

EBA/CP/2015/27

---

14 December 2015

---

# Consultation Paper

---

Draft Regulatory Technical Standards

on the specification of the assessment methodology for competent authorities regarding compliance of an institution with the requirements to use internal models for market risk and assessment of significant share under Article 363(4)(b) and (c) of Regulation (EU) No 575/2013

# Contents

---

<b>1. Responding to this consultation</b>	<b>3</b>
<b>2. Executive Summary</b>	<b>4</b>
<b>3. Background and rationale</b>	<b>6</b>
<b>4. Draft regulatory technical standards</b>	<b>26</b>
<b>5. Accompanying documents</b>	<b>110</b>
5.1 Draft cost-benefit analysis / impact assessment	110
5.2 Overview of questions for consultation	122

# 1. Responding to this consultation

---

The EBA invites comments on all proposals put forward in this paper and in particular on the specific questions summarised in 5.2.

Comments are most helpful if they:

- respond to the question stated;
- indicate the specific point to which a comment relates;
- contain a clear rationale;
- provide evidence to support the views expressed/ rationale proposed; and
- describe any alternative regulatory choices the EBA should consider.

## Submission of responses

To submit your comments, click on the 'send your comments' button on the consultation page by 13.03.2016. Please note that comments submitted after this deadline, or submitted via other means may not be processed.

## Publication of responses

Please clearly indicate in the consultation form if you wish your comments to be disclosed or to be treated as confidential. A confidential response may be requested from us in accordance with the EBA's rules on public access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by the EBA's Board of Appeal and the European Ombudsman.

## Data protection

The protection of individuals with regard to the processing of personal data by the EBA is based on Regulation (EC) N° 45/2001 of the European Parliament and of the Council of 18 December 2000 as implemented by the EBA in its implementing rules adopted by its Management Board. Further information on data protection can be found under the Legal notice section of the EBA website.

## 2. Executive Summary

---

The Capital Requirements Regulation (CRR) and the Capital Requirements Directive (CRD)<sup>1</sup> set out prudential requirements for banks and other financial institutions which have been applied from 1 January 2014. Among others, the CRR contains specific mandates for the EBA to develop draft Regulatory Technical Standards (RTS) to specify the conditions under which competent authorities assess the significance of positions included in the scope of market risk internal models, as well as the methodology that competent authorities shall apply to assess compliance of an institution with the requirements to use an Internal Model Approach (IMA) for market risk.

These proposed draft RTS are considered an integral part of the efforts of the EBA to foster consistency in models outputs and comparability of the risk-weighted exposure amounts. It is expected that these proposed draft RTS should enable harmonisation of the supervisory assessment methodology across all EU Member States. It will therefore contribute to address some of the issues identified in the latest EBA Report on the comparability of RWAs and shall provide enhanced clarity on various aspects of the IMA application.

### Main features of the draft RTS

In accordance with the mandate established in Article 363(4)(c) of the CRR, section 1 of these draft RTS provide objective criteria to be applied in the assessment of the significance of those positions included in the scope of the model. The RTS proposes two different methodologies for general and specific risk categories, both of them based on the standardized rules for market risk. The EBA is proposing that the assessment of significance is performed before and after competent authorities validate the model, though applying a lower threshold in case the competent authority has decided, as a result of their assessment of the internal model, to exclude certain positions from the scope of the internal model. Finally, once the model has been approved, the RTS allows the use of alternative methodologies to assess whether the significance of the positions included in the model remains appropriate.

The remaining sections of the RTS set out the standards for the competent authorities assessment of the institution's compliance with IMA requirements, as defined in Chapter 5, Title IV, Part Three of the CRR, when the institution initially applies to use the IMA for one or more of the risk categories listed in Article 363(1), or introduces any material changes or extensions to the IMA approach. Competent authorities shall also use this draft RTS to assess whether institution meets minimum IMA requirements on an ongoing basis following the regular review of the internal model. Consequently, these RTS will need to be embedded in day-to-day practices of supervisory authorities.

---

<sup>1</sup> Regulation (EU) No 575/2013 of 26 June 2013 of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012, and 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.

The draft RTS has been structured around modelling standards. Accordingly, the RTS text provides a mapping of the different risk categories, contemplated in Article 363, to the modelling standards applicable for VaR, SVaR, IRC and correlation trading models.

The RTS requirements build partially on existing guidelines on IRC and SVaR, which were issued by the EBA in May 2012 under a CRD III mandate. These guidelines have constituted the starting point to develop the legal requirements on SVaR and IRC included in the CP. At the same time, Articles 365 and 372 of the CRR incorporate new mandates for the EBA to issue guidelines on SVaR and IRC. Accordingly, the EBA will update and re-issue the guidelines covering only those parts that have not been incorporated in the RTS.

Finally, the EBA has been mindful of developments in international market risk capital standards, in particular regarding the Fundamental Review of the Trading book (FRTB) that the Basel Committee on Banking Supervision (BCBS) is close to finalizing. The EBA has considered the convenience of moving in the policy direction followed in the FRTB. The EBA objective has been to introduce some elements that go in the direction of the Basel review, which can be implemented within the CRR current legal setting. Examples are the proposals to establish VaR limits as well as back-testing requirements at a higher level of disaggregation than the 'top of the house' VaR, the requirement that one year PDs used in IRC should be greater than zero, or the clarification that modelling event risk in VaR should be applicable only for equity positions.

### **Next steps**

Following the consultation, the EBA will review the draft RTS to ensure that any relevant comments arising from the consultation process are taken into account.

