as comparisons of past forecasts or risk estimates with actual results to inform potential modelling shortcomings. In particular, institutions should assess the modelled prepayment losses against historical realised losses. Portfolios that may be subject to significant mark-to-market movements should be clearly identified and the impact should be monitored within the institution's MIS and subject to oversight in line with any other portfolios exposed to market risk.

68. While the types of reports prepared for the management body or its delegates will vary based on the institution's portfolio composition, they should include, taking into account paragraph 65, the following:

(a) Summaries of the institution's aggregate IRRBB exposures, including information on exposures to gap, basis and option risk. Assets, liabilities, cash flows, and strategies that are driving the level and direction of IRRBB should be identified and explained.

(b) Reports demonstrating the institution's compliance with policies and limits.

(c) Key modelling assumptions, such as characteristics of non-maturity deposits (NMDs), prepayments on fixed rate loans, early withdrawals of fixed term deposits, drawing of commitments, currency aggregation and treatment of commercial margins.

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- (d) Details of the impact of key modelling assumptions on the measurement of IRRBB in terms of both economic value measures and earnings measures, including changes in assumptions under various interest rate scenarios.
- (e) Details of the impact of interest rate derivatives on the measurement of IRRBB, in terms of both economic value measures and earnings measures.
- (f) Details of the impact of fair value instruments, including Level 3 assets and liabilities, on the measurement of IRRBB in terms of both economic value measures and earnings measures.
- (g) Results of stress tests as referred to in section 4.4.4, the shocks as referred to in section 4.4.3, the supervisory outlier test as referred to in section 4.5, and assessments of sensitivity to key assumptions and parameters; and
- (h) Summaries of the reviews of IRRBB policies, procedures and adequacy of the measurement systems, including any findings of internal and external auditors or other equivalent external parties (such as consultants).

69. Based on these reports, the management body or its delegates should be able to assess the sensitivity of the institution to changes in market conditions and other important risk factors, with particular reference to portfolios that may potentially be subject to significant mark-to-market movements.

70. The internal measurement system should generate reports in a format that allows the different levels of the institution's management to understand the reports easily and to make appropriate decisions in a timely manner. The reports should constitute the basis for regular monitoring of whether or not the institution operates in line with its strategy and the interest rate risk limits it has adopted.

#### e. Model governance

71. Institutions should ensure that the validation of IRRBB measurement methods — which should be reviewed and validated independently of their development — and the assessment of corresponding model risk are included in a formal policy process that should be reviewed and approved by the management body or its delegates. The policy should be integrated within the governance processes for model risk management and should specify:

- (a) the management roles and designate who is responsible for the development, validation, documentation, implementation and use of models; and
- (b) the model oversight responsibilities as well as policies including the development of initial and ongoing validation procedures, evaluation of results, approval, version control, exception, escalation, modification and decommission processes.

72. The validation framework should include the following four core elements:

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- (a) evaluation of conceptual and methodological soundness, including developmental evidence;
- (b) ongoing model monitoring, including process verification and benchmarking;
- (c) outcomes analysis, including back-testing of key internal parameters (e.g. stability of deposits, loan prepayment rates, early redemptions of deposits, pricing of instruments); and
- (d) thorough assessment of any expert opinions and judgements used in internal models.

73. In addressing the expected initial and ongoing validation activities, the policy should establish a hierarchical process for determining model risk soundness based on both quantitative and qualitative dimensions such as size, impact, past performance and staff expertise with the modelling technique employed.

74. Model risk management for IRRBB measures should follow a holistic approach that begins with motivation, development and implementation by model owners and users. Prior to receiving internal approval for usage, the process for determining model inputs, assumptions, modelling methodologies and outputs should be reviewed and validated independently of the development of IRRBB models.

75. The review and validation results and any recommendations on model usage should be presented to and approved by the management body or its delegates. Upon approval, the model should be subject to ongoing review, process verification and validation at a frequency that is consistent with the level of model risk determined and approved by the institution.

76. The ongoing review process should establish a set of exception trigger events that obligate the model reviewers to notify the management body or its delegates in a timely fashion, in order to determine corrective actions and restrictions on model usage. Clear version control authorisations should be designated, where appropriate, to model owners.

77. On the basis of observations and new information gained over time, an approved model may be modified or withdrawn. Institutions should articulate policies for model transition, including change and version control authorisations and documentation.

78. Institutions may rely on third-party IRRBB models to manage and control IRRBB, provided that these models are adequately customised to properly reflect the specific characteristics of the institution in question. Institutions are expected to fully understand the underlying analytics, assumptions and methodologies of the third-party models and to ensure that they are adequately integrated into the institutions' overall risk management systems and processes. Where third parties provide input for market data, behavioural assumptions or model settings, the institution should have a process in place to determine if those inputs are reasonable for its business and the risk characteristics of its activities. Institutions should ensure there is adequate documentation of their use of third-party models, including any specific customisation.

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79. Model inputs or assumptions, whether stemming from internal model processes or from third parties, should be included in the validation process. The institution should document and explain model specification choices as part of the validation process.

## 4.4 Measurement

### 4.4.1 General approach to measurement of IRRBB

80. Institutions should implement robust internal measurement systems (IMs) that capture all components and sources of IRRBB which are relevant for the institution's business model.

81. Institutions should measure their exposure to IRRBB in terms of potential changes to both the economic value (EV) and earnings. Institutions should use complementary features of both approaches to capture the complex nature of IRRBB over the short-term and long-term time horizons. In particular, institutions should measure and monitor (i) the overall impact of key modelling assumptions on the measurement of IRRBB in terms of both economic value measures and earnings measures, and (ii) the IRRBB of their banking book interest rate derivatives where relevant for the business model.

82. If commercial margins and other spread components are excluded from economic value measures, institutions should (i) use a transparent methodology for identifying the risk-free rate at inception of each instrument; and (ii) use a methodology that is applied consistently across all interest rate sensitive instruments and all business units.

83. When calculating earnings measures, institutions should include commercial margins.

84. Institutions should consider non-performing exposures (net of provisions) as interest rate sensitive instruments reflecting expected cash flows and their timing.

85. When measuring their exposure to IRRBB, institutions should not purely rely on the calculation and outcomes of the supervisory outlier tests as described in section 4.5, or any additional outlier test developed by the competent authority, but should develop and use their own assumptions and calculation methods. However, the supervisory outlier tests should be fully integrated into the internal framework for the management of IRRBB and should be used as complementary tools for measuring exposure to IRRBB.

### 4.4.2 Methods for measuring IRRBB

86. Institutions should not rely on a single measure of risk but should instead use the range of quantitative tools and models that corresponds to their specific risk exposure. To that end, institutions should consider the application of the methods listed in Annex I but not limited to those, to ensure that various aspects of interest rate risk are captured adequately.

87. The limitations of each quantitative tool and model used should be fully understood by the institution, and these limitations should be taken into account in the IRRBB risk management

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process. In assessing IRRBB, institutions should be aware of the risks that may arise as a consequence of accounting treatment of transactions in the non-trading book.

88. Institutions should identify and measure all components of IRRBB. In order to identify different components of IRRBB, institutions should at least consider those approaches as shown in Table 1.

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

<b>Component</b>	<b>Method</b>	<b>Focus</b>
<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
<b>Option risk</b> (automatic and behavioural options)	Inventory of all instruments with embedded or explicit options	Behavioural 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

89. For measuring and monitoring of IRRBB, institutions should use at least one earnings-based measure and at least one economic value measurement method that, in combination, capture all components of IRRBB. Large institutions with cross-border activities, in particular institutions under categories 1 and 2 of the SREP Guidelines, and institutions with complex or sophisticated business models, should use multiple measurement methods, as further specified in Annex II.

#### **4.4.3 Interest rate shock scenarios for ongoing management**

90. Institutions should regularly, at least quarterly and more frequently in times of increased interest rate volatility or increased IRRBB levels, measure their exposure to IRRBB in terms of

changes in economic value and earnings under various interest rate shock scenarios for potential changes in the level and shape of the interest rate yield curves, and to changes in the relationship between different interest rates (i.e. basis risk).

91. Institutions should also consider whether to apply a conditional or unconditional cash flow modelling approach. Larger and more complex institutions, in particular institutions under categories 1 and 2 of the SREP Guidelines, should also take into account scenarios where different interest rate paths are computed and where some of the assumptions (e.g. relating to behaviour, contribution to risk, and balance sheet size and composition) are themselves functions of changing interest rate levels.
92. Institutions should assess exposures in each currency in which they have positions. For the material currency exposures, the interest rate shock scenarios should be currency-specific and consistent with the underlying economic characteristics. Institutions should include in their internal measurement systems methods to aggregate their IRRBB across different currencies. Where institutions make use of assumptions about dependencies between interest rates in different currencies, they should have the necessary level of skills and sophistication to do so. Institutions should take into account the impact of assumptions regarding dependencies between interest rates across different currencies.
93. When selecting interest rate shock scenarios, institutions should consider the following:
- (a) That their own internally developed interest rate shock scenarios be commensurate with the nature, scale and complexity of their activities as well as their risk profile, taking into account sudden and gradual parallel and non-parallel shifts and changes in the yield curves. Scenarios should be based on the historical movements and behaviour of interest rates, as well as simulations of future interest rates.
  - (b) Interest rate scenarios that reflect changes in the relationships between key market rates in order to address basis risk.
  - (c) The six prescribed interest rate shock scenarios set out in Annex III.
  - (d) Any additional interest rate shock scenarios required by supervisors.
94. In low interest rate environments, institutions should also consider negative interest rate scenarios and the possibility of asymmetrical effects of negative interest rates on their interest rate sensitive instruments.
95. The results of shock scenarios should feed into the decision-making at appropriate management level. This includes strategic or business decisions, the allocation of internal capital, and risk management decisions by the management body or its delegates. The results should also be considered when establishing and reviewing the policies and limits for IRRBB.
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#### 4.4.4 Interest rate stress scenarios

96. IRRBB stress testing should be considered in the ICAAP, where institutions should undertake rigorous, forward-looking stress testing that identifies the potential adverse consequences of severe changes in market conditions on their capital or earnings, including through changes in the behaviour of their customer base. Stress testing for IRRBB should be integrated into institutions' overall stress-testing framework, including reverse stress testing, and should be commensurate with their nature, size and complexity, as well as their business activities and overall risk profile.
97. IRRBB stress testing should be performed regularly, at least annually and more frequently in times of increased interest rate volatility and increased IRRBB levels.
98. The IRRBB stress-testing framework should include clearly defined objectives, scenarios tailored to the institution's businesses and risks, well-documented assumptions and sound methodologies.
99. In enterprise-wide stress tests, the interaction of IRRBB with other risk categories (e.g. credit risk, liquidity risk, market risks), and any material second-round effects, should be computed.
100. Institutions should perform reverse stress tests in order to (i) identify interest rate scenarios that could severely threaten an institution's capital and earnings; and (ii) reveal vulnerabilities arising from its hedging strategies and the potential behavioural reactions of its customers.
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.
102. The results of stress scenarios should feed into the decision-making at the appropriate management level. This includes strategic or business decisions, the allocation of internal
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capital, and risk management decisions by the management body or its delegates. The results should also be considered when establishing and reviewing the policies and limits for IRRBB.

#### **4.4.5 Measurement assumptions**

103. When measuring IRRBB, institutions should fully understand and document key behavioural and modelling assumptions. These assumptions should be aligned with business strategies and be regularly tested.

104. Institutions should, in relation to both economic value and earnings-based measures of IRRBB, take into account assumptions made for the purpose of risk quantification in relation to at least the following areas:

- a) the exercise of interest rate options (automatic or behavioural) by both the institution and its customer under specific interest shock and stress scenarios;
- b) the treatment of balances and interest flows arising from NMDs;
- c) the treatment of fixed term deposits with risk of early redemption;
- d) the treatment of fixed rate loans and fixed rate loan commitments;
- e) the treatment of own equity in internal economic value measures;
- f) the implications of accounting practices for the measurement of IRRBB, and in particular hedge-accounting effectiveness.

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

##### **a) Behavioural assumptions for customer accounts with embedded customer optionality**

106. In assessing the implications of optionality, institutions should take into account:

- (a) The potential impact on current and future loan prepayment speeds arising from the interest rate scenario, underlying economic environment and contractual features. Institutions should take into account the various dimensions influencing the embedded behavioural options.
- (b) The elasticity of adjustment of product rates to changes in market interest rates.
- (c) The migration of balances between product types as a result of changes in their features, terms and conditions.

107. Institutions should have policies in place governing the setting of, and the regular assessment of, the key assumptions for the treatment of on- and off-balance-sheet items that

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have embedded options in their interest rate risk framework. This means that institutions should:

- (a) identify all material products and items subject to embedded options that could affect either the interest rate charged or the behavioural repricing date (as opposed to contractual maturity date) of the relevant balances;
- (b) have appropriate pricing and risk mitigation strategies (e.g. use of derivatives) to manage the impact of optionality within the risk appetite, which may include early redemption penalties chargeable to the customer as an offset to the potential break costs (where permitted);
- (c) ensure that modelling of key behavioural assumptions is justifiable in relation to the underlying historical data, and based on prudent hypotheses;
- (d) be able to demonstrate that they have accurate modelling (back-tested against experience);
- (e) maintain appropriate documentation of assumptions in their policies and procedures, and have a process for keeping them under review;
- (f) understand the sensitivity of the institution's risk measurement outputs to these assumptions, including undertaking stress testing of the assumptions and taking the results of such tests into account in internal capital allocation decisions; and
- (g) perform regular internal validation of these assumptions to verify their stability over time and to adjust them if necessary.

**b) Behavioural assumptions for customer accounts without specific repricing dates**

108. In making behavioural assumptions about accounts without specific repricing dates for the purposes of interest rate risk management, institutions should:

- (a) Be able to identify 'core' balances, i.e. deposits that are stable and unlikely to reprice even under significant changes in interest rate environment, and/or other deposits whose limited elasticity to interest rate changes could be modelled by banks.
  - (b) Modelling assumptions for these deposits should reflect depositor characteristics (e.g. retail/wholesale) and account characteristics (e.g. transactional/non-transactional). A high-level description of the above categories can be found below:
    - i. Retail transactional deposits include non-interest-bearing and other retail accounts whose remuneration component is not relevant in the client's decision to hold money in the account.
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- ii. Retail non-transactional deposits include retail accounts (including regulated ones) whose remuneration component is relevant in the client's decision to hold money in the account.
  - iii. Wholesale deposits include accounts from corporate and other wholesale clients, excluding interbank accounts or other fully price-sensitive ones.
- (c) Assess the potential migration between deposits without specific repricing dates and other deposits that could modify, under different interest rate scenarios, key behavioural modelling assumptions.
- (d) Consider potential constraints on the repricing of retail deposits in low or negative interest rate environments.
- (e) Ensure that assumptions about the decay of core and other modelled balances are prudent and appropriate in balancing the benefits to earnings against the additional economic value risk entailed in locking in a future interest rate return on the assets financed by these balances, and the potential forgone revenue under a rising interest rate environment.
- (f) Not exclusively rely on statistical or quantitative methods to determine the behavioural repricing dates and the cash flow profile of NMDs. Further, the determination of appropriate modelling assumptions for NMDs may require the collaboration of different experts within an institution (e.g. risk management and risk control department, sales and treasury).
- (g) Have appropriate documentation of these assumptions in their policies and procedures, and a process for keeping them under review.
- (h) Understand the impact of the assumptions on the institution's own chosen risk measurement outputs and internal capital allocation decisions, including by periodically calculating sensitivity analyses on key parameters (e.g. percentage and maturity of core balances on accounts and pass-through rate) and the measures using contractual terms rather than behavioural assumptions to isolate the impact of assumptions on both economic value and earnings.
- (i) Undertake stress testing to understand the sensitivity of the chosen risk measures to changes in key assumptions, taking the results of such tests into account in internal capital allocation decisions.

**c) Corporate planning assumptions for own equity capital**

109. Where institutions decide to adopt a policy intended to stabilise earnings arising from their own equity, they should:

- (a) have an appropriate methodology for determining what elements of equity capital should be considered eligible for such treatment;
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- (b) determine what would be a prudent investment maturity profile for the eligible equity capital that balances the benefits of income stabilisation arising from taking longer-dated fixed-return positions against the additional economic value sensitivity of those positions under an interest rate stress, and the risk of earnings underperformance should rates rise;
  - (c) include appropriate documentation of these assumptions in their policies and procedures, and include a process for keeping them under review;
  - (d) understand the impact of the chosen maturity profile on the institution's own chosen risk measurement outputs, including by regular calculation of the measures without inclusion of the equity capital to isolate the effects on both EVE and earnings perspectives; and
  - (e) undertake stress testing to understand the sensitivity of risk measures to changes in key assumptions for equity capital, taking the results of such tests into account in their IRRBB internal capital allocation decisions.
110. In deciding the investment term assumptions for equity capital, institutions should avoid taking income stabilisation positions that significantly reduce their capability to adjust to significant changes in the underlying economic and business environment.
111. The investment term assumptions used to manage the risks to earnings and economic value sensitivity arising from equity capital should be considered as part of the normal corporate planning cycle, and such assumptions should not be altered just to reflect a change in the institution's expectations of the path of future interest rates. Any use of derivative or asset portfolios to achieve the desired investment profile should be clearly documented and recorded.
112. Where an institution has not set explicit assumptions for the investment term of equity capital or sets assumptions that are explicitly short-term, the institution should make sure that its systems and management information can identify the implications of its chosen approach for the volatility of both earnings and economic value.

## 4.5 Supervisory outlier test

113. Institutions should regularly, at least quarterly, calculate the impact on their EVE of a sudden parallel +/-200 basis points shift of the yield curve. Institutions should report regularly, at least annually, to the competent authority the change in EVE that results from the calculation. Where the decline in EVE is greater than 20% of the institution's own funds, the institution should inform the competent authority immediately.
114. Institutions should regularly, at least quarterly, calculate the impact on their EVE of interest rate shocks, applying scenarios 1 to 6 as set out in Annex III. Institutions should report regularly, at least annually through the ICAAP report, to the competent authority the change in EVE that results from the calculation. Where the decline in EVE is greater than 15% of the institution's
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Tier 1 capital under any of the six scenarios, the institution should inform the competent authority.

115. When calculating the change in EVE for the purpose of paragraphs 113 and 114, institutions should in particular apply the following principles:

- (a) All positions from interest rate sensitive instruments should be taken into account.
- (b) Small trading book business should be included unless its interest rate risk is captured in another risk measure.
- (c) All CET1 instruments and other perpetual own funds without any call dates should be excluded from the calculation of the standard EVE outlier test.
- (d) Institutions should reflect automatic and behavioural options in the calculation. Institutions should adjust key behavioural modelling assumptions to the features of different interest rate scenarios.
- (e) Pension obligations and pension plan assets should be included unless their interest rate risk is captured in another risk measure.
- (f) The cash flows from interest rate sensitive instruments should include any repayment of principal, any repricing of principal and any interest payments.
- (g) Institutions with an NPE ratio<sup>15</sup> of 2% or more should include NPEs as general interest rate sensitive instruments whose modelling should reflect expected cash flows and their timing. NPEs should be included net of provisions.
- (h) Institutions should consider instrument-specific interest rate floors.
- (i) The treatment of commercial margins and other spread components in interest payments in terms of their exclusion from or inclusion in the cash flows should be in accordance with the institutions' internal management and measurement approach for interest rate risk in the non-trading book. Institutions should notify the competent authority whether they exclude commercial margins and other spread components from the calculation or not. If commercial margins and other spread components are excluded, institutions should (i) use a transparent methodology for identifying the risk-free rate at inception of each instrument; (ii) use a methodology that is applied consistently across business units; and (iii) ensure that the exclusion of commercial margins and other spread components from the cash flows is consistent with how the institution manages and hedges IRRBB.
- (j) The change in EVE should be computed with the assumption of a run-off balance sheet.

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<sup>15</sup> Ratio of non-performing exposures (non-performing debt securities and loans and advances/total gross debt securities and loans and advances) calculated at the level of the institution.