## 3. Background and rationale

---

Article 363(4) of the CRR contains three mandates for the EBA to develop Regulatory Technical Standards on: (i) the conditions for assessing materiality of extensions and changes to use market internal models; (ii) the assessment methodology under which competent authorities permit institutions to use internal models<sup>2</sup>, and (iii) the assessment of what is a ‘significant share’ of the positions to be included in an internal model, computed for each one of the market risk categories referred to in paragraph 1 of the Article.

The first of the three mandates has already been completed. On 4 July 2014 the EBA published the RTS on Model Changes and extensions. These RTS have been adopted by the Commission on 19 of June 2015<sup>3</sup>.

These RTS cover the other two mandates included on Article 363(4), i.e. the assessment of significance of the positions to be included in the scope of the internal model by each one of the risk categories listed in Article 363(1) as well as the assessment methodology under which competent authorities permit institutions to use internal models.

### 3.1 Assessment of significant share of positions

According to Article 363 competent authorities shall grant permission to institutions to calculate their own funds requirements using their internal models for one or more of the following risk categories

- a. general risk of equity instruments;
- b. specific risk of equity instruments;
- c. general risk of debt instruments;
- d. specific risk of debt instruments;
- e. foreign-exchange risk;
- f. commodities risk.

The permission shall be required for each risk category and shall be granted only if the internal model covers ***a significant share of the positions of a certain risk category.***

#### 3.1.1 Risk category and legal scope of the assessment of significance

The materiality of the positions covered in the risk category(ies) for which an institution requests modelling approval should be assessed considering exclusively the scope of application of the model.

---

<sup>2</sup> Similar mandates existed for credit and operational risks internal models.

<sup>3</sup> Commission Delegated Regulation (EU) No 529/2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council.

In this regard, when applying for an internal model, a bank must identify which risk(s) category(ies) and which legal entity(ies) are part of the scope.

It is worth noting that, unlike for IRB where the CRR establishes requirements regarding the need to carry out a 'sequential implementation' (roll-out plan) and limits the possibility of keeping positions permanently outside the IRB approach (permanent partial use 'PPU'), for market risk internal models the CRR does not establish any requirements regarding the need to implement internal models for all/most units within a group. As mentioned above, there is an obligation that the model covers a significant share of the positions of a certain risk category, but the rest of risk categories and/or legal entities within a group can, in principle, remain under the standardised approach on a permanent basis.

Accordingly, the EBA considers that the assessment of the significance of positions has to be conducted for the particular combination of legal entity(ies) and risk category(ies) for which the bank is requesting modelling permission, without considering any roll-out plans or materiality limits for the risk categories or institutions that remain outside the scope of the model.

### 3.1.2 Methodology applied

When assessing the significance of positions, the EBA has considered that, due to differences in the nature of general and specific risks, it is appropriate to treat those positions subject to general risk of equity and debt instruments as well as subject to foreign-exchange and commodities risks, differently from those positions to be included in the internal model for specific risk of equity and debt instruments.

According to this rationale, the assessment of general risk has to be based on the own fund requirements stemming from changes in broad market movements, unrelated to any specific attributes of individual securities, while it is more appropriate to assess specific risk based on the net position in each individual security, in order to reflect the idiosyncratic risk.

The two proposed approaches for General and Specific risks are as follows:

#### For General risk:

$$\frac{\textit{standardised charge for non modelled positions}}{\textit{standardised charge for non modelled positions} + \textit{standardised charge for modelled positions}}$$

This approach allows the assessment of positions to reflect their 'relevance', not only from an absolute size, but also from a riskiness perspective. For example, considering interest rate risk, it is clear that longer term positions are more 'risky' (and thus, 'relevant') than shorter term positions.

In general using the capital requirement seems to be a sensible approach; however, the EBA considers that the distortion introduced by positions which receive a 0% capital should also be taken into account. Accordingly, the approach proposed for specific risk is different.

## For Specific risk:

$$\frac{\text{sum of long and short for non modelled positions}}{\text{sum of long and short for non modelled positions} + \text{sum of long and short for modelled positions}}$$

The use of net positions for specific risk avoids the distorting effect of having potentially a significant part of positions pondering 0% RWAs in the assessment of materiality. In addition, the proposed treatment is fully consistent with the rationale applied in the RTS on materiality thresholds for specific risk, published by the EBA in December 2013. In these RTS the EBA clearly stated that the use of risk-weighted assets to define the materiality of positions would not be appropriate, since the economic incentives behind the implementation of internal models should be independent from risk weighting.

### 3.1.3 Initial and regular assessment of significance

The assessment of 'significant' has to be assessed regularly to ensure the significance requirement established in Article 363 is met. The EBA considers that the positions excluded from the internal model at inception should not grow significantly after the initial validation. In case these positions become a material part of the trading business they should be included in the scope of the internal model. This provision is consistent with the rationale behind the Level 1 text and also intends to address the risk of any potential 'window dressing', which might be performed by the institution prior to the model approval request.

However, the EBA is mindful that any request to compute the above ratios regularly would imply that banks that have internal models should always be able to compute the standardised approach on all their positions, which may be quite burdensome in many cases.

Accordingly, the EBA is proposing that, at a minimum, as part of the annual internal validation, the risk control unit assesses the materiality of these positions excluded, though this assessment might not necessarily be based on the same ratios used at inception. In this regard, the RTS proposes using two simple metrics based on data that should be readily available: the proportion of (i) the P&L and of (ii) the own funds requirements stemming from the positions included in the scope of the model compared with the total by risk category.