- (k) A maturity-dependent post-shock interest rate floor should be applied for each currency starting with -100 basis points for immediate maturities. This floor should increase by 5 basis points per year, eventually reaching 0% for maturities of 20 years and more. If observed rates are lower than the current lower reference rate of -100 basis points, institutions should apply the lower observed rate<sup>16</sup>.
- (l) Institutions should calculate the change in EVE at least for each currency where the assets or liabilities denominated in that currency amount to 5% or more of the total non-trading book financial assets (excluding tangible assets) or liabilities, or less than 5% if the sum of assets or liabilities included in the calculation is lower than 90% of total non-trading book financial assets (excluding tangible assets) or liabilities (material positions).
- (m) When calculating the aggregate EVE change for each interest rate shock scenario, institutions should add together any negative and positive changes to EVE occurring in each currency. Positive changes should be weighted by a factor of 50%.
- (n) An appropriate general 'risk-free' yield curve per currency should be applied (e.g. swap rate curves). That curve should not include instrument-specific or entity-specific credit spreads or liquidity spreads.
- (o) The assumed behavioural repricing date for retail and non-financial wholesale deposits without any specific repricing dates (non-maturity deposits) should be constrained to a maximum average of 5 years. The 5-year cap applies individually for each currency. Non-maturity deposits from financial institutions should not be subject to behavioural modelling.

116. When computing the effects of the standard EVE outlier test, institutions should use the calculation methods set out under the economic value of equity headings in Annex I and Annex II.

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<sup>16</sup> The EBA might envisage revising this floor to ensure that the lower reference rate will be sufficiently prudent given future developments in the interest rates.

# Annex I – IRRBB measurement methods

Cash flow modelling	Metric	Description	Risks captured	Limitations of metric
	<p><b><u>Earnings-based:</u></b></p> <ul style="list-style-type: none"> <li>• Gap analysis: Repricing gap</li> </ul>	<p>Gap analysis allocates all relevant interest rate sensitive instruments into predefined time buckets according to their repricing or maturity dates, which are either contractually fixed or based on behavioural assumptions. It calculates the net positions ('gaps') in each time bucket. It approximates the change in net interest rate income ensuing from a yield curve shift by multiplying each net position with the corresponding interest rate change.</p>	<p>Gap risk (only parallel risk)</p>	<ul style="list-style-type: none"> <li>• The metric approximates the gap risk only linearly.</li> <li>• It is based on the assumption that all positions within a particular time bucket mature or reprice simultaneously.</li> <li>• It fails to measure basis and option risk.</li> </ul>
<p><b>Unconditional cash flows</b> (it is assumed that the <i>timing</i> of cash flows is independent of the specific interest rate scenario)</p>	<p><b><u>Economic value:</u></b></p> <ul style="list-style-type: none"> <li>• Duration analysis: Modified duration/PV01 of equity</li> </ul>	<p>The modified duration approximates the relative change in the net present value of a financial instrument due to a marginal parallel shift of the yield curve by one percentage point. The <i>modified duration of equity</i> measures the exposure of an institution to gap risk in its non-trading book. PV01 of equity is derived from the modified duration of equity and measures the absolute change of the equity value resulting from a 1 basis point (0.01%) parallel shift of the yield curve.</p> <p>The starting point is the allocation of all cash flows of interest rate sensitive instruments into time buckets. For each instrument type, an appropriate yield curve is selected. The modified duration of each instrument is calculated from the change of its net present value due to a 1 percentage point parallel shift of the yield curve. The modified duration of equity is determined as the modified duration of assets times assets divided by equity minus the modified duration of liabilities times liabilities divided by equity.</p>	<p>Gap risk (only parallel risk)</p>	<ul style="list-style-type: none"> <li>• The metric only applies to marginal shifts of the yield curve. In the presences of convexities, it may underestimate the effect of larger interest rate movements</li> <li>• It only applies to parallel shifts of the yield curve</li> <li>• It fails to measure option risk and captures basis risk at best partially.</li> </ul>

Cash flow modelling	Metric	Description	Risks captured	Limitations of metric
		<p>PV01 of equity is obtained by multiplying the modified duration of equity by the value of equity (i.e. assets minus liabilities) and dividing by 10 000 to arrive at the value change per basis point.</p> <hr/> <p>The partial modified duration of an instrument for a specific time bucket is calculated as the modified duration above, except that not the entire yield curve is shifted in parallel, but only the yield curve segment corresponding to the time bucket. These partial measures show the sensitivity of the market value of the banking book to a marginal shift of the yield curve in particular maturity segments. To each time bucket's partial measure a different magnitude of a shift can be applied, such that the effect of a change of the yield curve's shape can be computed for the entire portfolio.</p>		
	<ul style="list-style-type: none"> <li>Partial modified duration/partial PV01</li> </ul>		<p>Gap risk (parallel and non-parallel risk)</p>	<ul style="list-style-type: none"> <li>The metric only applies to marginal interest rate changes. In the presence of convexity, the metric may underestimate the effect of larger interest rate movements.</li> <li>It fails to measure the basis and option risk.</li> </ul>
<p><b>Cash flows partially or fully conditional on interest rate scenario</b> (it is assumed that the <i>timing</i> of cash flows of options, of instruments with embedded, explicit options and – in more sophisticated approaches – of instruments of which the maturity depends on clients' behaviour, is modelled conditional on the interest rate scenario)</p>	<p><b><u>Earnings-based:</u></b> Focus on net interest income (NII) component:</p> <ul style="list-style-type: none"> <li>Change of NII</li> </ul>	<p>The change of NII is an earnings-based metric and measures the change of the net interest income over a particular time horizon (usually 1-5 years) resulting from a sudden or gradual interest rate movement.</p> <p>The starting point is the mapping of all cash flows of interest rate sensitive instruments to (granular) time buckets (or using the exact repricing dates of individual positions in more sophisticated systems).</p> <p>The base scenario for the calculations reflects the institution's current corporate plan to project the volume, pricing and repricing dates of future business transactions. The interest rates used to calculate future cash flows in the base scenario are derived from forward rates, appropriate spreads or market expected rates for different instruments.</p> <p>In assessing the possible extent of NII changes, banks use assumptions and models to predict the path of interest rates, the run-off of existing assets, liabilities and off-balance-sheet items, and their potential replacement.</p>	<p>Gap risk (parallel and non-parallel), basis risk and, provided <i>all</i> cash flows are modelled scenario dependent, also option risk</p>	<ul style="list-style-type: none"> <li>Sensitivity of the outcome to the modelling and behavioural assumptions</li> <li>Complexity</li> </ul>

Cash flow modelling	Metric	Description	Risks captured	Limitations of metric
		<p>Earnings-based metrics can be differentiated according to the sophistication of projecting future cash flows: simple <i>run-off models</i> assume that existing assets and liabilities mature without replacement; <i>constant balance sheet models</i> assume that maturing assets and liabilities are replaced by identical instruments; while the most <i>complex dynamic cash flow models</i> reflect business responses to differing interest rate environments in the size and composition of the banking book.</p> <p>All earnings-based metrics can be used in a scenario or stochastic analysis. Earnings at risk (EaR) is an example of the latter, which measures the maximum NII change at a given confidence level.</p>		
	<p><b><u>Economic value:</u></b> Focus on economic value of equity (EVE) • Change in EVE</p>	<p>The change in EVE is the change in the net present value of all cash flows originating from banking book assets, liabilities and off-balance-sheet items resulting from a change in interest rates, assuming that all banking book positions run off.</p> <p>The interest rate risk can be assessed by the <math>\Delta</math>EVE for specific interest rate scenarios or by the distribution of <math>\Delta</math>EVE using Monte Carlo or historical simulations. Economic value at risk (EVaR) is an example of the latter, which measures the maximum equity value change for a given confidence level.</p>	<p>Gap risk (parallel and non-parallel), basis risk and, if <i>all</i> cash flows are modelled scenario dependent, also option risk</p>	<ul style="list-style-type: none"> <li>• Sensitivity of the outcome to the modelling and behavioural assumptions</li> <li>• Stochastic metrics, which apply distributional assumption, may fail to capture tail risks and non-linearities</li> <li>• Full revaluation Monte Carlo approaches are computationally demanding and may be difficult to interpret ('black-box')</li> <li>• Complexity</li> </ul>

## Annex II – Sophistication matrix for IRRBB measurement

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Institutions should apply at least the level of sophistication in their risk measures shown in the table below corresponding to their categorisation under the SREP Guidelines. Where the complexity or scope of an institution's business model is significant, the institution should, notwithstanding its size, apply and implement risk measures that correspond to its specific business model and adequately capture all sensitivities. All material sensitivities to the interest rate changes should be adequately captured, including sensitivity to behavioural assumptions.

Institutions that offer financial products containing embedded optionalities should use measurement systems that can adequately capture the dependence of options to interest rate changes. Institutions with products that provide behavioural optionalities to clients should use adequate conditional cash flow modelling approaches to quantify IRRBB with regard to the changes in client behaviour that could occur under different interest rate stress scenarios.

The four categories referred to in the sophistication table below reflect the categorisation of institutions laid down in the EBA SREP Guidelines. The different categories reflect different size, structure and the nature, scope and complexity of activities of institutions; with Category 1 corresponding to the most sophisticated institutions.

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**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
<p><b>Unconditional cash flows</b> (it is assumed that the <i>timing</i> of cash flows is independent of the specific interest rate scenario)</p>	<p><b><u>Earnings-based:</u></b> Gap analysis:</p> <ul style="list-style-type: none"> <li>• Repricing gap</li> </ul>	<p>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).</p>			<p><i>[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’).]*</i></p>
	<p><b><u>Economic value:</u></b> Duration analysis:</p> <ul style="list-style-type: none"> <li>• Modified duration/PV01 of equity</li> <li>• Partial modified duration/partial PV01</li> </ul>	<p>Time buckets advised in BCBS Standards. Application of standard shocks. Yield curve model with tenors corresponding to the time buckets.</p>	<p>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.</p>	<p><i>[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.]*</i></p>	<p><i>[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.]*</i></p>

## IRRBB metric and modelling

## Indicative supervisory expectations regarding IRRBB metric and modelling depending on the institution's sophistication category

<b>Cash flows partially or fully conditional on interest rate scenario</b> ( <i>timing</i> of cash flows of options, of instruments with embedded, explicit options and – in more sophisticated approaches – of instruments of which the maturity depends on clients' behaviour, is modelled conditional on the interest rate scenario)	<b>Earnings-based:</b> •Net interest income (NII)	Standard shocks applied to earnings under a constant balance sheet. Based on time buckets advised in the BCBS Standards.	Standard and other interest rate shock and stress scenarios for the yield curve (see section 4.4, 'Measurement') applied to earnings, reflecting constant balance sheet or simple assumptions about future business development.	Standard and other interest rate shock and stress scenarios for the yield curve and between key market rates separately (see section 4.4, 'Measurement') applied to earnings projected by business plan or constant balance sheet. Including projected commercial margins consistent with the interest rate scenario (see section 4.4, 'Measurement').	Comprehensive interest rate and stress scenarios, combining shifts of yield curves with changes in basis and credit spreads, as well as changes in customer behaviour, are applied to reforecast business volumes and earnings to measure the difference compared with the underlying business plan. Including projected commercial margins consistent with the interest rate scenario (see section 4.4, 'Measurement').
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## IRRBB metric and modelling

### Indicative supervisory expectations regarding IRRBB metric and modelling depending on the institution's sophistication category

**Economic value:**

- Economic value of equity (EVE)

Application of standard and other interest rate shock and stress scenarios for the yield curve (see section 4.4, 'Measurement'), using time buckets as advised in the BCBS Standards; yield curve tenors corresponding to the time buckets.

Measure computed on transaction or cash flow basis. Application of standard and other interest rate shock and stress scenarios for the yield curve and between key market rates separately (see section 4.4, 'Measurement'). Adequate tenors in yield curves. Full optionality valuation.

Comprehensive interest rate and stress scenarios, combining shifts of yield curves with changes in basis and credit spreads, as well as changes in customer behaviour. Adequate tenors in all yield curves. Full optionality valuation. Scenario analysis complemented by Monte Carlo or historical simulations on portfolios with material optionality. Daily updating of risk factors.

\* For category 1 and category 2 institutions, unconditional cash flow modelling approaches do not reflect supervisory expectations

# Annex III – The standardised interest rate shock scenarios

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## 1. Interest rate shock scenarios and shock sizes

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<sup>17</sup>.

The shock size for the six interest rate shock scenarios is based on historical interest rates. More precisely, for capturing the local interest rate environment and cycle, a historical time series ranging from 2000 to 2015<sup>18</sup> for various maturities is used to calculate the parallel, short-end ('short') and long-end ('long') shocks for a given currency. However, deviations from the above-mentioned 16-year period are permitted if they better reflect a particular jurisdiction's idiosyncratic circumstances.

Table 1 displays the values calculated for the parallel, short and long interest rate shocks for selected currencies. The shocks capture the heterogeneous economic environments across the jurisdictions. These are then used to calculate the shocks for different maturities of the yield curve to create the interest rate shock scenarios as per the methodology explained below.

Table 1. Specified size of interest rate shocks  $\bar{R}_{shocktype,c}$

	ARS	AUD	BRL	CAD	CHF	CNY	EUR	GBP	HKD	IDR	INR
Parallel	400	300	400	200	100	250	200	250	200	400	400
Short	500	450	500	300	150	300	250	300	250	500	500
Long	300	200	300	150	100	150	100	150	100	350	300

	JPY	KRW	MXN	RUB	SAR	SEK	SGD	TRY	USD	ZAR
Parallel	100	300	400	400	200	200	150	400	200	400
Short	100	400	500	500	300	300	200	500	300	500
Long	100	200	300	300	150	150	100	300	150	300

<sup>17</sup> Material positions are defined in section 4.5, 'Supervisory outlier test'.

<sup>18</sup> The EBA may envisage a recalibration in due course.

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## 2. Calibration of other currencies

For calibrating interest rate shock sizes for further currencies, the following proceeding shall be applied:

### *Step 1: Calculation of the daily average interest rate*

Collect a 16-year time series of daily ‘risk-free’ interest rates for each currency  $c$  for the maturities 3M, 6M, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y and 20Y. Then, calculate the overall average interest rate for each currency  $c$  across all observations in the time series and for all maturities. The result is a single measure per currency.

### *Step 2: Applying the global shock parameters*

Apply the global shock parameters on the average interest rate, as per Table 2 below, to each currency  $c$ .

Parallel	$\bar{\alpha}_{parallel}$	60%
Short	$\bar{\alpha}_{short}$	85%
Long	$\bar{\alpha}_{long}$	40%

Applying the global shock parameters from Table 2 to the average interest rates calculated in step 1 results in revised interest rate shocks by currency for the different segments of the yield curve, i.e. for the parallel, short and long shocks.

### *Step 3: Applying the caps and floors*

The proposed interest rate shock calibration can lead to unrealistically low interest rate shocks for some currencies and to unrealistically high interest rate shocks for others. In order to ensure a minimum level of prudence and a level playing field, a floor of 100 bps as well as variable caps (denoted as  $\Delta\bar{R}_j(t_k)$ ) are set as 500 bps for the short-term shock, 400 bps for the parallel shock and 300 bps for the long-term shock, respectively.

The change in the ‘risk-free’ interest rate for shock scenario  $j$  and currency  $c$ , at time bucket tenor midpoint  $t_k$  can be defined as:

$$|\Delta\tilde{R}_{j,c}(t_k)| = \max\left\{100, \min\{|\Delta R_{j,c}(t_k)|, \Delta\bar{R}_j\}\right\},^{19}$$

where  $\Delta\bar{R}_j = \{400, 500, 300\}$ , for  $j = \{parallel, short \text{ and } long\}$ , respectively. Applying the caps and floors to the shocks calculated in step 2, and rounding to the nearest 50 bps, results in the final set of interest rate shocks by currency as shown in Table 1.

### *Step 4: Adjustments for further currencies that are not shown in Table 1*

As jurisdictions might have experienced major economic changes within the period 2000 to 2015, the proceeding in steps 1 to 4 might not be adequate for some of them. This is particularly the case if the interest rates during the first years of the period differ considerably from the interest rates in the more recent years.

For currencies that are not mentioned in Table 1, the time series to be used to calculate the average interest rate as per step 1 is determined using the following principle: If the average interest rate calculated as per step 1 for the period 2000 to 2006 is greater than 700 bps, then data from the

<sup>19</sup> In the case of rotation shock scenarios,  $\Delta\tilde{R}_{j,c}(t_1)$  cannot exceed 500 bps, and  $\Delta\tilde{R}_{j,c}(t_K)$  cannot exceed 300 bps, whereby  $t_1$  denotes the time bucket with the lowest maturity and  $t_K$  the time bucket with the highest maturity.

most recent 10 years (i.e. 2007 to 2016) or until when data is available shall be used; *otherwise* the full time series of data from 2000 to 2015 shall be used.

Using this principle allows us to identify high interest rate environments and periods of significant structural change before the financial crisis. Further, this principle aims at finding those currencies that exceed the cap ( $700 \text{ bps} \cdot 0.6 = 420 \text{ bps} > 400 \text{ bps}$ ) in the first years of the period considered and fosters a stronger consideration of more recent observed interest rates.

Table 3 shows the results of applying steps 1 to 4 on EU currencies that are not covered in Table 1. Interest rate shock sizes for other currencies can be similarly retrieved by applying the methodology outlined in this section.

Table 3. Specified size of interest rate shocks  $\bar{R}_{\text{shocktype},c}$  for additional EU currencies

	BGN	CZK	DKK	HRK	HUF	PLN	RON
Parallel	250	200	200	250	300	250	350
Short	350	250	250	400	450	350	500
Long	150	100	150	200	200	150	250

### 3. Parameterisation of the standardised interest rate shock scenarios

Given for each currency  $c$  the specified size of the parallel, short and long instantaneous shocks to the 'risk-free' interest rate, the following parameterisations of the six interest rate shock scenarios should be applied:

- (i) *Parallel shock for currency  $c$* : A constant parallel shock up or down across all time buckets:

$$\Delta R_{\text{parallel},c}(t_k) = \pm \bar{R}_{\text{parallel},c}$$

- (ii) *Short rate shock for currency  $c$* : Shock up or down that is greatest at the shortest tenor midpoint. That shock, through the shaping scalar  $S_{\text{short}}(t_k) = e^{-\frac{t_k}{x}}$ , where  $x = 4$ , diminishes toward zero at the tenor of the longest point on the term structure<sup>20</sup>. Where  $t_k$  is the midpoint (in time) of the  $k^{\text{th}}$  bucket and  $t_K$  is the midpoint (in time) of the last bucket  $K$ ):

$$\Delta R_{\text{short},c}(t_k) = \pm \bar{R}_{\text{short},c} \cdot S_{\text{short}}(t_k) = \pm \bar{R}_{\text{short},c} \cdot e^{-\frac{t_k}{x}}$$

- (iii) *Long rate shock for currency  $c$* : This shock is only applied to rotational shocks. The shock is greatest at the longest tenor midpoint and is related to the short scaling factor as  $S_{\text{long}}(t_k) = 1 - S_{\text{short}}(t_k)$ :

$$\Delta R_{\text{long},c}(t_k) = \pm \bar{R}_{\text{long},c} \cdot S_{\text{long}}(t_k) = \pm \bar{R}_{\text{long},c} \cdot \left(1 - e^{-\frac{t_k}{x}}\right)$$

- (iv) *Rotation shocks for currency  $c$* : Involving rotations to the term structure (i.e. for *steepeners* and *flatteners*) of the interest rates, whereby both the long and short rates are shocked and the shift in interest rates at each tenor midpoint is obtained by applying the following formulas to those shocks:

$$\Delta R_{\text{steepener},c}(t_k) = -0.65 \cdot |\Delta R_{\text{short},c}(t_k)| + 0.9 \cdot |\Delta R_{\text{long},c}(t_k)|;$$

<sup>20</sup> The value of  $x$  in the denominator of the function  $e^{-\frac{t_k}{x}}$  controls the rate of decay of the shock.

$$\Delta R_{flattener,c}(t_k) = +0.8 \cdot |\Delta R_{short,c}(t_k)| - 0.6 \cdot |\Delta R_{long,c}(t_k)|.$$

*Examples:*

*Short rate shock:* Assume the bank uses  $K = 19$  time bands and  $t_k = 25$  years (the midpoint (in time) of the longest tenor bucket  $K$ ), where  $t_k$  is the midpoint (in time) for bucket  $k$ . For  $k = 10$  with  $t_k = 3.5$  years, the scalar adjustment for the short shock would be:  $S_{short}(t_k) = e^{\frac{-3.5}{4}} = 0.417$ . Banks would multiply this by the value of the short rate shock to obtain the amount to be added or subtracted from the yield curve at that tenor point. If the short rate shock was +250 bps, the increase in the yield curve at  $t_k = 3.5$  years would be 104.2 bps.