### 3.1.4 Minimum model 'stability period' prior to authorization

The RTS establishes that, at the moment when the model application is submitted, the market risk internal model shall have been working for at least 1 year in a stable way. This 'run-up' period is necessary considering that, when the model is applied for capital purposes on day one, 250 back-testing observations need to be available to determine the multipliers applied for VaR and SVaR. Another implication would be that the firm would have to comply with the back-testing requirements included in the RTS at least one year before the model is implemented. Banks will also be requested to provide their significance assessment calculations for the positions held on the 4 quarters of this 'run-up' year.



In addition, this 'model stability' requirement implies that, during this one year period the model should not be subject to any material changes, defined in accordance to Commission Delegated Regulation (EU) No 529/2014. Alternatively, the EBA is consulting on the possibility of allowing the introduction of material changes, provided the institution is able to recalculate the VaR backwards and perform the back-testing.

Finally, the EBA considers that the results of the hypothetical portfolio exercise (HPE) for market risk models, coordinated yearly by the EBA in accordance with Article 78 of the CRD, provides relevant validation input. Of course, an institution is not formally required to report to the EBA the results for the portfolios till its internal model has been validated; however, competent authorities should request that firms provide the results for the benchmarking portfolios published by the EBA during the 'run-up' year. The results provided will be used as an additional assessment tool to be used by competent authorities.

### **3.1.5 Treatment of positions excluded by the competent authority**

The RTS contemplates that the assessment of the significance of positions included in the scope of the model should consider those positions that, as a result of the validation process conducted in accordance with the RTS requirements, might have been explicitly excluded by the competent authority from the scope of the internal model.

It may be argued that it is not appropriate to compute those positions excluded by the CA, since the exclusion is not something decided by the institution. On the other hand it could be argued that Article 363 of the CRR introduced the possibility of not incorporating all positions in the model exactly to take account of those excluded by the CA.

The EBA is consulting on the possibility of requesting two calculations in case positions have been excluded by the competent authorities during the initial validation process:

- When submitting a model application banks would be required to comply with a high threshold for the positions they intend to include in the internal model. The EBA is consulting on a level of 5 to 10%, i.e. 90 to 95% of positions included, for this initial threshold.
- In case competent authorities have excluded some positions from the scope as a result of the application of the RTS banks will have to perform the calculation again, but this time they would be required to meet a lower (but still significant) threshold. The EBA is consulting on a level of 30 to 40%, i.e. 60 to 70% of positions to be included, for this second threshold.

Of course, if no positions have been excluded by the CA, only the first calculation would be needed. According to the rationale behind the proposal, when a CA considers that the internal model is not appropriate for certain instruments, but still believes that the market risk model is suited for the rest of trading activities, positions excluded by the CA should not be computed when assessing the materiality of positions.

The proposal for consultation intends to frame the discretion that competent authorities have to exclude positions as a result of their assessment (in order to avoid having 'empty' models), whilst at

the same time giving enough flexibility to allow them to be strict enough in their assessment of the internal model. The EBA considers that, in case the 90-95% level were to be met in all cases, the room for CAs to exclude positions which do not fully meet all standards would be very limited, turning the approval of a model into an 'all or nothing' decision.

### **3.1.6 Treatment of securitisations and 'structural fx' positions**

According to Article 371 of the CRR, an institution may choose to exclude from the calculation of its specific risk internal model the securitisation and nth-to default derivative positions which are calculated according to the standardised approach. The exception are those securitisation and nth-to default derivative positions that form part of the correlation trading for which an internal model has been approved.

Thus, the RTS states that, when assessing the materiality of the positions modelled for specific risk, banks may ignore positions in securitisations and nth-to-default derivatives calculated according to the standardised rules, unless they intend to include them in the VaR and SVaR calculations or they are in the scope of an internal model for correlation trading activities that the bank intends to use for capital purposes.

Additionally, when assessing the significance of positions for the foreign-exchange risk category, banks shall also ignore those positions which, in accordance with Article 352(2) of the CRR, have been authorised by the competent authority to be excluded from the calculation of net open currency positions.

### **3.1.7 Threshold levels for the ratios**

As previously noted, the EBA is seeking feedback on the levels proposed for the two thresholds. In the CP the threshold values range from 5 to 10%, for the ratios presented by the institution when applying for the model, and 30 to 40%, for the ratios computed after competent authorities might have decided to exclude some positions from the scope of the model.

## **3.2 Application of the RTS requirements**

### **3.2.1 Modelling application by risk category vs modelling standards by type of model**

While the CRR establishes in Article 363 that the permission by the competent authorities for the use of internal models shall be required by risk category, modelling validation is in practice not conducted solely by risk category, but by a combination of risk category and type of model, such as VaR, Stressed VaR, IRC and Correlation Trading models.

Article 363 allows firms to apply for a single 'risk category', however this is the only Article of the CRR in which these risk categories are mentioned. All CRR requirements are structured in practice

following a modelling categorisation. From Article 367 onwards the rule refers to internal models for 'FX, commodities, correlation trading models and position risk'<sup>4</sup>.

In particular, Articles 368-369 of the CRR contain general modelling requirements applicable to any internal model used to calculate own funds. VaR (and SVaR, where applicable) requirements are covered in Articles 365 to 367 and 370, IRC is regulated in Articles 372-376 and, finally, Article 377 includes the additional requirements for the correlation trading internal model.

Accordingly, depending on the risk category, positions would be subject to the following modelling requirements (and capital charges):

- a. general risk of equity instruments: positions shall be subject to VaR and SVaR
- b. specific risk of equity instruments: positions shall be subject to VaR and SVaR; in addition, following the requirements established in Article 373 of the CRR, they may be subject also to IRC.
- c. general risk of debt instruments: positions shall be subject to VaR and SVaR
- d. specific risk of debt instruments: positions shall be subject to VaR, SVaR, IRC and, solely for securitisation positions and nth-to-default derivatives that meet the requirements stated in Article 338, internal model for correlation trading.
- e. foreign-exchange risk: positions shall be subject to VaR and SVaR
- f. commodities risk: positions shall be subject to VaR and SVaR

The RTS has been organised following a 'modelling' structure; the EBA is proposing to have a common 'governance' section covering all the central elements which are applicable where an internal model is used for capital purposes (regardless of the risk category(ies) included in the model application) while the rest of the RTS is structured around the different modelling standards for VaR, SVaR, IRC and internal models for correlation trading.

### 3.2.2 General-Specific risk hierarchy

The CRR distinguishes between 'general' and 'specific' market risks, and establishes different requirements included in different Articles. The EBA considers that the way the requirements for general and specific risks are articulated in the CRR allow banks to apply for general risk approval without applying simultaneously for specific risk, but not vice versa<sup>5</sup>. In this regard, Article 367(2) establishes 'general' quantitative requirements that any model should meet<sup>6</sup>, whilst Article 370 introduces 'additional' requirements 'particular to' specific risk modelling.

<sup>4</sup> According to Article 326 CRR 'position risk' bundles together risks stemming from debt and equity instruments. 'The institution's own funds requirement for position risk shall be the sum of the own funds requirements for the general and specific risk of its positions in debt and equity instruments'.

<sup>5</sup> The EBA considers that, in practice, this hierarchy has been historically applied.

<sup>6</sup> Similarly, Article 368 CRR contains qualitative requirements which are always applicable in case a market internal model is used for capital purposes.

Accordingly, (though this is not introduced in Article 363) the EBA is proposing in the RTS that banks would not be able to request permission to model specific risk, of either equity or debt instruments, without having authorisation (or applying simultaneously) to model 'general risk' for equity and debt respectively. FX and Commodities are treated independently since they have the consideration of general risks.

### **3.2.3 Articulation of RTS and guidelines mandates for SVaR, IRC and Correlation Trading.**

The RTS mandate for the assessment methodology covers all 'internal models' for market risk, which, as stated previously, includes VaR, SVaR, IRC and correlation trading models. However, simultaneously, Articles 365 and 372 of the CRR incorporate the requirement for the EBA to issue guidelines on SVaR and IRC.

In this context, it is worth noting that the EBA already published IRC and SVaR guidelines, under a CRD III mandate, on 12 and 16 May 2012 (see: <https://www.eba.europa.eu/-/guidelines-on-the-incremental-default-and-migration-risk-charge-ir-1>).

The EBA has decided, after monitoring developments and practices in both topics, to incorporate those parts of the existing guidelines that the EBA considers should be included as part of competent authorities' assessment methodology in the RTS, updating them as well where deemed necessary. Consequently the guidelines will be re-issued covering only those parts that have not been incorporated in the RTS.

Finally, the EBA also has a requirement under Article 377(5) to issue guidelines on the application of stress scenarios for the correlation trading portfolio. However, in this case there are no preexisting guidelines.

### **3.2.4 Application of proportionality depending on the model complexity**

Proportionality is a general principle of EU regulation, and as such is applicable when reading the RTS requirements; nevertheless, the EBA explicitly acknowledges that competent authorities shall apply the RTS requirements in a manner proportionate to the size and complexity of the institution and, more specifically, of the trading activities included in the scope of application of the internal model.

The EBA considers that the complexity of the model should be linked to the complexity of the instruments that are negotiated in the trading area, and is proposing that, as a guide in assessing the complexity of any internal model, competent authorities consider a series of product categories that group financial products in increasing order of complexity. Depending on the relevance of those instruments included in a complex category, certain requirements of the RTS, such as those related to non-linearity or correlation risks, become more relevant for the model assessment.

## 3.3 Assessment methodology of Market Risk internal models

### 3.3.1 Common Governance Section

In Section 2 of Chapter 5, the CRR includes requirements that are applicable to all institutions that intend to use internal models for capital purposes. In particular, Articles 368 and 369 of Section 2 introduce qualitative requirements that cut across internal models and are applicable regardless of the particular 'risk category(ies)' for which institutions submit the modelling application.

Accordingly, as previously mentioned, the EBA has decided to consolidate minimum standards on model governance, independence, resources and validation in a single section which will be applicable in all cases where an internal model is assessed by competent authorities. The Governance section covers, amongst others, the following elements:

#### **Segregation and Independence of the risk unit**

In line with Article 368 of the CRR, that states that the risk control unit shall be independent from business trading units and report directly to senior management, the RTS establishes several requirements intended to ensure that the independence of the risk unit is exercised in practice.

The EBA is proposing that the ultimate responsible of the risk unit shall be a senior manager of the institution, though not necessarily a member of the board. However, the RTS also requires that the risk unit is represented at the Board at a minimum when it discusses areas that are relevant for the unit. In order to assess how the independence of the risk unit is exercised in practice and how the views of the risk unit are incorporated into the decisions of the Board on market risk matters, competent authorities are requested to examine the proposals from the risk unit as well as the final decisions taken by the Board on the relevant decisions. Clearly the Board retains overall responsibility for management of the institution; however, such analysis will inform a broader assessment of the independence of the risk unit.