*Steeper:* Assume the same point on the yield curve as above,  $t_k = 3.5$  years. If the absolute value of the short rate shock was 250 bps and the absolute value of the long rate shock was 100 bps (as for the euro), the change in the yield curve at  $t_k = 3.5$  years would be the sum of the effect of the short rate shock plus the effect of the long rate shock in basis points:  $-0.65 \cdot 250 \text{ bps} \cdot 0.417 + 0.9 \cdot 100 \text{ bps} \cdot (1 - 0.417) = -15.3 \text{ bps}$ .

*Flattener:* The corresponding change in the yield curve for the shocks in the example above at  $t_k = 3.5$  years would be:  $+0.8 \cdot 250 \text{ bps} \cdot 0.417 - 0.6 \cdot 100 \text{ bps} \cdot (1 - 0.417) = 48.4 \text{ bps}$ .

## 5. Accompanying documents

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### 5.1 Draft cost-benefit analysis/impact assessment

Article 16(2) of the EBA Regulation (Regulation (EU) No 1093/2010 of the European Parliament and of the Council) provides that, where appropriate, the EBA should analyse ‘the related potential costs and benefits’ of guidelines issued by the EBA. Such analysis shall be proportionate in relation to the scope, nature and impact of the guidelines. The following section provides an impact assessment of the guidelines. It includes an overview of the findings regarding the problems to be dealt with, options available to tackle the problems, and cost-benefit analysis compared with the baseline scenario.

Given that the guidelines touch mainly upon qualitative issues relating to the management of the IRRBB that do not imply any detrimental quantitative impact, the nature of the study has been adjusted accordingly. The analysis is therefore high-level and qualitative in nature; a quantitative impact assessment was not conducted within this first stage of the implementation of the BCBS Standards. Nevertheless, the EBA plans to conduct a quantitative impact study once its new mandates for drafting binding technical standards on IRRBB are approved in the revised CRD/CRR.

#### A. Problem identification

Interest rate risk in the non-trading book (IRRBB) is an important financial risk for credit institutions, which has traditionally been considered under Pillar 2. The supervisory framework therefore assumes that institutions develop their own methodologies and processes for identification, measurement, monitoring and control of this risk. These methodologies and internal processes are subject to the supervisory review and evaluation process carried out by the competent supervisory authorities.

The development of appropriate and high-quality internal methodologies and processes for the identification, measurement, monitoring and control of IRRBB constitutes one of the main prerequisites for keeping this risk under control.

In May 2015, the EBA published Guidelines on the management of IRRBB, to communicate its expectations regarding the management of IRRBB. These guidelines took into account the existing supervisory expectations and practices at that time, including the principles for the management and supervision of interest rate risk published by the BCBS in 2004.

In April 2016, the BCBS published an updated version of its standards on the management of IRRBB (BCBS Standards) to reflect changes in markets and supervisory practices. The BCBS Standards have confirmed the Pillar 2 approach to IRRBB and introduced some new elements in the management of IRRBB. Institutions are expected to implement the BCBS Standards by 2018.

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The BCBS Standards, in general, apply to large internationally active institutions (banks) on a consolidated basis. The EBA guidelines, on the other hand, apply to institutions authorised by the competent authorities to carry out their activities throughout the EU, taking into account the principle of proportionality. Given this, the EBA guidelines endeavour to maintain the level playing field as much as possible by translating international standards, deemed to be applied by the largest internationally active institutions only, to the single book of guidelines which are then applied in the same manner to institutions in all Member States.

The EBA guidelines published in May 2015 significantly increased transparency in terms of the supervisory expectations on the management of IRRBB. Nevertheless, the experiences of the national competent authorities have shown that some concepts and expectations introduced in the guidelines have not been fully understood or implemented in a way that is consistent with the supervisory expectations. Consequently, the implementation of the EBA guidelines varies across jurisdictions, which may have negative repercussions on the comparability of the level of IRRBB exposures that institutions face and ultimately on the risk profile and vulnerability of the institutions concerned, especially in the environment where changes in the general level of interest rates, which drive the level of risk, are widely expected. The issue of comparability mainly relates to the outcomes of the supervisory outlier test.

In addition, the EBA's general policy approach as far as guidelines are concerned is to review all guidelines on a regular basis and update them when needed, taking into account, among other things, the latest developments on international forums to make sure that guidelines spell out all relevant expectations.

After carefully considering the principle of a level playing field, divergences in the implementation of the existing EBA guidelines and resulting issues with the comparability of the outcomes of the supervisory outlier test, and given the need to reflect the developments in the international regulatory environment, the EBA deems it necessary to update the existing framework.

## B. Policy objectives

The main objective of these EBA guidelines is to set and communicate supervisory expectations for the management of IRRBB and to make sure that institutions implement appropriate internal risk management methodologies, processes and practices. The guidelines aim for European institutions to align with the BCBS Standards and follow the same rules as their international counterparts.

Building upon the current EBA guidelines on IRRBB and taking into account the BCBS Standards, the updated guidelines are expected to improve institutions' management of IRRBB, lead to the harmonisation of institutions' practices, and ultimately create a level playing field across EU jurisdictions with safer and sounder institutions.

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### C. Options considered and baseline scenario

When the BCBS published its new Standards in April 2016, the EBA considered its approach to and the timing of the update of the current EBA guidelines on IRRBB. Two general options were identified: keep the status quo until the finalisation of the CRD V package, or update the existing guidelines as soon as possible and as long as practical with some transitional provisions for smaller institutions.

Both options have been considered and analysed in the light of the identified problems.

#### **Option 1** – Status quo until the finalisation of the CRD V package

The status quo approach would not solve any of the identified problems. On the contrary, it might even worsen the situation given the changing interest rate environment. It is highly likely that it would have a negative impact on the level playing field, since large internationally active banks would implement the BCBS Standards directly, while other institutions would probably not implement them at all or implement them inconsistently depending on the approach, if any, adopted by the national competent authorities. Institutions with low levels of international activity might be excluded from implementing the BCBS Standards without considering their IRRBB exposures, although their IRRBB exposures might be elevated. This option would also preserve the issue of impaired comparability across institutions and jurisdictions given incomparable assumptions employed in the calculation of IRRBB exposures and especially the supervisory outlier test. Lastly, the EU framework and expectations regarding the management of IRRBB would not reflect the latest developments on international forums.

#### **Option 2** – Updating the existing guidelines as soon as possible and practical

The update of the existing guidelines would help to remedy the identified issues, enhance the management of IRRBB by institutions, and create a level playing field that fosters competition among EU banks and competitiveness vis-à-vis their international competitors.

As the majority of the EU institutions belong to jurisdictions that are also members of the BCBS, they are expected to implement the BCBS Standards by 2018. To this end, the EBA judges that both competent authorities and institutions should be provided with updated EBA guidelines that are aligned with the new BCBS Standards. A delayed response by the EBA would create uncertainty during a transitional period about whether or not the BCBS framework coincides with the EU approach.

Although the CRD V is expected to include new mandates for the EBA for the preparation of technical standards and revised guidelines on IRRBB, given the time needed for the finalisation and implementation of CRD V and, subsequently, for the development and implementation of the technical standards and revised guidelines, there would be a significant time gap between the implementation of the BCBS Standards on the one hand and the introduction of the technical standards and revised guidelines on the other. The update of the EBA guidelines prior to the finalisation of CRD V will allow this time gap to be bridged.

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After taking considering the available arguments for both options, the EBA decided that option 2, i.e. updating the guidelines, was the preferred option.

In addition to the two general options regarding the update of the guidelines and its timeline (see above), the EBA has also considered several specific options regarding the supervisory outlier test and principles for the calculation of this test. The EBA has, in particular, considered available options for the following principles: (i) the treatment of NPEs, (ii) the treatment of commercial margins, (iii) the after-shock negative interest rate floor, (iv) the minimum coverage of currencies and (v) the aggregation of currencies.

### **Treatment of NPEs**

Option A: providing guidance on how NPEs should be treated within the supervisory outlier test.

Option B: retaining the same approach as in the current guidelines, where no specific expectations on the treatment of NPEs have been provided.

Option A would allow better and more comprehensive coverage of interest rate sensitive instruments, as NPEs can, in general, be regarded as interest rate sensitive assets, taking into account the timing of their recovery.

Option B would leave the treatment of NPEs open and up to institutions, thus not improving the comparability of the outcomes of the supervisory outlier test. Moreover, it might also lead to the underestimation of IRRBB depending on NPE volumes.

Option A has been selected.

### **Treatment of commercial margins**

Option A: providing guidance on the treatment of commercial margins, but allowing institutions to apply their own internal approach in terms of the exclusion or inclusion of commercial margins.

Option B: providing guidance on the treatment of commercial margins and instructing institutions to use only one specific option in terms of the exclusion or inclusion of commercial margins.

Option A would give institutions full flexibility regarding the treatment of commercial margins. This option is especially important for institutions with less flexible or less developed internal systems that do not make the exclusion possible without additional adjustments and costs. The drawback of option A is that allowing flexibility for the calculation of the supervisory outlier test (with or without commercial margins) makes the outcomes of the test less comparable.

Option B would, on the other hand, not allow any flexibility. It would mean that institutions would have to adjust their systems accordingly. This option would bring additional costs for institutions that do not have flexible internal systems to calculate the supervisory outlier test with or without commercial margins. On the plus side, this option would allow more comparability of the outcomes of the supervisory outlier test.

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Option A has been selected. In addition, institutions are asked to notify the competent authority which approach they use.

#### **After-shock negative interest rate floor**

Option A: providing specific guidance on the after-shock negative interest rate floor.

Option B: retaining the 0% floor stipulated in the current guidelines.

Option A would reflect the interest rate environment in some countries where interest rates have moved to the negative territory and, thus, it would show the impact of negative interest rates on EVE under certain interest rate shock scenarios.

Option B would keep the existing approach, which might be more appropriate for some interest rate sensitive instruments, e.g. retail deposits.

Option A has been selected.

#### **Minimum coverage of currencies**

The minimum coverage of currencies is an important element in the calculation of the supervisory outlier test. It should be, on the one hand, sufficiently high to cover all material currencies and related material interest rate risk positions. The full coverage of all currencies may, on the other hand, require significant investments to cover each and every currency, including insignificant currencies which do not pose any material risk.

Option A: providing guidance to include at least currencies which account for 5% of the total non-trading book financial assets (excluding tangible assets) or liabilities and, at the same time, covering at least 90% of these non-trading book items.

Option B: providing guidance to include non-trading book positions in all currencies.

Option A would provide reasonable coverage by distinguishing between material and immaterial currencies and establishing a backstop of 90%.

Option B would assume full coverage of currencies without any differentiation in their materiality.

Option A has been selected.

#### **Aggregation of currencies**

Option A: to provide guidance on aggregating only negative changes to EVE occurring in currencies per interest rate shock scenario and disregarding any positive changes for the calculation of the supervisory outlier test.

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Option B: to provide guidance on aggregating both the full value of negative changes to the EVE and a certain part of positive changes, applying specific rules for the diversification benefits for the calculation of the supervisory outlier test.

Option A represents the most conservative and the most prudent approach to the aggregation of currencies. The calculation is relatively straightforward without any need to apply rules for the diversification benefits between currencies, which would add additional complexity to the calculation of the supervisory outlier test.

Option B would recognise the diversification benefits between currencies.

Whereas option A was included in the consultative document, following the public consultation on the guidelines, and the feedback received from industry participants, the EBA opted for a middle ground between taking into account full diversification benefits (option B) and no diversification benefits (option A). The final guidelines allow institutions to calculate the aggregate EVE change for the supervisory outlier test adding together any negative and positive changes to EVE occurring in each currency but weighting positive changes by a factor of 50%. The approach allows some aggregation to be taken into account, recognising the benefits of risk diversification while still having a prudent approach.

#### D. Cost-benefit analysis

The safety and soundness of institutions go hand in hand with resources, both financial and human resources, allocated to the so-called three lines of defence model on control functions, covering the control function within the business function on the one hand, and the two independent control functions, i.e. the risk management and compliance function and independent internal audit function, on the other hand.

From the supervisory perspective, the aim of updating the guidelines is twofold. First, the intention is to set out the qualitative supervisory expectations regarding the management of IRRBB and, ultimately, ensure that institutions further enhance their internal risk management methodologies, processes and practices. Sections 4.1, 4.2, 4.3 and 4.4 of the guidelines deal with supervisory expectations in this respect. Second, the supervisory outlier test is an important supervisory tool which should provide supervisors with relevant and comparable information on the levels of risk that individual institutions face in terms of EVE. In order to increase the relevance of the supervisory outlier test, the guidelines provide that institutions should apply six currency-specific interest rate shock scenarios in addition to the parallel +/-200 bps shocks. The six shock scenarios should better capture possible movements, including tilts and bends, of interest rates. The comparability of the test across institutions is, to a great extent, driven by assumptions and principles used for its calculation. Therefore, the guidelines stipulate principles for the calculation of the supervisory outlier test as set out in section 4.5.

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## 1) Update of the qualitative supervisory expectations

### **Costs**

As far as costs are concerned, the institutions will have to allocate resources, first, to review the compliance of their internal frameworks for the management of IRRBB with the updated EBA guidelines (gap analysis) and, second, to update the framework accordingly. Both the gap analysis and the update will require some financial and human resources. However, the general prudential expectation regarding the management of risks assumes that institutions regularly review and update their frameworks, including the developments in BCBS Standards. In this respect the update will not bring significant additional costs. Obviously, institutions will incur some costs especially for adjusting their IT systems, which play an important role in the management of IRRBB, should their gap analysis reveal a need for any upgrade or adjustments. The magnitude of IT-related costs will vary depending on the flexibility of a particular IT system but the overall cost in relation to the total operational costs is estimated to be relatively limited. Competent authorities are expected to have administrative costs related to the implementation of the guidelines.

### **Benefits**

The positive effects of the update include a wide range of benefits. On the one hand, the guidelines will bring more clarity on supervisory expectations for institutions and, on the other hand, they will strengthen the safety and soundness of institutions given the improved internal risk management frameworks, which is beneficial for the financial system as a whole.

### **Costs versus benefits**

The benefits of the update clearly outweigh associated costs, as there are no significant additional costs on top of expenditure on regular reviews and updates of internal risk management frameworks. The costs of any improvements to the risk management of IRRBB are expected to be outweighed by the benefits of an improved understanding and mitigation of the risk, reducing the incidence of unexpected losses. Moreover, the update will enhance the safety and soundness of institutions and help maintain the level playing field.

## 2) Supervisory outlier test

### **Costs**

The current EBA guidelines on IRRBB provide five principles for the calculation of the supervisory outlier test including shock scenarios (+/-200 bps). The updated guidelines, on the hand, specify 19 principles including 2 sets of shock scenarios in order to increase the comparability of results and limit unjustified or unreasonable assumptions, which could lead to the understatement of IRRBB. Institutions may incur costs related to the implementation of both the principles for the calculation and the six shock scenarios.

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When it comes to the implementation of the six shock scenarios, the implementation costs should be rather limited given the fact that the current guidelines have already introduced an expectation that institutions apply an appropriate range of different interest rate shock scenarios. Therefore, institutions should already have internal systems flexible enough to use additional shock scenarios and to calculate changes in EVE accordingly (see the comment on negative interest rate shock scenarios, below). Consequently, the EBA does not expect any additional specific costs in this respect.

The remaining principles (17 principles without 2 sets of shock scenarios) for the calculation of the supervisory outlier test combine (i) the principles from the current guidelines, e.g. risk-free yield curve, (ii) new general principles such as run-off balance sheet, minimum coverage in terms of currencies, aggregation of currencies, etc., and (iii) new specific principles, e.g. negative interest rate floor and the treatment of commercial margins.

One can reasonably expect that the principles that have already been introduced in the current guidelines will not bring any additional costs although institutions may, on their own, decide to revisit their systems to make them more flexible or appropriate for risk management purposes.

The new general principles, which aim to improve the comparability of the outlier test results, may require some additional financial resources to adjust internal systems. This may in particular be the case for the inclusion of non-performing exposures.

Similarly to the general principles, the specific principles pursue the goal of increasing comparability, and, accordingly, deal with some distinctive features of IRRBB such as negative interest rates in the shock scenarios and the treatment of commercial margins. Having been aware of the complexity the treatment of commercial margins may bring, the EBA has decided to make both options possible, i.e. either inclusion or exclusion depending on the abilities of internal systems and compliance with certain conditions for the latter. Thus, institutions should not have any additional costs. The removal of the 0% floor and the application of negative interest rates will probably require some investments, especially for institutions whose internal systems are not able to tackle negative interest rates. The related costs will largely depend on the flexibility of a particular IT system.

## **Benefits**

The update of the section on the supervisory outlier test brings additional clarity for both supervisors and institutions alike regarding the way how the test should be calculated. A significant benefit is the increase of the comparability of the test results together with better information about the IRRBB position under various shock scenarios capturing a wide range of interest rate movements.

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### **Costs versus benefits**

The updated guidelines bring both benefits and costs. The benefits are mainly related to the improved clarity on how institutions should calculate the supervisory outlier test and the significantly increased comparability of its results, while the costs stem from changes necessary to be made in institutions' internal systems. However, these costs are rather one-off costs and balanced by overall benefits.

## 5.2 Feedback on the public consultation and on the opinion of the BSG

The EBA publicly consulted on the draft proposal contained in this paper.

The consultation period lasted for 3 months and ended on 31 January 2018. Twenty-three responses were received, of which 19 were published on the EBA website.

This paper presents a summary of the key points and other comments arising from the consultation, the analysis and discussion triggered by these comments and the actions taken to address them if deemed necessary.

In many cases several industry bodies made similar comments or the same body repeated its comments in the response to different questions. In such cases, the comments and EBA analysis are included in the section of this paper where the EBA considers them most appropriate.

Changes to the draft guidelines have been incorporated as a result of the responses received during the public consultation.

### Summary of key issues and the EBA's response

There was general agreement that interest rate risk arising from non-trading book activities (IRRBB) is an important financial risk for banks, as adverse movements in interest rates have the potential to pose a risk to banks' earnings and capital position, and that exposure to IRRBB should be properly managed. Given the nature of IRRBB, respondents continue to support that IRRBB is captured under Pillar 2.

A general comment raised by several respondents was that the guidelines should not frontload the implementation of the BCBS Standards in the EU Level 1 legislation under the form of the Capital Requirements Directive and the Capital Requirements Regulation that are currently under revision. Whereas there is support for the inclusion of the qualitative aspects of the BCBS Standards in the revised guidelines, several respondents objected to the inclusions of any quantitative components such as the additional outlier test. It was also pointed out that the additional outlier test should be subject to a quantitative impact assessment, even if it is implemented as an 'early warning indicator'.

The introduction of the credit spread risk in the banking book (CSRBB) raised a number of comments. The definition, scope and expectations were perceived as not being sufficiently detailed. Furthermore, several respondents indicated that CSRBB should not be included in the IRRBB Guidelines because of the different nature of the credit spread risk.