#### **Variable remuneration of the risk unit / internal audit personnel**

The EBA is including a requirement, contemplated also in the credit model assessment RTS, stating that the variable remuneration of the staff and senior management responsible for the risk control unit and / or the internal audit shall not be 'materially linked' to the performance of the tasks related to trading business areas under their supervision.

The requirement has been introduced in the context of the assessment of independence of the risk unit and internal audit, which would likely be hindered in case the variable remuneration of the staff working in these areas would be linked to the performance of the activities they are supervising.

## Outsourcing

The EBA has also introduced an Article on outsourcing. The Article intends to ensure that the outsourcing by an institution of any tasks, activities or functions related to the design, implementation and validation of internal models does not prevent or in other way inhibit the implementation of the methodology referred to in the RTS. In particular, the outsourcing should not be extended to areas beyond the ones permitted under the CRR, there should be sufficient in-house understanding of the outsourced tasks and the competent authority should be able to have access to all relevant information.

## Initial and regular internal validation

The initial validation prior to the model approval shall cover all aspects of the internal model. Regarding the periodic validation, in line with the IRB requirements, the EBA is proposing that, at a minimum, the risk unit shall review yearly the internal model. This is also consistent with the annual review of the internal model, to be conducted by the internal audit, mandated in Article 368(2) of the CRR.

However, for this periodic validation, the assessment may focus in the relevant areas affected by changes in the trading business, new methodologies or instruments introduced, as well as any areas which might have been identified as problematic or subject to monitoring at previous validations and/or internal audit reviews.

## Completeness of the internal validation

The CP is proposing a number of tests and assessments that have to be conducted during the initial (and, if relevant, periodic) validation. These include, among other elements the need to:

- a. assess the back-testing results for the two P&Ls for different levels of calculation (i.e. not just the 'top of the house' back-testing),
- b. assess also the relevance of any missing risk factors in VaR,
- c. apply statistical tests regarding distribution assumptions,
- d. analyse the results from the institution's Stress Testing programme and from the Hypothetical portfolios developed to assess particular features that should be captured by the model,
- e. evaluate the adequacy of proxies used in the model and the robustness of the IT systems.

The EBA is proposing that a formal report reflecting the conclusions obtained from the initial and periodic validations be produced by the responsible unit and reported to the senior management and to the management body of the institution or to the committee designated by it.

## Independence of the internal validation

Article 368.1(b) of the CRR establishes that an ‘independent’ risk unit shall be responsible for designing and implementing any internal model used to calculate own funds requirements. This Article also establishes that the risk unit shall conduct the initial and ongoing validation of the model. In addition, Article 369 states that this internal validation must be conducted by ‘*suitably qualified parties independent of the development process*’.

The EBA considers that, at a minimum, this requirement implies that the staff that has developed and implemented a model shall not be the same that the one in charge of validating it. Considering the scarcity of resources (in particular of staff with sufficient expertise to develop, implement and/or validate an internal model<sup>7</sup>) this approach intends to allow some flexibility, since the same staff working in the development of one of the models could also validate a different model developed by other staff within the risk unit; however, it is clear that, under this approach, the independence of the validation process is partially hindered due to the likely ‘reciprocity’ (i.e. ‘tit for tat’) after several ‘cycles’ of modelling development, validation and implementation.

An improvement from the previous option would imply the need to create an independent ‘validation unit’ within the risk unit that would be fully responsible of the validation and would never be involved in the model development and/or implementation. Though this unit would finally report to the risk unit responsible, this scheme clearly allows a greater degree of independence.

Finally, it is clear that an independent validation unit, entirely segregated from the ‘risk unit’ and with completely different reporting lines, is the best option in terms of independence, but it is also the most burdensome. Taking into account that the objective in the CRR is, to the extent possible, to ensure independence in the validation process, the EBA has decided to consult on this possibility, which has already been implemented by some institutions, in line with the Credit IRB risk modelling validation requirements.

The CP RTS text includes the requirement that global systemically important institution (GSII) in the meaning of Article 131 of Directive 2013/36/EU shall have a fully independent validation unit in all cases. However the EBA has decided that this obligation should not be extended to other systemically important institution (OSII).

Generally, institutions are categorized as OSII due to its credit importance for the national economy and, accordingly, these institutions may likely have limited trading activities. Thus, the inclusion of these additional governance requirements would be over burdensome for most OSII.

---

<sup>7</sup> It is worth noting that, according to Article 368.1(h), internal audit shall also review annually the internal models.

## **New product approval policy**

Given the evolving nature of trading activities, in particular for advanced institutions using internal models, the EBA has considered it is necessary to incorporate a stable framework around the introduction and formal approval of new instruments and products into market risk models. The EBA considers that these requirements for a formal new product approval policy are needed to ensure that the flexibility to introduce new instruments, which may pose additional risk factors and imply the need to introduce changes in IT and/or risk management systems, is fully compatible with the comprehensive control and validation by the risk unit of all new risks factors within the market risk model.

Of course, the need for a new product approval policy is a general issue that affects all institutions and risks, in fact the EBA provided in September 2011 guidelines on Internal Governance that refer to this element; however, the requirements in the RTS have been articulated in a more detailed way the policy so they are relevant for banks applying an internal model for market risk. The EBA considers that this specification of the general requirements reflect well the RTS mandate.

## **Internal reports and structure of committees**

Article 368 of the CRR includes a series of qualitative requirements regarding the integration of the internal model in the daily management of the institution. These include the risk unit's obligation to produce and analyse daily reports on the output of the internal model and trading limits, as well as the obligation by the institution's management to review these daily reports produced by the risk-control and, if needed, enforce both reductions of positions taken by individual traders as well as in the institution's overall risk exposures. Accordingly, the EBA is requesting that all the reports produced by the risk unit are appropriately approved and documented.

Regarding the institution's internal committee structure, while the EBA does not intend to fully articulate the committee structure for institutions applying internal models, it also considers that a minimum structure is necessary to fulfil the tasks and responsibilities established in the CRR.

In particular, the EBA considers that the level of daily involvement in the monitoring and control of the internal limits required in the CRR implies that this task is formally assigned to a committee that meets frequently enough to study any limit breach and take corrective action or escalate it to the Board if necessary. In addition, as part of the new product approval policy abovementioned, the institution must also establish a 'new product committee', comprising all affected parties by the negotiation of new products, to monitor appropriately any new risks posed by the introduction of new activities in the trading area.

In order for competent authorities to be able to assess the appropriateness of the committee structure and evaluate its functioning on a day-to-day basis, the EBA considers that the structure



should be appropriately documented and approved by the board. In addition, meeting agendas and action points for these committees shall be documented.

### **Internal limits and limit breach approval process**

The EBA considers that internal limits are a central element necessary for the control of trading activities. Unlike for credit, where each significant transaction is normally assessed and approved individually, traders are generally able to buy or sell freely and immediately financial instruments; it is important to highlight that, in general, the trader does not have to request any permission for a new trade provided it has an authorization to operate in the specific instrument and the new trade does not breach any of the internal limits he has been assigned.

In this context, the EBA acknowledges that VaR limits are not the only method that institutions use to control traders' activities; the RTS recognizes institutions generally establish other type of limits apart from VaR (based on sensitivities, or lost trigger type). The RTS states that these other methods shall be consistent with the ones based in VaR metrics and shall also be formally approved and might be reviewed by competent authorities as part of the validation process. At the same time, VaR is a central element of the regulatory model and so it is given a predominant role in the RTS.

Regarding other regulatory metrics apart from VaR, in line with guidelines on SVaR and IRC published by the EBA in May 2012, the EBA is proposing that only VaR limits shall be considered compulsory. In principle, neither SVaR nor IRC or Correlation Trading Modelling limits are ex ante obligatory, however competent authorities might still be able to request that limits for these regulatory metrics are established, if appropriate.

As previously noted, regardless of the type of limits established internally, the EBA considers that a formal approval process for any limit is always necessary. Specifically for the VaR limits, the EBA is proposing a two-tier limit setting process, with some VaR limits being necessarily established and reviewed by the institution's Board, and a second tier of VaR internal limits being established and updated by the internal committee previously mentioned.

The Board should be responsible for the regulatory 'top of the house' VaR limit (i.e. at the level where the VaR is used to determine the capital requirement, in accordance with Article 366) and, for all institutions using an internal model, another level of VaR limits below the 'top of the house' and/or 'jurisdiction' levels is also requested.

Back-testing will be requested for all levels at which VaR limits have been established by the Board. In addition, for all the VaR limits established in the organisation (regardless of the committee responsible) a 'formal' limit breach approval process shall be established. The CP RTS proposes that the committee dealing with the breach will be the one that established the limit in the first place,

though if a breach exceeds certain thresholds they should always be escalated to the Board. Limits shall be updated regularly and, at a minimum, yearly.

### **Stress testing programme**

In accordance with Article 368(1)(g) of the CRR, the RTS requires that the risk unit establishes, at least annually, a series of scenarios that should be run at least monthly. The scenarios shall capture a series of historical and hypothetical events, but the RTS also requests that ad-hoc and reverse stressed test scenarios are applied.

The ad-hoc scenarios shall be produced after considering the most significant risk drivers of the trading portfolio and shall specifically be designed to address illiquidity, concentration risk, event and jump-to-default risks, non-linearity of products, deep out-of-the-money positions and other risks that may not be captured appropriately in the internal models, in particular, those derived from the use of proxies.

The stress testing programme should not focus solely on the reasonableness of VaR results when compared with potential market losses stemming from the stressed scenarios, credit and other event losses shall also be used to assess the reasonableness of the IRC and/or correlation trading model assumptions, in particular regarding the capture of credit risk concentrations.

### **3.3.2 VaR and SVaR sections**

#### **Calculation of VaR and SVaR at consolidated level**

The RTS includes specific requirements for the calculation of VaR and SVaR at consolidated (and, where relevant, sub-consolidated) level; in particular, in case the scope of the model that includes positions booked in different 'units' that operate in different jurisdictions and/or under different time zones.

It is worth noting that, for the purpose of determining the net positions applied to calculate the market risk requirements on a consolidated basis (both under standardised rules as well as using internal models), the CRR establishes in Article 325 several conditions (distinguishing between EU jurisdictions and third countries) that have to be fulfilled before institutions may use positions in one institution or undertaking to offset positions in another institution or undertaking.

Of course the scope of Article 325 is wider than the use of internal models, however the EBA considers that the fulfilment of the requirements established in this Article is a 'precondition' that has to be met to allow a consolidated VaR calculation.

Apart from requesting that the requirements established in Article 325 of the CRR are met, the EBA is consulting on a series of additional requirements to allow performing a single VaR / SVaR calculation, jointly for all positions held at consolidated level, when the scope of an internal model includes positions booked in different 'units' (subsidiaries, in case the conditions of Article 325 are met, but also branches) that operate under different time zones.