Respondents underlined that internal capital for IRRBB should be held to the extent that there is a risk of loss, and asked for this to be made specific throughout the section on internal capital. Respondents appreciated the explicit confirmation that banks are expected to model their capital requirement using their own internal models with an earnings and economic value approach. In

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addition, the use of the term 'economic value' as opposed to 'EVE' throughout the section on internal capital is welcomed, as it acknowledges the diversity of business models and hedging practices.

Respondents noticed a greater focus on derivatives in the revised version of the guidelines but interpreted the provisions as seemingly viewing derivatives as a potential source of risk taking in the banking book, as opposed to a set of hedging instruments that are used to reduce risk. A number of respondents did not see the purpose of separately quantifying the IRRBB of banking book derivatives.

The transitional period granted to SREP category 3 and 4 banks was welcomed in view of the significant effort required, particularly on the part of the smaller banks, to implement the new requirements on CSRBB and the additional outlier test. A number of respondents indicated that the larger SREP category 1 and 2 banks would also need more time to implement the guidelines and requested to delay the implementation date accordingly.

Whereas the general principle of proportionality included in the guidelines was welcomed, there was a request for proportionality to be more explicitly detailed in each section. In particular, it was requested to clarify – in each section – the specific obligations that are not applicable to SREP category 3 and 4 institutions. Doing this would provide smaller banks with certainty about the supervisory expectations. Furthermore, the guidelines were seen by some to be overly burdensome for smaller, less complex banks, in particular the complexity of the information required under the supervisory outlier test.

For the calculation of the supervisory outlier test, a majority of respondents supported the flexibility provided to institutions to include or exclude commercial margins. Not all institutions' internal systems are flexible enough to exclude commercial margins, as their development depends on the internal management framework. The costs of adapting systems to exclude margins are estimated to vary among banks.

The reference level of the proposed negative linear lower bound for the supervisory outlier test was perceived as being too conservative. In addition, the proposed currency aggregation which disregards any positive changes to the EVE was deemed to be punitive for institutions that aim to manage interest rate risk on a combined balance sheet basis across all currencies. In view of the correlation between currencies, respondents proposed allowing aggregation of all currency shocks, irrespective of their positive or negative outcome, for the purpose of the supervisory outlier test.

The EBA carefully examined all the comments received (see table below) and amended the text of the guidelines where appropriate.

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## Summary of responses to the consultation and the EBA's analysis

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>General comments</b>			
<b>Frontloading legislation</b>	<p>EU</p> <p>Several respondents pointed out that the guidelines should not frontload the EU legislation and suggested postponing the introduction of CSRBB and the new outlier test until the BCBS framework has been transposed into the CRD V/CRR II.</p> <p>Whereas some respondents supported the inclusion of the <i>qualitative</i> aspects of the BCBS IRRBB Standards into the EBA guidelines, they indicated that any <i>quantitative</i> components can be introduced only after the conclusion of the CRD V/CRR II framework.</p> <p>A few respondents proposed postponing the new guidelines entirely until the legislative process is concluded to avoid any misalignments and consequent recalibration of the guidelines that would constitute an additional implementation burden for institutions.</p>	<p>The EBA notes the suggestion of postponing the introduction of CSRBB and the new outlier test until the BCBS framework has been transposed into EU legislation. The EBA wishes to clarify that a transitional and progressive approach is adopted to the implementation of the BCBS framework to bridge the time gap between the implementation date of the BCBS IRRBB Standards (January 2018) and the entry into force of the revised CRD/CRR framework. The approach is focused on ensuring consistency between the different policy products. With regard to the additional outlier test, the EBA wants to clarify that no supervisory measures are attached to it under the guidelines.</p>	No changes made
<b>International playing field</b>	<p>level</p> <p>A few respondents recommended that the implementation of the BCBS Standards at EU level should be contingent on similar</p>	<p>The EBA agrees with the concern about the international level playing field, and wishes to point out that the full, timely and</p>	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>implementation in major supervisory jurisdictions to avoid putting European banks at a competitive disadvantage, and secure a level playing field.</p>	<p>consistent implementation of the BCBS Standards remains fundamental to building a resilient financial system, maintaining public confidence and providing a level playing field for internationally active banks. Delayed or partial implementation may have implications for the level playing field, and puts unnecessary pressure on jurisdictions that have implemented the standards agreed at BCBS level.</p>	
<b>Level of application</b>	<p>A number of respondents raised questions about the level of application of the guidelines.</p> <p>Some respondents asked for clarification of whether the guidelines apply at solo/sub-consolidated level or at the highest consolidated level; others indicated that the guidelines should only be applicable at the highest level of consolidation.</p> <p>According to participants, in particular the 15% threshold for the additional outlier test should apply to banks that are neither large nor internationally active only after an impact study, as it has not been tested at the individual entity level or for smaller institutions.</p> <p>A few respondents asked for a clearer definition of small trading book business,</p>	<p>The EBA wishes to clarify that the scope of the guidelines includes institutions defined in point 3 of Article 4(1) of the CRR, covering both credit institutions and investment firms at the entity level. The level of application will be in line with the level of application of requirements applicable to the institution under CRD/CRR. This is in line with the scope of application for the current EBA IRRBB Guidelines.</p> <p>A quantitative impact study is planned to be organised in the light of the introduction of the new outlier test to replace the current outlier test in the Level 1 text (Capital Requirements Directive), and any related technical standards. For the quantitative impact study to be organised in the light of the introduction of the new outlier test, it is</p>	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>especially with regard to the application level of the guidelines.</p>	<p>planned to invite also small- and medium-sized institutions to participate in order to test the impact at the level of different-sized EU institutions at consolidated and individual levels.</p> <p>The small trading book items are to be included in the calculation of the supervisory outlier test only for institutions taking advantage of the derogation granted in Article 94 of the CRR.</p>	
<b>Proportionality</b>	<p>A number of respondents indicated it would be useful if proportionality were explicitly detailed in each section to explain how proportionality can be applied in practice. In particular, it would be deemed helpful to clarify in each section for SREP category 3 and 4 institutions which specific obligations they are not expected to comply with. This would provide smaller banks with certainty about the supervisory expectations. Furthermore, the guidelines appear to be overly burdensome for smaller, less complex banks, in particular the complexity of the information required under the supervisory outlier tool.</p> <p>For the additional outlier test, additional qualitative and quantitative relief is requested for smaller and less complex</p>	<p>The EBA notes the comments on the proportionality, and wishes to clarify that proportionality applies throughout the guidelines as laid down in the general provisions. In addition to the current references to proportionality (in paragraphs 19, 20, 44(c), 46(b), 47, 86, 89, and 91) the EBA has strengthened the general proportionality principle throughout the different sections.</p>	<p>Paragraph 19 has been amended to include that institutions should identify their existing and prospective exposure to IRRBB <b>in a proportionate manner</b> depending on the level, complexity and riskiness of the non-trading book positions they face or through an increasing risk profile that takes into account their business model, strategies and the business environment they operate in or intend to operate in.</p> <p>In paragraph 20, it has been specified that, based upon the assessment of the existing and prospective exposure to IRRBB, institutions should consider <del>all</del> elements and expectations stipulated and implement them in a way commensurate with existing and prospective exposure to IRRBB.</p> <p>In paragraph 43(c), it has been added that institutions should also take into account the ‘potential’ impact on the P&amp;L accounts of</p>

## Comments

## Summary of responses received

## EBA analysis

## Amendments to the proposals

banks – such as flexibility in terms of the frequency and complexity of calculations, or allowing banks with limited IRRBB to use simple and standardised stress tests with less frequent calculations and reporting. A number of respondents also asked that the high complexity of the interest rate scenarios be reduced depending on the size of banks, the complexity of their balance sheet structure and their limited IRRBB exposures.

hedging interest rate derivatives in case their effectiveness was hampered by interest rate changes.

In paragraph 44(d), it has been clarified that, depending on the nature of an institution's activities and business model, sub-limits may also be identified for individual business units, portfolios, instrument types, specific instruments or **material** sub-types of IRRBB risk such as gap risk, basis risk and option risk.

A reference has been included in paragraph 68 to make explicit that the management reporting should be adapted to the specific situation of the institution and the economic environment.

It has been specified in paragraph 80 that the internal measurement systems should capture all components and sources of IRRBB **which are relevant for the institution's business model.**

It has been clarified in paragraph 81 that institutions should measure and monitor the IRRBB of their banking book interest rate derivatives **where relevant for the business model.**

It has been added in paragraph 99 that any **material** second-round affects should be computed in enterprise-wide stress tests.

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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**Relation between IRRBB guidelines and the EBA EU-wide stress test**

One respondent requested that the relation between the IRRBB guidelines and the EBA EU-wide stress test be defined, as well as the accounting standard that should be used.

The EBA wishes to clarify that IRRBB as such is not in the scope of the 2018 EBA EU-wide stress test. The stress test will include a stress of the NII (because of changes in reference rates and margins) and the cost of funding, but no stress of the IRRBB. For the 2018 EU-wide stress test, the IFRS 9 accounting standards have been incorporated.

No changes made

**IT-related issues**

Some respondents pointed out IT-related issues for the implementation of the guidelines.

As a general consideration on IT systems and data quality, it was highlighted that the requirements for IT systems should not be identical for all institutions, but should cover only the relevant material risks for the institutions in question.

One respondent indicated that, as NPEs are usually handled by banks in specific (credit-related) systems, integrating these systems within the IRRBB calculation engines could pose an issue, which could require significant IT investment as well as sufficient time and project resources. For this reason a longer implementation period is needed.

A large number of respondents pointed out that implementing a linearly

The EBA notes the IT-related issues raised by respondents.

As laid down in paragraph 54(a), the IT systems should capture interest rate risk data on all the institution's *material* IRRBB exposures.

With regard to the application of paragraphs 54(b) and 54(e), and in line with the current IRRBB Guidelines, the EBA wishes to clarify that the IT systems should be sufficiently granular to be able to record all transactions and measure the contributions of individual transactions to the overall exposure. However, there is no real-time detailed reporting required on transaction level with regard to the impact of IRRBB. As indicated in paragraph 65, the internal reports should be provided to the management body or its delegates with information at relevant levels of

No changes made

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	<p>increasing lower bound would be cumbersome from an IT perspective (subject to IT constraints depending on the functionality offered by different ALM software solutions, the change in floor over time by 5 bps is difficult to automate in a system).</p>	<p>aggregation (by consolidation level and currency).</p>	
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	<p>Some respondents suggested clarifying if paragraph 54(b) and 54(e) apply at individual institution level and do not apply at consolidated level. That is to say that there is no requirement to have all individual transactions available at the consolidated level (typically at head office level). Each institution should be free to consider how to manage data on a line-by-line basis or an aggregated basis.</p>		
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**Responses to questions in Consultation Paper EBA/CP/2017/19**

*Subject matter, scope and definitions*

**Definitions**

**Question 1.**

**Are the definitions sufficiently clear? If not, please provide concrete suggestions and justify your answer.**

<p><b>Interest rate risk arising from non-trading book activities</b></p>	<p>Several respondents requested clarification on the definition of interest rate risk arising from non-trading book activities. According to respondents, 'current and prospective' risk does not</p>	<p>The EBA notes the comments with regard to the definition of interest rate risk arising from non-trading book activities, and would like to clarify that the reference to 'current and prospective' risk is in line with</p>	<p>No changes made</p>
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>seem compatible with the two measures of interest rate risk (earnings and EV), since EV only allows for a current, not prospective, estimate. Current risk to earnings would be unclear, as it would require factoring in assumptions to derive 'forward looking economic value' and it is difficult to understand what could be 'current earnings'.</p> <p>The word 'prospective' would need to be clarified or removed, as prospective risk to economic value seems to be questionable given the use of assumptions and resulting lack of comparability, and given that the value calculated is only relevant for any actual day.</p> <p>Clarification has been requested with regard to the scope of IRRBB regarding business risk (product margins), as the pressure on business margins is not always due to changes in interest rates; it may also be caused by increased competition in markets.</p>	<p>the BCBS definition. The definition also refers to current 'or' prospective risk.</p> <p>Business risk should be taken into account in the stress test for NII for maturing instruments and how credit spread of new business should be modelled (as provided for in paragraph 101(e)). The projection of NII takes into account the credit spread of new business that could be conditional on interest rate risk.</p>	
<b>Interest rate sensitive instruments</b>	<p>Several respondents requested clarification in the definition of how interest rate sensitive instruments affect IRRBB.</p>	<p>The EBA welcomes the comment and has amended the definition of interest rate sensitive instruments to remove the reference to instruments affecting IRRBB in order to align the definition with the one used in the BCBS Standards.</p>	<p>The definition of interest rate sensitive instruments has been amended to read:</p> <p>Assets, liabilities and off-balance-sheet items in the non-trading book, excluding assets deducted from CET1 capital, e.g. real estate or intangible assets or equity exposures in the non-trading book.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		<p>Furthermore, the reference to interest rate sensitive instruments in section 4.5 has been brought in line with the definition by removing the mention of the deduction of own funds, which would be broader than the CET1 deduction captured under the BCBS definition.</p>	<p>Paragraph 115(a) has been amended as follows:</p> <p>When calculating the change in EVE for the purpose of paragraphs 113 and 114, institutions should in particular apply the following principles:</p> <p>(a) All positions from interest rate sensitive instruments <del>which are not deducted from own funds</del> should be taken into account.</p>
<b>Gap risk</b>	<p>A few respondents requested clarification of the definition and the use of 'gap risk', and indicated that the current definition seemed to refer to yield curve risk instead of gap risk.</p>	<p>The EBA notes the comment on the gap risk definition and would like to clarify that the definition used in the guidelines is aligned with the one used in the BCBS Standards, which includes both yield curve and gap risk.</p>	No changes made
<b>Basis risk</b>	<p>Several respondents indicated that the definition of basis risk needs to be clarified, and that it does not seem to be used in a consistent way throughout the document.</p> <p>The definition refers to only changes in the spread between similar tenors, but in Table 1 it seems to limit the focus to 'derivatives and other hedging</p>	<p>The EBA notes the comments with regard to the definition of basis risk and would like to clarify that the reference to 'similar tenors' has been retained because the use of 'identical tenors' does not seem practical for the implementation. Nevertheless there is still a logical distinction between gap risk and basis risk.</p>	No changes made

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instruments’ and broaden the scope to ‘timing difference neglected by gap analysis.’ In particular, since the definition in the definitions section refers to only changes in the spread between similar tenors, it is not clear whether or not the basis risk should also be referred to instruments indexed to Euribor/Libor with different tenors (e.g. asset Euribor 6 months paid semi-annually vs Euribor 1 month paid monthly).

**Option risk**

Several respondents requested clarification of the definition of option risk.

Respondents asked if embedded behavioural option risk includes implicit options that are not automatically exercised (e.g. loan commitment), and how they should be treated.

Respondents pointed out that exercise scenarios that depend not on the market rate of interest but on the personal situation of the customer are not described here. If these are not classified under interest rate sensitive instruments with an impact on IRRBB, they should be added here. These options are not interest rate sensitive, but still affect interest rate risk.

The EBA notes the comments on the definition of option risk and agrees that wholesale loans could be considered behavioural assumptions. Implicit options that are not automatically exercised should also be taken into account in option risk. The definition is deemed to provide sufficient leeway to classify the options.

No changes made

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<b>CSRBB</b>	<p>Several respondents indicated that the CSRBB definition and/or its scope need to be clarified. The definition was deemed to be very broad and to capture unintended items, such as product margins. Respondents indicated that banks typically focus on a narrower definition of CSRBB – the potential variation in fair value spread-sensitive line items which has a direct impact on bank capital.</p> <p>Unlike the CSRBB definition in the BCBS Standards, it was deemed that the proposed definition creates a risk of double-counting with other types of risk – such as credit risk – that are already captured under the Pillar 1 framework.</p>	<p>The EBA welcomes the comments on the definition of CSRBB, and proposes an amended wording for the definition. The revised wording aims to provide a positive definition and clarify the scope of CSRBB.</p> <p>Liabilities should be excluded from the scope of CSRBB, as the widening of spreads, i.e. deterioration of a bank's creditworthiness, would have a positive impact on the risk measure.</p> <p>The EBA wishes to clarify that credit risk referred to in the definition indicates migration risk.</p> <p>Further guidance on CSRBB will be provided in the future guidelines on CSRBB which are expected to be mandated under CRD V.</p>	<p>The CSRBB definition has been amended to read:</p> <p>The risk driven by changes in the market perception about the price of credit risk, liquidity premium and potentially other components of credit-risky instruments inducing fluctuations in the price of credit risk, liquidity premium and other potential components, which is not explained by IRRBB or by expected credit/(jump-to-)default risk.</p>
<b>Conditional cash flows</b>	<p>A few respondents requested clarification on the definition of conditional cash flows: in particular, whether they are connected only to behavioural assumptions on client actions or also to optionality in products, and if the definition is referring to product caps and floors and taking into account a number of rate paths.</p>	<p>The EBA wishes to clarify that the timing and amount of conditional cash flows is dependent on the specific interest rate path. This is linked not only to behavioural assumptions but also to optionality in products.</p>	No changes made
<b>Dynamic balance sheet</b>	<p>One respondent requested that the degree of dynamic modelling be proportionate to the impact of the</p>	<p>The EBA welcomes the comment and wishes to clarify that the depth of modelling should indeed be proportionate</p>	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	particular metric and to the size of the institution.	to the impact of the particular metric and to the risk profile of the institution.	
<b>Constant balance sheet</b>	Several respondents indicated that the definition of constant balance sheet referring to 'like-for-like replacement of assets and liabilities as they run off' was too strict and not realistic. Respondents proposed allowing for a consistent duration of assets and liabilities, in line with responsible management of IRRBB.	The EBA acknowledges the comment on the constant balance sheet definition and wishes to clarify that the 'duration' is assumed. The definition aims for constant duration in the institution's balance sheet. In order to clarify this, the definition has been amended in line with the constant balance sheet definition used in the BCBS Standards.	The constant balance sheet definition has been amended to read:  A balance sheet including off-balance-sheet items in which the total size and composition are maintained by replacing maturing or repricing cash flows with new cash flows that have identical features with regard to the amount, repricing period and spread components.
<b>OTHER, NON-OUTLINED DEFINITIONS</b>			
<b>Automatic options</b>	A few respondents asked for clarification of the definition of automatic options, and whether it includes only explicit options or also includes any non-retail implicit options (e.g. a loan commitment) that would be exercised automatically.	The EBA wishes to clarify that, in line with the BCBS Standards, automatic options are understood to refer to those options where the customer and the institution can assume that the exercise of options will be based on rational expectations, and where the holder will almost certainly exercise the option if it is in their financial interest to do so (as opposed to behavioural options, where behaviour will not always be rational). Automatic options include standalone instruments, such as exchange-traded and over-the-counter option contracts, and those which are explicitly embedded within the contractual terms of	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		an otherwise standard financial instrument (e.g. a capped rate loan).	
<b>Short and medium term</b>	A few respondents requested clarification on the meaning of 'short' and 'medium' term, especially regarding earnings measures.	The EBA notes the comment and wishes to clarify that short term would be up to 3 years, medium term from 3 to 5 years, and long term over 5 years.	No changes made
<b>Core and unstable balances</b>	Further clarification was requested on the use of the terms 'core' and 'transient balances', and the difference between 'core' and 'unstable balances'.	<p>The EBA welcomes the comment, and has amended the wording to align it with the definition of core balances included in the BCBS Standards.</p> <p>The EBA wishes to clarify that point (a) of paragraph 108 refers to loan prepayments, while points (b) and (c) are related to early redemption in term deposits.</p> <p>Furthermore the reference to low cost balances has been replaced with 'core and other modelled' balances.</p>	The description of core balances in paragraph 108 has been amended to align it with the definition of core balances included in the BCBS Standards.
<b>General provisions</b>			
<b>General comments</b>			
<b>Implementation timeline</b>	Several respondents indicated that the industry would need more time to implement the guidelines and proposed a period of between 1 and 2 years for implementation after the release of the final version.	The EBA notes the comment and would like to indicate that a number of amendments have been made to the guidelines to ease the implementation (such as the clarification of the proportionality principle, the softening of the expectations for CSRBB, the simplification of the expectations on the setting of the risk	The implementation date has been amended to 30 June 2019 with an additional 6 months of transitional provisions for SREP category 3 and 4 institutions to implement the provisions on CSRBB (paragraph 18) and the additional outlier test (paragraph 114).