In particular, the RTS requires that both VaR and SVaR are calculated for the positions held consistently at 'close of business' time (which of course may be different in the different units). Once positions have been grouped in a single portfolio, they shall be treated as if they had been held in a single jurisdiction (i.e. a 'simultaneous' revaluation-recalibration). However, the RTS also acknowledges that, on occasions, some instruments (labelled as 'local' products) might only be traded in specific markets, so some flexibility is allowed to accommodate non-fully consistent timing. A similar treatment is proposed in case of inconsistent bank holidays.

Whatever choices might be taken by the bank, the two P&L used for back-testing purposes, under Article 366 of the CRR, shall be calculated consistently with how the VaR is computed for the different positions included in the model held in units that operate in different time-zones. It is also proposed that banks must clearly document (and competent authorities review) how these differences are taken into consideration, both for VaR calculation and for the two P&L computations used for back-testing purposes, in particular the following should be properly documented:

- Computation for VaR purposes: how differences in time zones are taken into account in the process of production and how risk / VaR figures are aggregated. In addition how bank holidays are taken into account should also be documented.
- Computation of P&L for back-testing purposes: in case of different time zones, how the two P&Ls used for back-testing at consolidated level (Hypothetical and Actual 'cleaned') are calculated.

As regards the computation for IRC and the internal models for correlation trading, the assumption in the RTS is that it is acceptable to compute a single portfolio calculation, instead of aggregating IRCs computed for the different units, provided the requirements for VaR and SVaR for the same exposures are fulfilled.

### **Back-testing requirements**

As previously noted, formal back-testing, conducted by the independent risk unit, is requested for the VaR limits established by the institution's Board.

The RTS further specifies how the two Profit and Loss calculations referred to in Article 366(3) of the CRR shall be calculated:

- Hypothetical
- Actual

The EBA considers that the back-testing based on the two P&Ls is complementary. Back-testing calculations applying the hypothetical P&L shall be used as a statistical test of the integrity of the value-at-risk measure, allowing a more 'pure' testing of the model, whilst back-testing calculations applying the actual P&L shall be used as a 'reality check' testing, since this actual profit and loss would be reflecting the actual trading outcomes experienced by the institution.

Article 366 states that the VaR and SVaR multiplier addend shall be calculated based on the higher of the number of overshootings under hypothetical and actual changes in the value of the portfolio. However, in individual cases, competent authorities may limit the 'addend' to that resulting from overshootings under hypothetical changes, where the number of overshootings under actual changes does not result from deficiencies in the internal model.

In this regard the EBA is considering for consultation two possible P&L computations for the 'hypothetical' back-testing: (i) incorporating only the P&L stemming from the risk categories included in the scope of the model and (ii) incorporating the P&L stemming from all the risk categories independently of whether they are included in the scope of the model or not.

The rationale for the first alternative would be to apply the 'hypothetical' back-testing as a 'pure' statistical test of the adequacy of the model. In this regard, it is clear that the model cannot capture the risk stemming from risk factors that are not included in the scope of the risk metric calculation.

However this may not always be appropriate, under the second alternative the regulatory back-testing would ensure that the requirement of Article 367(1) of the CRR ('(...) the model shall capture accurately all material price risks; (...)') is adequately tested, ultimately leading to the inclusion of a larger set of risk factors if they prove to be material. This alternative would also ensure that the unexplained part of the hypothetical P&L is included in the regulatory back-testing and would finally foster the reliability and validity of the model used for reporting relevant risk exposures to the senior management.

For the back-testing based on actual P&L, institutions are requested to compute the full P&L (after excluding fees, commissions and net interest income) produced for all risk categories listed in Article 363, including those that remain under standardised rules. Of course, a movement in one of the risk categories which may have not been included in the scope of the model is one of the possible circumstances where the number of overshootings under actual changes might not result from deficiencies in the internal model.

Finally, the RTS establishes that, despite the possibility of computing only hypothetical back-testing exceptions, it is still not acceptable that a material number of overshootings is primarily caused by intraday trading or new trades, since this situation would simply show that the model is incapable of capturing the risk produced as a result of the trading activity. Accordingly, the competent authority is required to consider the relevance of these overshootings when assessing the VaR and SVaR multipliers proposed by the institution.

### Treatment of 'event risk'

'Event risk' is mentioned in Article 370(f) of the CRR as one of the elements that has to be captured when modelling 'specific risk' (both for equities and debt instruments), however event risk is not defined, nor mentioned again, anywhere in the rest of the CRR.

The 1996 BCBS Market Risk Amendment stated that banks' specific risk models should be able to capture 'event risk'. What was meant exactly with event risk was established in a footnote (nº 5):

*"Where the price of an individual debt or equity security moves precipitously relative to the general market, e.g., on a take-over bid or some other shock event; such events would also include the risk of default".*

Thus, according to the 1996 BCBS definition, "event risk" was part of "specific risk" and affected both equity and credit positions. However, after the Market Risk Amendment was modified with the publication by the BCBS of the so called 'Basel 2.5' package in July 2009, it was decided that the 'credit' component of event risk (e.g. default and migration) would now be fully captured by the IRC.

Accordingly, a new footnote (nº 15) was added to paragraph 718 (Lxxxviii) of the BCBS solvency rule, clarifying that banks do not need capture default and migration risks on its VaR specific models for positions subject to the incremental risk capital charge (IRC).