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>One respondent pointed out that, as NPEs are usually handled by banks in specific (credit-related) systems, integrating these systems within the IRRBB calculation engines could pose an issue, which could require significant IT investment as well as sufficient time and project resources. For this reason, a longer implementation period is needed.</p>	<p>limits, the inclusion of the link with the business models for the IRRBB measurement, the addition of a materiality threshold for the inclusion of NPEs for the purpose of the supervisory outlier test, and the softening of the approach for currency aggregation for the supervisory outlier test allowing currency diversification with positive changes to be weighted by a factor of 50%.) In addition to these amendments, the implementation date and transitional provisions have been postponed by 6 months to allow institutions more time to implement the guidelines.</p>	
<p><b>Calculation methods</b></p>	<p>One respondent pointed out that the annexes are not clear/extensive enough, because of a lack of base assumptions.</p>	<p>The EBA notes the comment, and wishes to clarify that Annex I is only illustrative and firms can use their own measurement methods as an alternative to those listed in Annex I. This has been made more explicit in the wording. The standardised approach will be further defined in the technical standards expected to be mandated under the CRD V framework.</p>	<p>Paragraph 86 has been amended to read: Institutions should not rely on a single measure of risk but should instead use the range of quantitative tools and models that corresponds to their specific risk exposure. To that end, institutions should consider the application of the methods listed in Annex I <b>but not limit themselves to those</b>, to ensure that various aspects of interest rate risk are captured adequately.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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**Question 2.**

**Are the guidelines in section 4.1. regarding the general provisions sufficiently clear? If not, please provide concrete suggestions.**

<b>Market value changes on earnings measure</b>	Several respondents indicated that it is unclear why market value is included for the calculation of the impact of interest rate movements in the earnings perspective, as market value movements are already captured in EVE.	The EBA notes the comments, and wishes to clarify that market value changes apply to both earnings and EV measures.	No changes made
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<b>Earnings scenario stress</b>	<p>One respondent indicated that it is unclear how EaR positions are stressed. It is assumed that an EaR stress, i.e. one that assumes a constant balance sheet approach, is being suggested. If this is correct, it is not clear how these positions should be stressed. An EV-type stress would appear to be more appropriate.</p> <p>An EaR measure for a historical lookback could produce an outcome which is favourable, whereas a specified worst-case interest rate scenario will always be unfavourable for economic value. The guidelines need to make clear which approach is appropriate.</p>	Further to the comments, the EBA wants to clarify that, as it is the interest rate which is stressed under the stress scenario, it is still possible to use a constant balance sheet.	No changes made
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<b>Derivatives and off-balance sheet items</b>	A few respondents indicated that it is unclear what is expected from institutions regarding the interest rate risk from interest rate derivatives. They requested that interest rate sensitive loan	The EBA notes the comment and wishes to clarify that loan commitments are off-balance-sheet items and are considered interest rate sensitive instruments of	No changes made
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>commitments be defined more specifically, in particular whether these apply only to fixed positions or also to variable positions.</p>	<p>which the expected cash flows and their timing need to be reflected.</p>	
<p><b>CSRBB identification, monitoring and measurement</b></p>	<p>Several respondents indicated that the actual expectations on the identification, monitoring and measurement of CSRBB should be specified, in particular the scope of CSRBB. Alternatively, CSRBB should be excluded from the guidelines because of the different nature of the risk, and in view of the risk of double-counting.</p>	<p>The EBA agrees that the guidance included in the guidelines on CSRBB is high level. In this respect, we amended the wording to fully align it with the requirement on CSRBB in the BCBS Standards. In line with the transitional and progressive approach to the implementation of the BCBS Standards, CSRBB has been included in the scope of the guidelines to allow banks to prepare for its implementation. More detailed requirements will be included in the guidelines expected to be issued under the mandate of CRD V.</p>	<p>The guidance on CSRBB in paragraph 18 has been amended as follows:</p> <p>Institutions should <del>identify</del> monitor <del>measure</del> and assess their CSRBB-affected exposures, <b>by reference to the asset side of the non-trading book, and ensure that CSRBB is adequately controlled if where CSRBB is</b> relevant for the risk profile of the institution.</p>
<p><b>Prospective exposure</b></p>	<p>A few respondents indicated that the reference to 'existing and prospective' exposure is either unclear or superfluous, as prospective risk already exists.</p>	<p>The EBA would like to clarify that the reference to 'current and prospective' risk is in line with the BCBS definition. The definition also refers to current 'or' prospective risk.</p>	<p>No changes made</p>
<p><b>Accounting standards</b></p>	<p>One respondent requested clarification that future interest income is calculated following the IFRS 9 principles. Cash flows should be aligned with the accounting recognition of interest income and balance sheet value.</p>	<p>The EBA would like to clarify that the accounting framework is outside the scope of these guidelines.</p>	<p>No changes made</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Legitimacy of interest rate risk</b>	<p>A few respondents pointed out that some IRRBB positions arise for legitimate reasons (e.g. operational time lags, macro hedges and expectations of offsetting customer flow), and requested that the guidelines explicitly acknowledge legitimate interest rate risk taking and differentiate it from less legitimate interest rate risk taking.</p>	<p>The guidelines aim to clarify the supervisory expectations regarding the management of interest rate risk arising from non-trading activities, regardless of the business rationale behind it.</p>	No changes made
<b>Treatment of cash flows from NPEs as interest rate sensitive instruments</b>	<p>Several respondents suggested adding further guidelines on the NPE definition, technical guidance on NPE parameters, and standard parameters to be used by smaller banks (for proportionality reasons). It was also requested that smaller banks be allowed not to take into account NPEs.</p> <p>One respondent pointed out that banks should also take into account the behaviour of assets once an impairment has been recognised. It may be that such net exposures should be better regarded as a fixed, rather than variable, asset, but subject to modification based on the bank's actual approach.</p>	<p>The EBA welcomes the comments, and has added a reference to the NPE definition in line with the ITS (EU) 680/2014 on supervisory reporting.</p> <p>Notwithstanding the heterogeneity of non-performing exposures, banks may employ several methodologies to model the cash flow profile of non-performing exposures based on their expectations: in general, the lower the credit quality of a non-performing exposure, the higher the likelihood that the associated cash flows will be driven by the time of repossession of the collateral or any other residual value of the exposure. On the contrary, the higher the credit quality of a non-performing exposure, the higher the likelihood that the associated cash flows will remain close to the contractual schedule.</p>	<p>A reference has been added to the NPE definition as included in Annex V of Regulation (EU) 680/2014.</p>
<i>Further guidance</i>	<p>Another respondent indicated that the modelling of NPE requires significant data analysis and the need to make a number of assumptions. This could be burdensome and time-consuming, in</p>		

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	particular for those institutions that have portfolios with a low probability of default.	The inclusion of standard NPE parameters for smaller institutions does not seem feasible in the current environment.	
<p><b>Treatment of cash flows from NPEs as interest rate sensitive instruments</b></p> <p><i>Materiality threshold</i></p>	<p>A few respondents suggested implementing a materiality threshold to avoid reporting very small exposures (e.g. 2% NPE/total loans). For banks below the 2% threshold, considering NPEs either as non-interest-bearing or without provisions should be allowed. In addition, small non-complex banks should be allowed to treat NPEs in a simpler way.</p>	<p>The EBA welcomes the suggestion and included a materiality threshold of 2% NPE ratio (non-performing debt securities and loans and advances/total gross debt securities and loans and advances). The materiality threshold will apply per institution for the purpose of the outlier test. Whereas the materiality threshold should be calculated using the gross NPE ratio, for the purpose of the calculation of the supervisory outlier test the NPEs net of provisions should be included. Institutions will not be required to include NPEs in the calculation for the purpose of the supervisory outlier test if the NPE ratio at institution level is below 2%.</p>	<p>The guidance for the inclusion of the NPEs for the calculation of the outlier test in paragraph 115(g) has been amended as follows:</p> <p>Institutions <b>with an NPE ratio of 2% or more</b> should include NPEs as general interest rate sensitive instruments whose modelling should reflect expected cash flows and their timing. NPEs should be included net of provisions.</p>
<p><b>Treatment of cash flows from NPEs as interest rate sensitive instruments</b></p> <p><i>Provisions</i></p>	<p>A few respondents requested clarification on the treatment of general provisions, IFRS 9 provisions and expected credit losses.</p> <p>One respondent proposed allowing flexibility to reflect the institution's individual management with regard to the inclusion of provisions.</p>	<p>The EBA wishes to clarify that institutions may employ a methodology to model the cash flow impact of both expected client defaults (a shortening in the duration of the cash flow) and the time-to-repossession of amounts due (a lengthening in the duration of the cash flow).</p>	<p>No changes made</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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**Treatment of cash flows from NPEs as interest rate sensitive instruments**

*Possibility of excluding NPEs from the scope of interest rate sensitive instruments*

A few respondents indicated that NPEs should be factored in the IRRBB framework only if they are considered interest rate sensitive instruments in the internal models allowing a flexible approach.

The EBA notes the comment, and wishes to clarify that the guidelines explicitly require banks to map NPEs into their ALM systems as interest rate sensitive instruments, i.e. internal approaches that excluded those NPEs from projected cash flows would not be considered acceptable.

No changes made

**Capital identification, calculation and allocation**

**Question 4.**

**Are the guidelines in section 4.2. regarding the capital identification, calculation, and allocation sufficiently clear? If not, please provide concrete suggestions and justify your answer.**

**IRRBB as contribution to a broader framework**

Several respondents suggested that the draft guidelines should distinguish the recommendations that apply to 'IRRBB considered in isolation' from those that apply to 'IRRBB as contribution to a broader framework'.

In this regard, it should be clarified that the internal capital buffer relates to the holistic stress test, covering all material sources of risk, including IRRBB, in combination with other risks, including IRRBB, in combination with other risks (i.e. not IRRBB considered in isolation).

The EBA notes the comments and wishes to clarify that model risk for IRRBB should be taken into account here and reflected in the ICAAP, since it is very specific. The inclusion of the model risk is in line with the approach of the BCBS Standards and reflects the fact that model risk is specifically relevant for the assessment of IRRBB.

The reference to the revision of the dividend policy is also in line with the BCBS Standards and allows business risk to be taken into consideration. This instrument

No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>Respondents requested that the following references be removed from the considerations for the allocation of internal capital: ‘secular changes in the market environment’, and ‘revision of dividend policy or decrease in business operations’.</p>	<p>also allows a link to be made between the EVE and NII.</p>	
<p><b>Internal capital linked to loss risk/variability risk</b></p>	<p>Several respondents requested that it be made clearer as a principle that a capital charge should be required only when the bank is exposed to a risk of loss, and not a variability risk.</p> <p>The identification of capital needs should be based on institutions’ actual level of risk, although it is interesting to identify what would be the potential capital needs if the Risk Appetite Statement (RAS) limits were fully used.</p> <p>One respondent noted that risk appetite is more aligned to the level of variability risk, be it in terms of economic value or of net interest income, that an institution is prepared to accept. The capital section may unintentionally provide scope for local regulators to allocate buffers against specific items. As there is not a universal capital allocation process for IRRBB across Europe, the introduction of risk appetite will add further differences to how banks</p>	<p>The EBA welcomes the suggestions, and has added to the guidelines that not only the impact of embedded losses but also that of embedded gains should be taken into account for the capital adequacy assessments for IRRBB.</p> <p>Embedded gains and losses refer to the difference between the current balance sheet carrying value of balance sheet items and their fair value amount.</p> <p>For example, consider an entity whose balance sheet has fixed interest rate assets and floating rate liabilities, accounted for at amortising cost (starting point). From the starting point, the interest rates have decreased, so that in the lower interest rate environment, the NII has improved in comparison with the NII obtained under the initial interest rate scenario and its EVE is higher than the book value of equity as well.</p>	<p>Paragraph 26(f) has been amended as follows:</p> <p>(Capital adequacy assessments for IRRBB should take into account the following:) (f) the impact of embedded losses <b>and embedded gains</b>.</p>

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capitalise this risk. The risk appetite could be viewed as a bank’s internal appetite for IRRBB variability, so its inclusion within the capital assessment process leads to a conclusion that it is the IRRBB variability that needs to be capitalised. The potential capital needs should reflect actual risks and not assumed risks. Besides, it should be noted that RAS metrics and limits usually refer to variability risk while potential capital needs refer to loss risk.

Respondents requested that any capital requirement due to potential reduced earnings should be excluded from the guidelines. The objective of the IRRBB Guidelines should be to protect banks from losses and not from reduced earnings.

When measuring the potential decline on NII/EVE in the downward interest rate scenario, the bank evaluates the risk of a potential decline in NII/EVE in an upward interest rate scenario. However, if this decline in NII/EVE occurs, the bank will be returning to the starting point (EVE is aligned with the book value of equity).

Consequently, for evaluating the capital needs on IRRBB, the potential decline in NII/EVE should be considered along with the embedded gains (or embedded losses in the other balance sheet structure).

The variability needs to be taken into account, for example when the NII variability of the institution is too high, which might require the adaptation of the dividend policy.

**Imperfect modelling assumptions**

Clarification was requested that the sensitivity of metrics to imperfect modelling assumptions should be measured, but that this should not lead to identifying capital needs for IRRBB, as it is not purely IRRBB-driven. It would make more sense to consider the changes in behaviour, competition, business modes, etc. in the framework of holistic stress tests, where those sensitivity analyses would be typically addressed as business risk.

The EBA notes the comments and wishes to clarify that model risk for IRRBB should be taken into account here and reflected in the ICAAP, since it is very specific. The inclusion of the model risk is in line with the approach of the BCBS Standards and reflects the fact that model risk is specifically relevant for the assessment of IRRBB.

No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Double-counting</b>	<p>One respondent suggested removing the notion of double-counting in paragraph 23. Similarly, another respondent noted that it is difficult to combine both EVE and earnings approaches in a meaningful way and that more guidance on this would be welcome.</p>	<p>The EBA wishes to retain flexibility in view of the different approaches in different institutions. Since there is a lot of room to measure the internal capital for the ICAAP, it would not be feasible to provide more detailed guidance in this respect.</p>	No changes made
<b>Derivatives</b>	<p>Some respondents requested clarification on how the size and tenor of internal limits on IRRBB exposures – and whether or not these limits are reached at the point of capital calculation – feeds into the capital adequacy assessment of IRRBB.</p> <p>A few respondents asked for clarification of what cost of hedging is envisaged to be taken into account for the capital adequacy assessment. It is clear that the ‘cost’, or risk exposure, of an open position is something which should form part of an institution’s capital assessment. However, making an assessment of the effectiveness of hedging open positions is not something that would be expected to be included for the purpose of the capital assessment.</p> <p>It was indicated that further clarification is needed on the meaning of the ‘impact of embedded losses’ that institutions need to take into account in the capital adequacy assessments for IRRBB. Embedded losses can arise within the banking book as a</p>	<p>The EBA welcomes the comments, and has added in the guidelines that not only the impact of embedded losses but also that of embedded gains should be taken into account for the capital adequacy assessments for IRRBB.</p> <p>The guidance for the size and tenor of internal limits on IRRBB exposures to be taken into account for the capital adequacy assessment for IRRBB is in line with the BCBS Standards, and can provide institutions with useful information for the assessment.</p> <p>The guidance for banks to take into account the expected cost of hedging open positions in the capital adequacy assessments for IRRBB does not refer to all hedging, but to those that are intended to take advantage of internal expectations of the future level of interest rates. The EBA agrees with the comment about the ‘effectiveness’ of the hedging in this</p>	<p>Paragraph 26(f) has been amended as follows:</p> <p>(Capital adequacy assessments for IRRBB should take into account the following:) (f) the impact of embedded losses <b>and embedded gains</b>.</p> <p>Paragraph 26(b) has been amended as follows:</p> <p>(Capital adequacy assessments for IRRBB should take into account the following): (b) the <del>effectiveness</del> <b>and</b> expected cost of hedging open positions that are intended to take advantage of internal expectations of the future level of interest rates.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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result of different activities and, in some instances, may be realised only as a result of changes in management strategy or customer behaviour. Conversely, the same can also be said of embedded gains within the banking book, and any realised embedded losses under stress, expected to be included in the capital assessment, should be net of any embedded gains that may also be realised under stress.

Further clarification is requested on the provision for institutions to take into account the ‘circumstances under which the risk may materialise’ for the capital adequacy assessments for IRRBB.

context, and has removed the reference accordingly.

As regards the ‘drivers of the underlying risk’ that institutions need to take into account for the capital adequacy assessments for IRRBB, these refer to a wide range of risk drivers, not only for IRRBB but for the whole ICAAP (e.g. referring to the macro-economic environment) which may materialise under the interest rate risk.

**Other**

One respondent asked for clarification about the articulation between the supervisory outlier test and the supervisory assessment of internal capital.

Some respondents requested clarification on the definition of embedded losses.

One respondent asked how institutions can measure the impact of shock and stress scenarios on positions priced with different interest rate indices (basis risk).

The EBA welcomes the comments and would like to clarify that embedded losses are those losses embedded in the net present value of the banking book.

With regard to the measurement of the impact of shock and stress scenarios on positions priced with different interest rate indices, we refer to the measurement methods to calculate the basis risk that are included in Annex I.

No changes made

**Comments****Summary of responses received****EBA analysis****Amendments to the proposals****Question 5.**

**Do you agree with the list of elements to be considered for the internal capital allocation in respect of IRRBB to earnings in paragraph 30? If not, please provide concrete suggestions and justify your answer.**

**Loss risk/variability risk**

Many respondents stated that only elements linked to the risk of actual losses and not to the variability of earnings should be considered for the internal capital allocation in respect of IRRBB to earnings. There are ambiguities in the internal capital requirement section in this regard. Some statements explicitly relate to loss risk, while some other statements seem to refer to variability risk and to enterprise-wide stress tests (e.g. 'reduction in dividend policy', 'maintain business operations'). In their opinion, internal capital should relate to loss risk, whereas variability risk should be taken into account in the enterprise-wide risk stress test.

Similarly, it was requested that the purpose of holding additional capital in respect of an EV calculation be clarified. EV metrics capture the change in the market value of the portfolio under the specified rate shocks. In business-as-usual conditions, this change in market value will never be fully realised, as the position is normally held to maturity and pulls to

The reference to the revision of the dividend policy is in line with the BCBS Standards and allows for business risk to be taken into consideration. This instrument also allows to make the link between the EVE and NII.

The variability needs to be taken into account, for example when the NII variability of the institution is too high, which might require the adaptation of the dividend policy or the reduction of business operations. To align the wording with the BCBS Standards, and to clarify the meaning, the reference to the dividend distribution has been amended to refer to the 'curtailing of the normal dividend distribution'.

Paragraph 30(e) has been amended as follows:

Institutions with a high level of IRRBB that could, under a plausible range of market scenarios, result in losses, in ~~the revision of the dividend policy curtailing normal dividend distribution~~, or in a decrease in business operations should ensure that they have sufficient capital to withstand the adverse impact of these scenarios.

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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par (i.e. has no P&L at maturity). It is only when this EV shock is accompanied by a change in behavioural assumptions, such as an increase in prepayment behaviour, or the bank fails, that this variability in income will ever be realised.

<b>Derivatives</b>	One respondent considered that derivatives instruments are always linked to the hedged instrument and cannot be seen as a separated item for internal capital measurement, because this is not the rationale of the hedge.	The guidance for banks to take into account the expected cost of hedging open positions in the capital adequacy assessments for IRRBB refers not to all hedging, but to that which is intended to take advantage of internal expectations of the future level of interest rates.	No changes made
<b>Other</b>	A few respondents asked for clarification of the difference between paragraphs 30(b) and 30(e), and clarification of paragraphs 30(d) and 30(e).	The elements in paragraphs 30(a) to (e) are all linked, which explains the partial overlaps between the different elements.	No changes made

## Governance

### Question 6.

**Are the guidelines in section 4.3 regarding the governance sufficiently clear? If not, please provide concrete suggestions and justify your answer.**

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Derivatives</b>	<p>Some respondents questioned the guidance for a dedicated set of risk limits to be developed to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are accounted for at market value. Since all derivatives are accounted for at market value, this would require putting limits on derivatives that are used to mitigate IRRBB. These instruments are part of the integral IRRBB position, and should be measured and monitored as an integral part of it. The objective of separate measurement is unclear, and the supervisory framework should not discourage risk mitigation using hedging. If the intent is to make sure that other dimensions of risks relating to derivatives are captured (e.g. liquidity risk arising from collateralised derivatives and counterparty credit risk), a link should be made to how these dimensions are dealt with in other/existing regulatory requirements to avoid double-counting.</p>	<p>The EBA observes that the provision on the development of dedicated risk limits to monitor the evolution of hedging strategies has been interpreted differently from what was intended. The comments received suggest that the rule has been interpreted in an excessively strict sense, in that the presence of limits may hinder hedging, whereas the focus of the rule was to make sure the management is aware of the size of the exposure and related second-order risks.</p>	<p>Paragraph 44(f) has been removed:</p>
<b>Derivatives</b>	<p>Another respondent requested further clarification on paragraphs 43(c) and 44 regarding the limits relating to hedging strategies involving derivatives. In the respondent's view, the limits should be applied to the mismatch between the</p>	<p>The EBA has therefore amended the guidelines, replacing the provision on risk limits for hedging strategies with the guidance to monitor the evolution of hedging strategies. The main message of this paragraph is that an institution should have a clear policy on how it plans to address volatility in EV and NII in case some hedges turn out to be ineffective as a result of changed market conditions.</p>	<p><del>A dedicated set of risk limits should be developed to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are accounted for at market value;</del></p>
		<p>The aim of paragraph 43(c) is not to contradict the accounting perspective, but to prompt banks to reflect upon potential drivers of hedge ineffectiveness and the consequences on their IRRBB.</p>	<p>The paragraph has been replaced by the newly added paragraph 45 which reads:</p>
		<p>Paragraph 44 does not prescribe that the positions need to be immediately scaled down if the limits are reached.</p>	<p>A <b>framework</b> should be in place to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are accounted for at market value.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>adjusted profile and the current hedge in order to minimise the institution's risk exposure, and not just to the hedges, as the wording suggests. A loss of value could also occur because the take-up of a product is different from expected. Furthermore, the accounting and risk perspectives seem to be mingled together. The future ineffectiveness of any hedge accounting relationship results from potential larger differences between the actual and the assumed interest rates, and making reasonable assumptions in this respect is not possible.</p>		
<b>Risk appetite</b>	<p>As to the governance, the institutions are requested to express their risk appetite for IRRBB in terms of the maximum acceptable short-term and long-term impact of fluctuating interest rates on both earnings and economic value, and to reflect all this in limits.</p> <p>Given that an appropriate definition of the short-term and long-term horizons is not straightforward, and that, when assessing the impacts on earnings and on economic value, different time horizons are usually applied, it is suggested that the reference to the short-term and long-term horizons be deleted. In addition, the requirement to express the risk appetite in terms of maximum acceptable impact of fluctuating interest rates is perceived as</p>	<p>The EBA agrees with the comment and has amended the guidance for institutions to express their risk appetite for IRRBB in terms of maximum acceptable short-term and long-term impact of fluctuating interest rates by removing the reference to 'maximum short- and long-term'.</p> <p>The EBA acknowledges the comment with regard to the prescription for credit institutions to determine their risk appetite in relation to each of the sub-types of IRRBB. In view of the proportionate application of the guidelines, and seeing that not all of the sub-types of IRRBB are equally material for all institutions, the provision to determine risk limits per risk type has been removed. In line with the</p>	<p>Paragraph 33 has been amended to remove the provision for institutions to express their IRRBB risk appetite in terms of maximum acceptable short-and long-term impact:</p> <p>The institution's risk appetite for IRRBB should be expressed in terms of the <del>maximum</del>-acceptable <del>short term and long term</del> impact of fluctuating interest rates on both earnings and economic value and should be reflected in limits. Institutions with significant exposures to gap risk, basis risk or option risk should determine their risk appetite in relation to each of these material sub-types of IRRBB.</p> <p>Paragraph 44(d) has been amended to read:</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>overly prescriptive, and the determination of the risk appetite in relation to each of the sub-types of IRRBB as neither relevant nor efficient. Moreover, distinguishing the risk appetite for each sub-type of IRRBB would make it unnecessarily difficult for executive committees and supervisory boards to assess and validate institutions' risk appetite framework, as it would rely on too many technical assumptions.</p>	<p>BCBS Standards, institutions with significant exposures to gap risk, basis risk or option risk are still requested to determine their risk appetite in relation to each of these material sub-types of IRRBB.</p>	<p>(d) Depending on the nature of an institution's activities and business model, sub-limits may also be identified for individual business units, portfolios, instrument types, specific instruments <b>or material sub-types of IRRBB risks such as gap risk, basis risk and option risk.</b></p> <p>Paragraph 44 (e) has been deleted.</p>
<b>'Riding the yield curve'</b>	<p>A few respondents suggested removing the reference to 'riding the yield curve', as it appears to indicate a bias towards banks whose management of non-trading interest rate risk consists in funding assets with a comparatively long repricing period with liabilities with a comparatively short repricing period as a business model. Respondents pointed out that it is likely that few if any banks today leave their balance sheets systematically unhedged in this way as a business model and, if they do, it is captured as gap risk.</p>	<p>The EBA notes the comment but wishes to retain the expression 'riding the yield curve' since it is still valid and being applied by institutions.</p>	<p>No changes made</p>
<b>Integration of internal governance arrangements on a</b>	<p>One respondent asked for clarification on whether or not consolidated entities will be required to follow the group policy, even when the business model and client</p>	<p>The EBA notes the comment and wishes to explain that the provision requires institutions to ensure that internal governance arrangements and processes</p>	<p>No changes made</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>consolidated and a sub-consolidated basis</b>	profile of these entities differ thoroughly from those of the parent company.	for the management of IRRBB are consistent and well integrated on a consolidated and a sub-consolidated basis. This does not mean that the arrangements and processes should be identical.	
<b>Risk management responsibilities</b>	<p>A few respondents indicated that the responsibilities outlined for the management body seem to be formulated in a rather ambitious way. For example, treasury or capital markets functions of banks will be continuously engaged in IRRBB hedging on the basis of delegated authority and may also have discretion to run IRRBB positions. It is neither practicable to define a suitable framework for this in advance nor possible to involve the management body in these decisions in a timely manner.</p> <p>As a general consideration on IT systems and data quality, respondents stress that the requirements for IT systems should not be identical for all institutions, but should only cover the relevant material risks for the institutions in question.</p> <p>Whereas the separation of risk managers and risk takers was deemed appropriate, it was questioned whether the term 'risk taker' should not be replaced by 'risk mitigation function', since interest rate in the banking book originates from</p>	<p>The EBA notes the comments but intends to keep the wording of the risk management section unchanged, as it is aligned with the BCBS Standards.</p> <p>The EBA wishes to clarify that 'major' hedging or risk-taking initiatives refer to the strategic decisions on hedging including limits on hedging and strategic risk taking, and the wording is in line with the BCBS Standards.</p> <p>Whereas there is the possibility of delegation via the framework, the management body should at least be made aware of the decision.</p>	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	customer exposures, which are then passed to the ALM function for management.		
<b>Internal reporting</b>	One respondent pointed out that the in-depth requirements for internal reporting are too detailed, complex and comprehensive, and referred to BCBS 239, where the reporting obligations are already addressed. Because of the complexity of the overall topic of IRRBB and the different business models, the institutions should have more room to decide the form in which a breakdown of risks for the management body makes sense.	The EBA notes the comment on BCBS 239 and wishes to clarify that these guidelines do not go beyond BCBS 239, and are in line with the current EBA IRRBB Guidelines.  With regard to the application of paragraphs 54(b) and 54(e), and in line with the current IRRBB Guidelines, the EBA wishes to clarify that the IT systems should be sufficiently granular to be able to record all transactions and measure the contributions of individual transactions to the overall exposure. However, there is no real-time detailed reporting required at transaction level with regard to the impact of IRRBB. As indicated in paragraph 65, the internal reports should be provided to the management body or its delegates with information at relevant levels of aggregation (by consolidation level and currency).	
<b>Internal reporting</b>	Several respondents requested clarification that the requirements to 'be capable of fully and clearly record all transactions' and to 'enable the institutions to fully measure, assess and monitor the contribution of individual transactions to their overall exposure' apply at individual institution level, and do not apply at consolidated level. Each institution should be free to consider how to manage data on a line-by-line basis or an aggregated basis.  One respondent highlighted that the requirement to ensure that data (and, by implication, assumptions) used to	With regard to the requirement to ensure consistency between the data used to measure earnings risk and those used for financial planning, it is important to note that 'consistent' here does not mean 'identical', but that the same underlying data should be shared.	No changes made

<b>Comments</b>	<b>Summary of responses received</b>	<b>EBA analysis</b>	<b>Amendments to the proposals</b>
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measure earnings risk is consistent with that used for financial planning could be a problem, as the purposes of risk management and finance are different.

Respondents also deemed that the requirement to compare historical stress analyses against the current performance (at least for earnings risk) is unnecessarily time-consuming and not expedient. In contrast to economic value risk, earnings are stressed only over a certain period. In order to obtain meaningful back-testing, both the historical scenario and the corresponding balance sheet change would thus have to be perfectly modelled.

The obligation to always report the proportion of interest rate derivatives and Level 3 instruments in the regular reports to the management body (regardless of the importance of these positions or how stable their proportion is) is not deemed appropriate. Any separate treatment of derivatives in the banking book seems to misunderstand the impact of their role: hedging the IRRBB exposure. The treatment of derivatives should therefore be aligned with other exposures in the banking book, such as mortgage loans.

The reporting on the impact of interest rate derivatives on the measurement of IRRBB in terms of EV and NII would ensure awareness at all levels of the bank's governance structure of the impact of interest rates derivatives on the overall risk metrics. It would also allow management to get a comprehensive view of how the overall EVE and NII position is structured.

The proportionality principle applies to the scope of the reporting on the models used.

<b>Internal reporting</b>			
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>Whereas it is important to understand the models used, their strengths and weaknesses, their consistency with other methodologies used and the assumptions and their consequences, adequate consideration should be given to the principle of proportionality, especially with regard to the understanding of the analytics.</p>		
<b>Other</b>	<p>Some respondents requested more specification on the scope of model validations, and proposed focusing on client behaviour models and including an objective materiality criterion such as the criterion for currencies in the supervisory outlier test.</p> <p>One respondent requested clarification of the term 'pipeline transaction'.</p> <p>One respondent noted the use of the term 'risk appetite' where the 2015 EBA IRRBB Guidelines used 'risk tolerance'. It would be helpful to understand whether this is mainly a terminological change or a change of substance, given that appetite typically has a more formal meaning than tolerance.</p> <p>Respondents pointed out that the term 'management body', depending on the context, can be interpreted to mean either</p>	<p>The EBA notes the comments with regard to the specification on the scope of model validation and wishes to clarify that a focus solely on client behaviour models would be too specific whereas the focus on model governance should be more general.</p> <p>The EBA welcomes the comment with regard to the concept of 'pipeline transaction/exposure'. The term has now been defined in paragraph 47(f).</p> <p>The EBA wishes to clarify that the term 'risk appetite' is used in line with the terminology used in principle 3 of the BCBS Standards referring to the aggregated level and types of IRRBB exposures that a bank will accept, or avoid, in order to achieve its business objectives.</p> <p>The term 'management body' is used in line with the EBA Guidelines on internal governance. Similarly to the EBA Guidelines on internal governance, the</p>	<p>The definition of 'pipeline transaction' has been included in the footnote to paragraph 47(f):</p> <p>Pipeline exposures (e.g. where a loan has been agreed and the customer can choose whether to draw down or not) effectively provide the customer with an option that will most likely be exercised when market conditions least suit the institution (negative convexity). Management of pipeline exposures relies on accurate data on applications received, and modelling of expected drawdowns.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>the board of directors or the executive management committee in the Anglo-Saxon model. This differs from the BCBS Standards, which use the term 'governing body' when addressing matters that it believes should go to the board of directors.</p>	<p>IRRBB Guidelines apply to all institutions regardless of their governance structures (unitary board, dual board or other structure), without advocating or preferring any specific structure.</p>	

**Question 7.**

**Are the guidelines in section 4.4 regarding the measurement sufficiently clear? If not, please provide concrete suggestions and justify your answer.**

**Measurement**

<p><b>General approach to IRRBB measurement</b></p>	<p>A few respondents were concerned about the statement that commercial margins should be included in earnings measures, as this would be burdensome, especially for small firms.</p> <p>The provision for institutions to measure and monitor the IRRBB of their banking book interest rate derivatives was not deemed appropriate, as it would not make sense to consider the interest rate risk of derivatives in isolation from what they are hedging.</p> <p>Further clarification was requested about the term 'transparent methodology' in paragraph 82.</p> <p>Some respondents raised comments on the provision for supervisory outlier tests to be fully integrated in the internal</p>	<p>The EBA notes the comment and wishes to clarify that the guidelines include the provision for commercial margins to be included in earnings measures, since this option is conceptually more correct.</p> <p>With regard to the provision for institutions to measure and monitor the IRRBB of their banking book interest rate derivatives in the light of the overall IRRBB measurement, the purpose is to look at the impact of derivatives, which is also required for internal reporting purposes. Proportionality has been made explicit in this paragraph by referring to the link to the relevance for the business model.</p> <p>The EBA wishes to clarify that a 'transparent' methodology for the identification of the risk-free rate and the</p>	<p>Paragraph 81 has been amended as follows:</p> <p>institutions should measure and monitor (i) the overall impact of key modelling assumptions on the measurement of IRRBB in terms of both economic value measures and earnings measures, and (ii) the IRRBB of their banking book interest rate derivatives <b>where relevant for the business model.</b></p> <p>Paragraph 82 has been amended as follows:</p> <p><del>Institutions should use a transparent methodology for the identification of the risk free rate and the treatment of spread components applied consistently across all interest rate sensitive instruments and all business units.</del> If commercial margins and other spread components are excluded from economic value measures, institutions should (i) use a transparent methodology for</p>
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>framework for the management of IRRBB, as outlier tests should not drive IRRBB management.</p>	<p>treatment of spread components refers to the fact that the methodology needs to be clearly documented with an appropriate justification. Paragraph 82 has been amended to clarify this.</p> <p>The purpose of the provision for supervisory outlier tests to be integrated in the internal framework for the management of IRRBB aims to encourage institutions to use the supervisory outlier test as a complementary tool for measuring IRRBB exposures, and not for the outlier test to drive the institution's IRRBB management, nor for institutions to rely solely on the calculation and the outcomes of the supervisory outlier test.</p>	<p>identifying the risk-free rate at inception of each instrument; and (ii) use a methodology that is applied consistently across all interest rate sensitive instruments and all business units.</p>
<p><b>Methods for measuring IRRBB</b></p>	<p>It was proposed to use an alternative definition of basis risk to the one proposed in Table 1, which refers to 'timing differences'.</p> <p>One respondent deemed the reference to a simple run-off balance sheet in Annex I to be unnecessary, as it is not practical to implement, nor is it mentioned in Annex II.</p> <p>Another respondent requested clarification that firms can use their own methods as an alternative to those in Annex I.</p>	<p>The EBA agrees that basis risk is a more general and broader concept than what would appear from the example in Table 1, which is only illustrative.</p> <p>The reference to a simple run-off balance sheet in Annex I is also only illustrative even though it should be used as an assumption for the calculation of the EVE change for the purpose of the supervisory outlier test.</p> <p>The EBA acknowledges that firms can use their own measurement methods as an</p>	<p>Paragraph 86 has been amended as follows:</p> <p>Institutions should not rely on a single measure of risk but should instead use the range of quantitative tools and models that corresponds to their specific risk exposure. To that end, institutions should consider <del>at least</del> the application of the methods listed in Annex I <b>but not limit themselves to those</b>, to ensure that various aspects of interest rate risk are captured adequately.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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	<p>The line between behavioural and automatic options was deemed to be more blurred than the table suggests and respondents proposed limiting automatic options to caps and floors and not include swaptions or prepayment options embedded in wholesale assets, as they are very often determined by behavioural factors, and they also observed that behavioural options apply to wholesale as well as retail banking.</p>	<p>alternative to those listed in Annex I, and has made this more explicit in the wording.</p>	
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<p><b>Shock scenarios</b></p>	<p>A few respondents requested more proportionality to be included in the number and range of scenarios for ongoing management, with fewer but relevant scenarios.</p> <p>It was also highlighted that basis risk is not relevant to all institutions.</p> <p>One respondent asked how the maximum average 5-year duration should be applied when firms are doing conditional cash flow modelling and if the maximum applies under every scenario.</p>	<p>The principle of proportionality as laid out in section 4.1 should also be applied to the number and range of scenarios to be included for the ongoing IRRBB management.</p> <p>The EBA agrees that sub-types of IRRBB should be taken into account only as far as they are material, in line with the proportionality principle outlined in paragraph 19.</p> <p>With regard to the application of the maximum average 5-year duration when firms are doing conditional cash flow modelling, the EBA wishes to clarify that there is value in a scenario-specific approach, but the intent for the supervisory outlier test is to maximise the comparability of the results.</p>	<p>No changes made</p>
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
Interest rate stress scenarios	<p>One respondent indicated that the calculation of second-round effects in enterprise-wide stress tests is not feasible and should be qualified ('major second-round effects'). Another respondent stated it considered the six scenarios to be the 'stresses' and would want more guidance if firms are expected to consider stresses beyond the six scenarios.</p>	<p>The EBA agrees with the comment about proportionality, and has added the qualification of 'material' to the second-round effects that should be computed in enterprise-wide stress tests.</p> <p>The six scenarios for the additional outlier test are deemed to be shock scenarios, not stress scenarios as such.</p>	<p>Paragraph 99 has been amended to indicate that any <b>material</b> second-round effects should be computed in enterprise-wide stress tests.</p>
Measurement assumptions	<p>One respondent proposed that the provision for institutions to review significant measurement assumptions 'at least annually' be amended to 'regularly'.</p> <p>A few respondents suggested removing the provision for institutions to add 'a margin of conservatism' for the modelling of key behavioural assumptions, as there is no predetermined direction in which to be prudent.</p> <p>One respondent requested clarification on whether competitors' activities should be included in models or it is sufficient to include them in stress tests.</p> <p>Another respondent pointed out that it is not practicable to model all the parameters in paragraph 104 and the focus should be on the most important parameters. The respondent suggested using the word 'speed' instead of</p>	<p>The EBA notes the comments, and wishes to clarify that the significant measurement assumptions need to be reviewed at least annually, since it concerns the 'significant' measurement assumptions, and the frequency is also linked to the ICAAP cycle. For the 'general' review of model assumptions, a 'regular' review is requested.</p> <p>The requirement to add a 'margin of conservatism' when modelling the key behavioural assumptions has been removed, as it could lead to overhedging. However, institutions should address the uncertainty and use prudent hypotheses.</p> <p>The EBA welcomes the comment about the competitor's activities and removed the guidance for institutions to take into account competitors' activities in assessing the implications of optionality, as this</p>	<p>Paragraph 106(a) has been amended as follows:</p> <p>[In assessing the implications of optionality, institutions should take into account:] (a) the potential impact on current and future loan prepayment speeds arising from the interest rate scenario, underlying economic environment and contractual features, <del>and competitor's activities.</del></p> <p>Paragraph 107(c) has been amended as follows:</p> <p>[Institutions should:] ensure that modelling of key behavioural assumptions is justifiable in relation to the underlying historical data, and based on prudent hypotheses. <del>:- a margin of conservatism should be used where there are uncertainties, especially when actual experience differs from past assumptions and expectations.</del></p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>'elasticity', as elasticity has a precise statistical meaning.</p> <p>Several respondents raised concerns about the definition of 'core' balances and would prefer to follow the BCBS Standards, which consider the concept as a book-level one, not an account-level one. The respondents proposed revising the definition of 'core' and 'transient' balances on transaction accounts to offer more flexibility to credit institutions. In addition, the current definition seems inconsistent with the definition of 'stable/operational' and 'less stable/non-operational' deposits applicable to liquidity requirements.</p> <p>One respondent thought the consideration of the constraints on repricing should apply to assets as well as liabilities.</p> <p>Clarification was requested on what 'without any specific repricing dates' means, and whether or not 'non-maturity deposits' are assumed to be deposits 'without any specific repricing dates'.</p>	<p>would not make sense under a static balance sheet.</p> <p>The EBA welcomes the comment on the definition of core balances and has amended the wording to align it with the definition of 'core balances' as included in the BCBS Standards. Core balances are those balances that remain stable and interest rate insensitive, even under significant changes in the interest rate environment. The EBA wishes to clarify that point (a) of paragraph 106 refers to loan prepayments, while points (b) and (c) are related to early redemption in term deposits.</p> <p>Furthermore, the reference to low cost balances has been replaced with 'core and other modelled' balances.</p> <p>The reference to the 'elasticity' of adjustment of product rates refers to the price elasticity of products where it is relevant to market rates.</p>	<p>Paragraph 108 has been amended to align the definition of core balances with the BCBS definition.</p>

**Question 8.**

**Do you consider the comparison between EV metrics calculated using contractual terms for NMDs with the EV metrics calculated with behavioural modelled assumptions sensible and practical? Please justify your answer.**

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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**Comparison between EV metrics calculated using contractual terms for NMDs with EV metrics calculated with behavioural modelled assumptions**

A very small minority of respondents supported the approach of the comparison between EV metrics calculated using contractual terms for NMDs and EV metrics calculated with behavioural modelled assumptions, arguing that it provides a better understanding of the total risk generated by different strategies and allows proper limits to be set.

One respondent pointed out that the best assessment of interest rate exposure, as expressed by behavioural models for NMDs, should be the basis for the internal capital assessment and the national regulator’s review thereof. Naturally, the assumptions and their impact on interest rate risk should be evaluated and tested. To ensure a level playing field for European banks, the discussion should revolve around the validity of assumptions and not the rationale for using – or not using – behavioural models.

The EBA notes the comments and wishes to clarify that the proposed comparison is aimed at easing a separate understanding of the interest rate risk borne by the bank as a result of its contractual commitments versus expected client behaviour, which is by definition uncertain. There is a need to ensure awareness, at all levels of the bank’s governance structure, about the sensitivity of internal metrics to key parametric assumptions, and to use an economic metric that measures the sensitivity and uncertainties of behavioural assumptions. This requirement is already included in the current IRRBB Guidelines.

No changes made

**Comparison between EV metrics calculated using contractual terms for NMDs with EV metrics calculated**

Most of the criticism focused on the fact that the contractual terms are deemed not to reflect economic reality and the proposed measure would disregard the relationship between the models and the actual behaviour of the clients. The measure is deemed to ignore the quality

The EBA wishes to clarify that what is expected is that banks break down their EVE results into different components, including a contractual one related to banking business, a contractual one related to hedging and other interest rate

No changes made

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**with behavioural modelled assumptions**

of the model and is considered to be too simplistic to allow any conclusions to be drawn.

The comparison between EV metrics calculated using contractual terms for NMDs and the EV metrics calculated with behavioural assumptions is deemed to provide limited insight into the amount of model risk.

derivatives, and finally a modelled component.

This could ease the separate understanding of interest rate risk borne by the bank as a result of its contractual commitments versus expected client behaviour, which is uncertain by definition. There is a need to ensure awareness, at all levels of the bank's governance structure, about the sensitivity of internal metrics to key parametric assumptions, and to use an economic metric that measures the sensitivity and uncertainties of behavioural assumptions. It can also help understand the evolution over time of the risk profile of the bank with respect to different sources of risk.

**Disclosure**

A few respondents advised against disclosure of the metric, since isolating this number, without considering how the risk is hedged, might be misleading.

The EBA wishes to clarify that there is no requirement to report the results of the comparison between EV metrics calculated for NMDs and EV metrics calculated with behavioural modelled assumptions to the competent authorities, nor is there a requirement for disclosure of the results. Disclosures are outside the scope of these guidelines, as disclosure requirements are expected to be developed under the regulatory technical standards planned to be mandated under the revised CRD/CRR framework.

No changes made

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<b>Sensitivity analysis</b>	A few respondents suggested that a better measure of model risk would be a sensitivity analysis with respect to model assumptions (e.g. changing the duration of NMDs by 0.1Y).	The EBA notes the comment and wishes to clarify that a suggestion on using sensitivities is already included in the text of the guidelines. As NMD models represent one among several behavioural models, focusing on analysing only the sensitivity of NMDs would give merely a partial picture of the model risk.	No changes made
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*Supervisory outlier test*

**General comments**

<b>Quantitative impact study</b>	<p>Several respondents pointed out that the additional supervisory outlier test introduced as an early warning indicator should be subject to a quantitative impact study (QIS).</p> <p>While larger European banks participated in regular impact studies, the 15% threshold transposed from the BCBS Standards was calibrated for only large and internationally active banks. The threshold was tested neither on the individual entity level nor for smaller institutions.</p> <p>Respondents requested that the results of the QIS inform the decision about whether or not the additional outlier test should apply to individual institutions, in addition</p>	<p>The EBA wishes to clarify that the additional supervisory outlier test (based on the six scenarios set out in Annex III and a 15% Tier 1 threshold) will act as an early warning signal that will lead to a supervisory dialogue but to which no supervisory measures are linked.</p> <p>A quantitative impact study is planned to be organised in the light of the introduction of this new outlier test to replace the current outlier test in the Level 1 text (Capital Requirements Directive), and any related technical standards.</p> <p>The EBA wishes to clarify that the scope of the guidelines includes institutions as defined in point 3 of Article 4(1) of the CRR,</p>	No changes made
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to the application at consolidated level, and/or whether or not additional proportionality measures should be implemented.

covering both credit institutions and investment firms. For the quantitative impact study to be organised in the light of the introduction of the new outlier test, it is planned to invite also small- and medium-sized institutions to participate, in order to test the impact at the level of different-sized EU institutions at consolidated and individual levels.

**Supervisory outlier test as warning indicator**

A few respondents indicated that any supervisory outlier test should only act as a warning indicator that triggers a supervisory dialogue, without any automatic supervisory measures or increased capital surcharges.

One respondent proposed that the text also make explicit that the institution's overall situation must be taken into consideration in the decision on supervisory measures.

The EBA wishes to clarify that indeed the additional supervisory outlier test included in the guidelines (based on the six scenarios set out in Annex III and a 15% Tier 1 threshold) will act as an early warning signal that will not trigger any supervisory measures, but will lead to a supervisory dialogue.

The supervisory outlier test which is included in the Level 1 text, Article 98(5) of the Capital Requirements Directive, indicates that measures shall be required at least in the case of institutions whose economic value declines by more than 20% of their own funds as a result of a sudden and unexpected change in interest rates of 200 bps. The CRD/CRR framework is currently under revision.

No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Question 9.</b>			
<b>Are the guidelines in section 4.5 regarding the supervisory outlier test sufficiently clear? If not, please provide concrete suggestions and justify your answer.</b>			
<b>Scope of instruments</b>	A few respondents requested clarification about the scope and application of 'small trading book business' items to be included in the supervisory outlier test unless their interest rate risk is captured in another risk measure.	The small trading book items are only to be included in the calculation of the supervisory outlier test for those institutions taking advantage of the derogation granted in Article 94 of the CRR.	No changes made
<b>Scope of instruments</b>	A few respondents requested clarification that future credit losses in cash flows should be reflected in the supervisory outlier test.	Whereas considering future credit losses is technically justified, it cannot be done in parallel with the exclusion of margins. Future credit losses should be treated similarly to general provisions.	No changes made
<b>Scope of instruments</b>	One respondent asked for clarification about the inclusion of loan commitments.	In general, loan commitments are off-balance-sheet items and should be included in the calculation of the supervisory outlier test because they are interest rate instruments. Proportionality needs to be taken into account.	No changes made
<b>Scope of instruments</b>	A few respondents proposed allowing banks to use their IMS for the treatment of NPEs and their provisions for the supervisory outlier test.	Institutions are required to include expected cash flows of NPEs (net of provisions) as general interest rate sensitive instruments whose modelling should reflect expected cash flows and their timing. This aims to increase the	The guidance for the inclusion of the NPEs for the calculation of the outlier test in paragraph 115(g) has been amended as follows:  Institutions <b>with an NPE ratio of 2% or more</b> should include NPEs as general interest rate sensitive instruments whose modelling

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		<p>comparability of the outcomes of the supervisory outlier test.</p> <p>A materiality threshold of 2% NPE ratio (non-performing debt securities and loans and advances/total gross debt securities and loans and advances) has been included in the guidelines. The materiality threshold will apply per institution for the purpose of the outlier test. Whereas the materiality threshold should be calculated using the gross NPE ratio, for the purpose of the calculation of the supervisory outlier test the NPEs net of provisions should be included. Institutions will not be required to include NPEs in the calculation for the purpose of the supervisory outlier test if the NPE ratio at institution level is below 2%.</p>	<p>should reflect expected cash flows and their timing. NPEs should be included net of provisions.</p>
<p><b>Scope of instruments</b></p>	<p>One respondent asked for the treatment of AT1 capital, which is a perpetual hybrid instrument and consists of perpetual private issued loans with an annual non-cumulative discretionary interest payment to be clarified.</p> <p>One respondent proposed measuring the EVE impact for the supervisory outlier test against total capital (including subordinated debt and Tier 2 capital) because of its gone-concern nature.</p>	<p>When calculating the change in EVE for the supervisory outlier test, institutions need to apply the criteria as outlined in paragraph 115 for assessing which instruments need to be included. Institutions should take into account all positions from interest rate sensitive instruments that are not deducted from own funds. All CET1 instruments and other perpetual own funds without any call dates should be excluded. Therefore, AT1 capital</p>	<p>No changes made</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		instruments without any call dates should be excluded.	
<b>Scope of instruments</b>	One respondent requested clarification about the inclusion of Tier 2 instruments in the calculation of the standard EVE outlier test.	Tier 2 instruments should be included as interest rate sensitive instruments as long as they are non-perpetual or even when they are perpetual if they have call dates.	No changes made
<b>Scope of instruments</b>	One respondent pointed out that Tier 1 can include an interest-bearing component and should be treated in the same way as all other interest-bearing instruments including Tier 2 instruments, referring to paragraph 115(c) (exclusion of CET1 instruments and other perpetual own funds without any call dates from the EVE calculation for the supervisory outlier test).	Institutions should apply the criteria as outlined in paragraph 115 to assess which instruments should be included in the calculation for the supervisory outlier test. For very specific instruments, we refer to the supervisory dialogue.	No changes made
<b>Scope of instruments</b>	One respondent requested that both outlier tests be based on own funds.	The EBA takes note of the request to base both the supervisory outlier tests on own funds. This approach has not been retained, since it would not be in line with the approach of the BCBS Standards.	No changes made
<b>Scope of instruments</b>	It was pointed out that the design of the supervisory outlier test puts at a disadvantage banks with high hidden reserves.	The EBA notes the remark that the design of the supervisory outlier test puts a disadvantage on banks with high hidden reserves, and wishes to clarify that the approach taken is in line with the approach of the BCBS Standards.	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Scope of instruments</b>	A few respondents requested clarification of the meaning of 'repricing of principal'.	The EBA wishes to clarify that the cash flows from interest rate sensitive instruments for the supervisory outlier test should include any repayment of principal (e.g. at contractual maturity), any repricing of principal and any interest payments. In line with the BCBS Standards, repricing is said to occur at the earliest date at which either the bank or its counterparty is entitled to unilaterally change the interest rate, or at which the rate on a floating instrument changes automatically in response to a change in an external benchmark.	No changes made
<b>Yield curve</b>	Clarification has been requested that the 'appropriate' general 'risk-free' curve refers to the discounting curve, and that banks could still adopt a multi-curve in their IMSs, to use different risk-free curves for discounting according to their IMSs depending on the instruments (e.g. financial derivatives and cash instruments).	The EBA notes the comment on the use of an appropriate risk-free curve for the calculation of the supervisory outlier test and wishes to refer to paragraph 115(n), which also gives an example of risk-free yield curves that could be applied (e.g. swap rate curves).	No changes made
<b>Yield curve</b>	A few respondents requested permission to use several risk-free curves (multi-curve approach) allowing for discounting using several yield curves per currency.	The EBA welcomes the request to allow the use of a multi-curve approach that would enable institutions to discount using a risk-free yield curve per currency and agrees it is technically justified and appropriate for use in the internal models. However, for the supervisory outlier test a facilitated	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		<p>approach is required which allows comparability of the results; therefore, the EBA opted to retain one general 'risk-free' yield curve per currency.</p>	
<b>Yield curve</b>	<p>A few respondents requested that the interest rate floor be applied at different curves retaining the basis between the curves, and that discounting using several yield curves be permitted.</p>	<p>The EBA notes the request for the application of the interest rate floor at different curves retaining the basis between the curves, and for permission to discount using several yield curves. Whereas both approaches can be used for the internal models, a simpler method should be used by institutions for the calculation of the supervisory outlier test to facilitate traceability and comparability.</p>	No changes made
<b>Yield curve</b>	<p>The standardised instantaneous interest rate shock scenarios were perceived as being extreme in nature and arguably highly improbable, representing a very significant increase in the severity of the supervisory outlier test. One respondent referred to an analysis of the values calculated for the parallel, short, and long interest rate shocks for US dollars in addition to the outlined assumptions. The findings suggested that over the last 30 years there has not been an occurrence over a 1-month period in which US dollar interest rates have moved as aggressively as the EBA- (and BCBS-) proposed scenarios suggest. The respondent</p>	<p>The EBA notes the comments with regard to the proposed interest rate shock scenarios and would like to clarify that these scenarios have been retained to allow a harmonised approach in line with the BCBS Standards.</p>	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>pointed out that using the 1-month time horizon as a proxy for an instantaneous shock to measure EVE is a restrictive approach to calibrating interest rate scenarios, and proposed applying the average change in rates over the worst-case 1-year period to determine a low-probability EVE scenario. Another respondent proposed that the EU shocks to be set at a level calibrated by local regulators, given the lack of economic cycle synchronicity across jurisdictions.</p>		
<b>Yield curve</b>	<p>One respondent requested more guidance on the choice of an appropriate risk-free curve.</p>	<p>The EBA wishes to refer to paragraph 115(n) on the use of an appropriate risk-free curve for the calculation of the supervisory outlier test.</p>	No changes made
<b>NMDs</b>	<p>Clarification was requested that the 5-year cap should be applied at overall portfolio level of non-maturity deposits per currency. One respondent asked to confirm that these guidelines would prevent any (more constraining) deviations from competent authorities on this topic.</p>	<p>The 5-year cap should be applied at overall portfolio level for non-maturity deposits per currency. With regard to the application of the guidelines, the EBA wishes to clarify that these recommendations provide common EU-wide guidance for both institutions and supervisors and are expected to be implemented by EU competent authorities under the 'comply or explain' principle.</p>	No changes made
<b>NMDs</b>	<p>One respondent asked for a clearer definition of core deposits.</p>	<p>The EBA wishes to clarify that the term 'core deposits' is used in accordance with the BCBS Standards referring to the</p>	<p>Paragraph 108 has been amended to align the definition of core balances with the BCBS definition.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
		proportion of stable deposits that do not reprice. The wording has been amended accordingly.	
<b>NMDs</b>	<p>The 5-year cap on NMDs is seen as unnecessary gold-plating of the BCBS Standards, and respondents requested permission for IMSs to be used for modelling NMDs.</p> <p>A few respondents indicated that the results of the supervisory outlier test are comparable only if there are no standardised requirements on NMDs.</p>	The EBA wishes to clarify that the IMS can be used for modelling NMDs. The 5-year cap is applicable for only the supervisory outlier test, in line with the current EBA IRRBB Guidelines.	No changes made
<b>NMDs</b>	A few respondents requested clarification of whether or not the NMD cap refers to the volume-weighted average.	The EBA wishes to clarify that the NMD cap for the supervisory outlier test refers to a volume-weighted 5-year cap.	No changes made
<b>NMDs</b>	One respondent asked if interest rate-specific floors apply to only retail customers, as there seems to be an inconsistency between the background section and the section on the supervisory outlier test in this respect.	The EBA welcomes the comment, and has amended paragraph 17(h) of the background section to remove the reference to retail customers in order to align this paragraph with paragraph 115(h) of the section on the supervisory outlier test.	<p>Paragraph 17(h) of the background section has been amended as follows:</p> <p>[When calculating the supervisory outlier test] Instrument-specific interest rate floors, <del>especially for retail deposits</del>, should be considered.</p>
<b>NMDs</b>	A few respondents indicated that the 5-year cap should apply to ‘non-maturing deposits’ (and not to ‘non-repricing deposits’). The two notions are not the same (‘non-maturity deposits’ can have repricing dates, and ‘non-repricing	The EBA wishes to clarify that, in the context of the supervisory outlier test, the 5-year cap applies to ‘non-maturing deposits’.	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>NMDs</b>	deposits' are not necessarily non-maturity deposits).	The EBA wishes to clarify that, in the context of the supervisory outlier test, the 5-year cap applies to the average repricing date.	No changes made
<b>NMDs</b>	<p>A few respondents asked for clarification about the treatment of non-maturity deposits from financial institutions, in particular whether or not it will include deposits deemed operational, for example deposits generated via custody/clearing/cash management.</p> <p>A few respondents indicated that they did not support the exclusion of financial institutions from behavioural modelling.</p> <p>One respondent asked for the definition of deposits from financial institutions, and if operational deposits of financial institutions are allowed to be modelled.</p>	The EBA notes the comments and wishes to clarify that deposits from financial institutions should not be subject to modelling, i.e. they should mature immediately. Financial institutions are defined as in point (26) of Article 4(1) of Regulation (EU) No 575/2013.	No changes made
<b>Other remarks</b>	<p>Confirmation was requested that any breaches of the threshold for the additional outlier test will not lead to supervisory measures.</p> <p>Whereas it is mentioned that there should be no automatic supervisory measures from a breach of the threshold, it is not</p>	The EBA wishes to clarify that indeed the additional supervisory outlier test included in the guidelines (based on the six scenarios as set out in Annex III and a 15% Tier 1 threshold) will act as an early warning signal that will not trigger any supervisory measures, but will lead to a supervisory dialogue.	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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clear if this is an interim or a permanent approach.

In addition, the six interest rate shocks to use for the supervisory outlier test are deemed as unnecessarily burdensome by some respondents not adding value compared to the current two scenarios (parallel up/down).

The current outlier test with a 20% threshold in terms of own funds is retained in the guidelines in view of its applicability as a legally binding threshold under the current CRD IV. To allow institutions to prepare for the implementation of the new outlier test with a 15% threshold in terms of Tier 1 capital in CRD V (in line with the BCBS Standards), this additional outlier test is introduced as an 'early warning signal' with no supervisory measures linked to it.

The EBA notes the comments with regard to the proposed interest rate shock scenarios and would like to clarify that these scenarios have been retained to allow a harmonised approach in line with the BCBS Standards.

**Other remarks**

One respondent indicated that the results of the supervisory outlier test should not be subject to public disclosure and should remain a confidential supervisory tool as part of the ICAAP discussion.

Another respondent indicated that it was not in favour of the coexistence of two prudential measures in view of the ongoing legislative process.

It was also indicated that the implementation of the quantitative components of the BCBS Standards, such

The EBA wishes to clarify that the results of the additional supervisory outlier test will not be subject to public disclosure. Disclosure requirements are outside the scope of these guidelines. The disclosure requirements of the BCBS Standards will be implemented in EU regulation through implementing technical standards mandated by CRD V. The new outlier test with the 15% threshold will be implemented in EU legislation through the revised CRD. Prior to the implementation

No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	as the supervisory outlier test, should be performed through the revised CRD/CRR framework.	of the new threshold, a QIS is expected to be organised to assess its impact.	
<b>Other remarks</b>	One respondent perceived an inconsistency between nominator (market value) and denominator (accounting measure) for the supervisory outlier test calculation.	The EBA notes the comment about the inconsistency between the nominator and denominator for the calculation of the supervisory outlier test, but has opted to align with the BCBS calculation to ensure harmonisation.	No changes made
<b>Other remarks</b>	One respondent pointed out that the two supervisory outlier tests do not trigger management actions.	The EBA wishes to clarify that indeed the additional supervisory outlier test included in the guidelines (based on the six scenarios as set out in Annex III and a 15% Tier 1 threshold) will act as an early warning signal that will not trigger any supervisory measures, but will lead to a supervisory dialogue.  In the Level 1 text, Article 98(5) of the Capital Requirements Directive indicates that measures shall be required in relation to the supervisory outlier test at least in the case of institutions whose economic value declines by more than 20% of their own funds as a result of a sudden and unexpected change in interest rates of 200 bps. The Capital Requirements Directive and Requirements framework is currently under revision.	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Other remarks</b>	One respondent highlighted that the supervisory outlier test should not drive IRRBB management and hedging decisions.	The provision for supervisory outlier tests to be integrated in the internal framework for the management of IRRBB aims to encourage institutions to use the supervisory outlier test as a complementary tool for measuring IRRBB exposures, and not for the outlier test to drive the institution's IRRBB management, nor for institutions to rely solely on the calculation and the outcomes of the supervisory outlier test.	No changes made
<b>Other remarks</b>	It is requested that a QIS be launched to determine the scope and proportionality of the supervisory outlier test and to test the impact of the new outlier threshold.	A quantitative impact study is expected to be organised in the light of the introduction of the new outlier test to replace the current outlier test in the Level 1 text (Capital Requirements Directive), and any related technical standards.	No changes made
<b>Other remarks</b>	One respondent that local supervisors be prevented from being more restrictive than what is agreed at the European level (e.g. 5-year cap for NMDs).	The EBA welcomes the comment and wishes to clarify that these guidelines aim to provide common EU-wide guidance for both institutions and competent authorities, and they are expected to be implemented by the EU competent authorities under the 'comply or explain' principle.	No changes made
<b>Other remarks</b>	A few respondents indicated that behavioural assumptions that depend on	The EBA notes the comment and wishes to clarify that there is clear evidence (particularly for loan prepayments) that	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	interest rate scenarios are not appropriate.	customer behaviour depends on interest rates.	
<b>Question 10.</b>			
<b>Is the proportionality adequately reflected in the guidelines, in particular in relation to the transitional period for SREP category 3 and 4 institutions and the frequency of calculation for the additional outlier test under paragraph 114?</b>			
<b>Proportionality for SREP category 3 and 4 institutions for additional supervisory outlier test</b>	<p>Most respondents requested the inclusion of more proportionality for the additional supervisory outlier test. While respondents acknowledged that there are fewer reporting obligations for smaller institutions, they requested additional qualitative and quantitative relief for smaller and less complex banks, such as some flexibility in terms of the frequency and complexity of calculations. The high complexity of the interest rate risk scenarios should be reduced depending on the size of banks, the complexity of balance sheet structure and/or their limited IRR exposures.</p>	<p>The EBA notes the comments on proportionality, and refers to paragraphs 19 and 20 of the general provisions setting out the proportionality that is to be applied throughout the guidelines. Both paragraphs have been amended to make the proportionality more explicit. The application of the guidelines should depend on the risk profile and complexity of the institution, as well as the level of exposure to IRRBB.</p> <p>In view of the comparability of the outcomes of the supervisory outlier test, it was not deemed appropriate to have different supervisory outlier tests for larger and smaller institutions; however, for a number of components of the supervisory outlier test, proportionality has been included. Flexibility is provided on the treatment of commercial margins, and a 2% materiality threshold has been added for the inclusion of NPEs in the calculation for the supervisory outlier test.</p>	<p>Paragraph 19 has been amended to include that institutions should identify their existing and prospective exposure to IRRBB <b>in a proportionate manner</b>, depending on the level, complexity and riskiness of the non-trading book positions.</p> <p>In paragraph 20, it has been specified that, based upon the assessment of their existing and prospective exposure to IRRBB, institutions should consider <del>all</del> elements and expectations stipulated ... and implement them in a way that is commensurate with existing and prospective exposure to IRRBB.</p> <p>The guidance for the inclusion of the NPEs for the calculation of the supervisory outlier test (paragraph 115(g)) has been amended as follows:</p> <p>Institutions <b>with an NPE ratio of 2% or more</b> should include NPEs as general interest rate sensitive instruments whose modelling should reflect expected cash flows and their timing. NPEs should be included net of provisions.</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>Proportionality for SREP category 3 and 4 institutions for additional supervisory outlier test</b>	Respondents indicated that it would be helpful to clarify that category 3 institutions should perform the basis risk analysis only if their exposure to this risk is material (providing clear guidance on the materiality definition).	We assume that, as a general rule, all institutions shall conduct the basis risk analysis, if basis risk is relevant for the institution (independent from the SREP category). The complexity of calculations can vary depending on the level, complexity and riskiness of the non-trading book.	No changes made
<b>Proportionality for SREP category 3 and 4 institutions for additional supervisory outlier test</b>	Respondents requested clarification of the definition of small trading book business (in paragraph 115(b)), especially with regard to the application level of the guidelines.	The EBA wishes to clarify that the guidelines apply to institutions defined in point 3 of Article 4(1) of the CRR, covering both credit institutions and investment firms at the entity level. Those institutions taking advantage of the small trading book derogation granted in Article 94 of the CRR should include their small trading book items in the calculation of the supervisory outlier test.	No changes made
<b>Proportionality for SREP category 3 and 4 institutions for additional supervisory outlier test</b>	Respondents indicated that the new 15% threshold should apply to smaller banks that are not internationally active only after an impact study has been conducted. While they support the principle of the supervisory outlier test as a consistent, comparable measure, as proposed it is too complex for small, simple banks .	A quantitative impact study is expected to be organised in the light of the introduction of the new outlier test to replace the current outlier test in the Level 1 text (Capital Requirements Directive), and any related technical standards.	No changes made
<b>Proportionality for SREP category 3 and 4 institutions for</b>	A few respondents proposed aligning the supervisory outlier test to internal cash flow modelling. One respondent pointed	Banks may model the impact of expected credit losses on cash flows, addressing both expected defaults (which would lead	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<b>additional supervisory outlier test</b>	out that it is unclear what is meant by 'repricing'. Principal is automatically re-measured when the interest rate risk cash flow is re-measured at overall bank level following the simulated interest rate shock.	to a shortening in the duration of cash flows) and the time it would take to recover the amounts due (a lengthening in the duration of cash flows).	
<b>Question 11.</b>			
<b>If relevant, do you manage interest rate risk arising from pension obligations and pension plan assets within the IRRBB framework or do you cover it within another risk category (e.g. within market risk separately from IRRBB, etc.)?</b>			
<b>Interest rate from pension obligations and pension plan assets</b>	Most respondents do not deem it appropriate to manage interest rate risk arising from pension obligations and assets under the IRRBB framework.	The EBA notes the comments, and wishes to clarify that, as pension plan obligations and pension plan assets are subject to interest rate risk, they should be captured in the risk framework. The current wording of the guidelines is deemed to leave sufficient room for consistency with the IMSs of the institutions and to allow for specificities in treatment of pension obligations and pension plan assets under different jurisdictions.	No changes made
<b>Question 12.</b>			
<b>What treatment of commercial margins cash flows do you consider conceptually most correct in EV metric, when discounting with risk-free rate curve: a) including commercial margins cash flows or b) excluding commercial margins cash flows? Please justify your answer.</b>			
	In general, respondents supported the flexibility provided to institutions to either include or exclude commercial margins	The feedback indicated a range of views on which approach was best. From a theoretical perspective, there was some support for the idea that excluding	No changes made

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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<b>Treatment of commercial margins</b>	<p>cash flows for the purpose of the supervisory outlier test.</p> <p>The majority of respondents indicated that they deemed that both inclusion and exclusion could be valid depending on the risk profile and framework of the institution. Several respondents deemed that, conceptually, it was best to exclude margins, and only a few respondents thought they should be included.</p>	<p>commercial margins may be conceptually 'more pure', while acknowledging that this could be difficult to implement in practice. The majority of respondents supported the EBA's proposed approach to allow firms flexibility to choose the approach to take on commercial margins for the purpose of the supervisory outlier test. The EBA acknowledges the comments received and welcomes the fact that the proposed approach is considered appropriate.</p>	
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<b>Treatment of commercial margins</b>	<p>Those responses promoting exclusion suggested this was potentially more theoretically sound. One respondent indicated that the exclusion of commercial margins allows institutions to focus purely on interest rate risk without any credit, liquidity or other risk components. This was supported by other respondents, who thought that exclusion was probably, conceptually, a more pure approach. In addition, it would improve comparability between banks. One respondent indicated that commercial margins should be included only in the case of an 'economic' discounting approach. Several thought the impact of including commercial margins would be insignificant to IRRBB. Among those suggesting its inclusion, the main argument put forward was the difficulty/complexity of accurately isolating the commercial margins.</p>		
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
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Respondents in favour of flexibility pointed out that the EVE calculation needs to be aligned with banks' risk frameworks and businesses, which will inevitably differ. There are frameworks that require including full cash flows in the EVE calculation and these could either be discounted with proprietary curves or adjusted for expected credit losses and funding costs. Some banks will consider margins part of their interest rate risk, may want to reflect dynamic assumptions and may require a more sophisticated approach than stripping margins from EVE calculations. Other banks prefer the exclusion of commercial margins from the EV metric, when discounting with risk-free rate curve, to show the IRRBB scenarios that the institution is exposed to and any large gap mismatches.

**Question 13.**

**Are your internal systems flexible enough to exclude margins for the purpose of calculating EV measures for the supervisory outlier test? If not, what would be the cost to adapt your systems (high, medium, low)? Please elaborate your answer.**

**Treatment of commercial margins for the supervisory outlier test**

In general, respondents considered that it would be technically feasible to exclude margins, but there would be costs associated with the process. Whereas it was deemed that larger, more sophisticated banks would technically be able to separate margins, concern was

The EBA noted the concerns raised by respondents about the technical capabilities to exclude commercial margins from the calculation of EV measures. In this respect, the option to provide flexibility to institutions in terms of inclusion or exclusion of commercial margins for the

No changes made

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	<p>raised around issues and costs for the smaller banks to develop and implement a sensible methodology for disaggregating interest flows between the market rate and the customer margin element. For smaller banks, the view was that splitting out margins would be challenging, because such banks would not necessarily have the flexibility in their IT systems to make the change, or the existing frameworks to identify margin cash flows. In addition to significant costs and lead time to develop flexibility for the treatment of commercial margins, a number of conceptual issues were raised such as for the fixed-rate items of the balance sheet for which there are no observable commercial margins.</p>	<p>purpose of the supervisory outlier test has been retained.</p>	
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**Question 14.**

**Do you consider the level of the proposed linear lower bound as described in paragraph 115(k) appropriate? If not, please provide concrete suggestions and justify your answer.**

<p><b>Shape of the lower bound yield curve</b></p>	<p>Whereas there was some understanding for the establishment of a minimum lower bound to negative interest rates in view of the current interest rate environment, the majority of respondents raised comments about the level and shape of the proposed linear lower bound.</p>	<p>The EBA notes the comments and opted to retain the current approach of a linear lower bound. Whereas a flat lower bound would ease some of the implementation challenges, it is less realistic and less conservative than a positively inclined one (especially for EVE measures) and it would pose challenges for calculating forward rates and lead to less informative results.</p>	<p>No changes made</p>
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<b>Shape of the lower bound yield curve</b>	<p>A large number of respondents pointed out IT constraints that would affect the implementation of a linearly increasing lower bound. The functionality to automate the change in floor over time is not offered by all ALM software solutions.</p> <p>Furthermore, the proposed relatively 'shallow' gradient of the lower bound is deemed to have a possibly immaterial impact on EVE results. Some respondents therefore proposed setting a parallel floor, where this approach does not lead to material differences in the EVE results.</p> <p>Moreover, applying a negative floor to currencies for which – until now – a zero lower bound was used would pose day one issues, with a sudden change in the results of the supervisory outlier test. Therefore, a phasing-in approach could be considered.</p> <p>In addition, conceptually, any lower bound will potentially cause asymmetry between upward and downward shocks.</p> <p>A few respondents pointed out that, if the same floor were applied to all yield curves, the basis spread between the yield curves might equal zero. Quite contrary to the argument that a linearly increasing uniform lower bound is already too complex, they suggested shocking the risk-</p>	<p>Based on the observations over the 5-year period, steepening the curve further might lead to rates falling below the lower bound.</p>	
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Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>free curve and constructing other yield curves to preserve the current basis spread.</p> <p>One respondent proposed using floors only for cash flows where a contractual agreement is in place (e.g. loans with a 0% floor) or where a strategic plan/decision of the bank is in place (e.g. no negative rates for deposits).</p>		
<p><b>Minimum level of negative interest rates for the linear lower bound</b></p>	<p>Nearly half of the respondents assessed the proposed minimum level of negative interest rates as too conservative based on rates observed in the past, their variability and economic reasoning. Respondents referred to analyses of the historic volatility of interest rates performed on euros and pounds sterling that show that, even for the current very low levels, it is highly improbable that rates will go below -100 bps.</p>	<p>The EBA welcomes the comments on the proposed reference rate for the linear lower bound. In view of the industry comments and after further analysis, it opted to raise the reference rate of the single lower bound level from -150 bps to -100 bps. This level is deemed to be more conservative from an EVE perspective.</p> <p>The reference rate may be subject to review in the framework of the regulatory technical standards under the revised CRD/CRR framework.</p>	<p>Paragraph 115(k) has been amended as follows:</p> <p>A maturity-dependent post-shock interest rate floor should be applied for each currency starting with <b>-100 basis points</b> for immediate maturities. This floor should increase by 5 basis points per year, eventually reaching 0% for maturities of 20 years and more. <b>If observed rates are lower than the current lower reference rate of -100 basis points, institutions should apply the lower observed rate.</b></p>
<p><b>Treatment of various currencies for the linear lower bound</b></p>	<p>A few respondents pointed out that, while they think that regulators should be in a position to determine the most appropriate lower bound for currencies under their jurisdictions, internationally active banks are faced with different prescribed lower bounds from different regulators, resulting in decreased</p>	<p>The EBA acknowledges the potential issue for cross-border institutions, and confirms the possibility for EU competent authorities to recognise lower bound floors prescribed by non-EU authorities for entities outside the EU of cross-border banking groups.</p>	<p>No changes made</p>

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	efficiency in the reporting process and loss of comparability of disclosures across geographies.	The EBA wishes to clarify that the floor should indeed be applied to the risk-free curves and transposed consistently to all other curves.	
<b>Interest rates below the floor of the linear lower bound</b>	One respondent noted that the rules imply that in case the spot rate was below the floor, application of the floor would result in an increase of the rate.	The EBA welcomes the comment and has clarified in the guidelines that, if the observed rates are lower than the current lower reference rate of -100 bps, institutions should apply the lower observed rate.	Paragraph 115(k) has been amended as follows:  A maturity-dependent post-shock interest rate floor should be applied for each currency starting with -100 basis points for immediate maturities. This floor should increase by 5 basis points per year, eventually reaching 0% for maturities of 20 years and more. <b>If observed rates are lower than the current lower reference rate of -100 basis points, institutions should apply the lower observed rate.</b>
<b>Step-up floor</b>	One respondent indicated that the step-up floor should be shortened to a more realistic 10Y, as it is difficult to imagine negative rates for the next 30 years.	The EBA notes the comment, and wishes to clarify that, whereas the reference rate has been raised from -150 bps to -100 bps, the slope of the curve has been maintained and the floor should increase by 5 bps per year, eventually reaching 0% for maturities of 20 years and more.	No changes made
<b>Cross-jurisdictional differences in lower bounds</b>	One respondent voiced concern that global banks could be subject to different prescribed lower bounds from different regulators. This would compromise the comparability of IRRBB disclosures across	The EBA wishes to clarify that competent authorities have the possibility of authorising different floors for currencies outside their jurisdictions, when the bound is defined by a foreign regulator.	No changes made

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	geographies and reduce the efficiency of the reporting process.		
<b>Question 15.</b>			
<b>Do you consider the minimum threshold for material currencies included into the supervisory outlier test (5% for individual currency and minimum 90% of the total non-trading book assets or liabilities) sufficient to measure IRRBB in terms of EVE? If not, please provide concrete suggestions and justify your answer.</b>			
<b>Minimum threshold for material currencies</b>	<p>A large number of respondents agreed with the proposed threshold for material currencies, which is seen as being in line with common practices.</p> <p>One respondent requested clarification of whether or not the threshold is applicable for NII purposes.</p> <p>A few respondents proposed adding an additional materiality threshold (e.g. 2% of total banking book) in case the last 10% of exposure is fragmented among many currencies with a very low materiality.</p>	<p>The EBA notes the comments with regard to the minimum threshold for material currencies for the supervisory outlier test. The threshold has been maintained and is planned to be assessed under the QIS which is expected to be organised in the light of the technical standards expected to be mandated under the revised CRD/CRR.</p>	No changes made
<b>Question 16.</b>			
<b>When aggregating changes to EVE in the supervisory outlier test, does the disregarding of positive changes to EVE have a material impact on the calculation of the supervisory outlier test?</b>			
<b>Currency aggregation</b>	<p>Most respondents indicated that the impact of the proposed currency risk aggregation methodology strongly depends on the balance sheet composition. Whereas some respondents</p>	<p>The EBA acknowledges that the proposed currency aggregation for the purpose of the supervisory outlier test is fairly conservative, especially for currencies that are pegged together. In order to allow</p>	<p>Paragraph 115(m) has been amended as follows:</p> <p>When calculating the aggregate EVE change for each interest rate shock scenario,</p>

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<p><b>Currency aggregation</b></p>	<p>estimated the impact of disregarding positive changes to EVE not to be material, others believed the effect to be significant.</p> <p>Many respondents viewed the proposed currency risk aggregation as being overly conservative and actually hindering risk diversification by disregarding any correlation and mitigation effects between currencies. According to them, the aggregation of all positive and negative positions would be a more accurate measure and it would make comparability across different banks clearer. Respondents recommended allowing banks to use their own approach for currency aggregation according to their IMSS.</p>	<p>comparability of the results of the supervisory outlier test, it was opted not to allow flexibility to institutions to base the currency aggregation for the purpose of the supervisory outlier test on their IMSS' approach. However, in order to recognise the benefits of risk diversification while at the same time maintaining the simplicity of the approach, under the final guidelines institutions are allowed to calculate the aggregate EVE change for the supervisory outlier test, adding together any negative and positive changes to EVE occurring in each currency but weighting positive changes by a factor of 50%</p> <p>A 50% weighting factor was included to allow for a middle ground between taking into account full diversification benefits and no diversification benefits. Whereas major currencies tend to exhibit a high degree of correlation (especially for the longer end of the yield curve), these relationships are not stable over time and cannot be expected to remain unchanged, especially in stressed market conditions. 50% was the minimum level of correlation of five major currencies observed in the period 2007-2017.</p>	<p>institutions should add together any negative <b>and positive</b> changes to EVE occurring in each currency. <del>and disregard any positive changes to EVE.</del> <b>Positive changes should be weighted by a factor of 50%.</b></p>