Nonetheless, for equity positions (which, in principle, are not included in the scope for IRC) VaR models must still capture event risk. The definition of 'event risk' was therefore modified in a new footnote (number 20 of the July 2009 regulatory package) so it would refer just to equity positions:

*"Events that are reflected in large changes or jumps in prices must be captured, e.g. merger break-ups/takeovers. In particular, firms must consider issues related to survivorship bias."*

The CRR does not differentiate explicitly between event risk for equities and credit. Both equity and credit are covered under Article 370 of the CRR, which includes the requirement to capture 'event risk' (without providing any particular definition) as part of the requirements to model 'specific risk'.

The RTS considers that there is no need to model event risk in VaR and SVaR for those positions included in the scope of a validated IRC model. This of course includes all positions subject to specific interest rate risk (i.e. credit) but also equity positions in case they have been included in the scope of the IRC model in accordance with Article 373 of the CRR. The rationale for this interpretation is that event risk is largely, if not entirely, captured already in the IRC; in addition, the interpretation allows an alignment of the RTS with the international standards produced in Basel.

However, for those equity positions which are not included in the IRC calculation, the RTS establishes that the VaR and SVaR model shall capture 'event risk'. The requirements for event risk, in line with Basel 2.5, relate entirely to equity risk.

### **Treatment of own creditworthiness**

According to Article 33 of the CRR gains or losses on liabilities and on derivative liabilities of the institution that result from changes in the institution's own credit standing are not included in any element of the own funds. This is subject to the application of the provisions specified in Article 481. In addition, Article 327 of the CRR establishes that institutions' holdings of their own debt instruments shall be disregarded in calculating specific risk own funds requirements under the standardised approach.

In contrast, the CRR remains silent on the treatment of own credit standing under the internal models approach (IMA). Accordingly, the EBA is consulting on two possible interpretations of regarding the treatment of own credit risk for internal model purposes.

On one hand, it could be argued that, although changes in an institution's own creditworthiness have an effect on the fair value of both own debt held as an 'asset' and/or any liabilities maintained in the Trading Book, the combination of Article 33 and Article 327 of the CRR advocates for any changes in valuation stemming from the institutions' own creditworthiness on any financial instrument held in the trading book (asset, liability or derivative) to be disregarded for the specific VaR, SVaR and IRC capital charges.

This treatment would also be justified by the fact that, under Article 363 of the CRR, any model permission should be granted for a set of positions for which own funds requirements are calculated under the standardised rules; accordingly, since positions in own debt are entirely excluded from the scope of the standardized specific risk capital charges, the specific risk stemming from positions in own debt should neither be included in the scope of the internal model. Consistently, any effect in P&L would also be eliminated from the valuation daily changes applied for back-testing purposes: profit and loss stemming from changes in the own credit standing of the institution would also be excluded from the calculation of both hypothetical and actual profit and loss.

On the other hand, it could be argued that Article 367(1) of the CRR requires that internal models capture 'all material price risks'. This would provide a legal basis for the capture of own creditworthiness - where material - as a risk factor in the VaR, SVaR and IRC capital charges. This interpretation would also be in line with the IRC Guidelines, whereby long and short positions in an institution's own debt should be included for migration risk purposes within the scope of the IRC model, while the default risk of short positions in own debt should not be modelled. This seems to reflect banks' current practice for IRC purposes. Likewise, for back-testing purposes, any effect in P&L

would be kept in the valuation daily changes applied. Nevertheless, this would contradict the treatment retained at the numerator of the capital ratio.

Regardless of the approach for an institution's own creditworthiness, it is worth noting that these positions would still be subject to the rest of market risk requirements (such as those established for Interest Rate or FX risks).

Finally, the capture or exclusion of an institution's own creditworthiness may also raise operational issues or boundary issues:

- It may be operationally difficult to exclude changes in the own credit standing from both hypothetical and actual profit and loss.
- It is unclear whether, for specific risk purposes, only 'direct' positions in own debt instruments should be excluded (e.g. positions in own debt instruments arising from trading or market-making activity in its own bonds) or whether also 'indirect' positions should be excluded (e.g. positions which may arise from the inclusion in the trading book of structured bonds or indices referencing the institution's own name).

### **Assessment of the appropriateness of VaR and SVaR multipliers and reserves proposed by the institution**

The VaR and SVaR multipliers (' $m_c$ ' and ' $m_s$ ' respectively) established in Article 366 of the CRR, are the result of adding a back-testing add-on that ranges from 0 to 1 to 'at least 3'. The multiplier proposed for VaR and SVaR by the institution (i.e. the 'at least 3' before computing any back-testing add-on) should reflect any deficiencies or modelling flaws, provided they are not material enough to put the whole model methodology into question.

Additionally, as explained in the back-testing section, in case the competent authority allows the back-testing to be based solely on hypothetical exceptions, the EBA considers that the multiplier should also reflect an excessive number of exceptions which may have been primarily produced by intraday transactions or new trades. The RTS also recognises that, on occasions, instead of increasing the multipliers institutions compute reserves to address, totally or partially, any known model flaws or shortcomings.

Finally, the EBA has considered that any flaws or issues of the VaR model will also be present in the SVaR calculation; however, on top of them, the SVaR may incorporate some additional proxies and simplifications that might not be needed in VaR. Accordingly, the RTS establishes that the SVaR multiplier cannot be lower than the one proposed for VaR.

### **SVaR specificities**

As mentioned previously, the SVaR section builds on EBA existing guidelines as well as on institutions' observed range of practices for SVaR. The RTS text does not deviate significantly from the 2012

guidelines, however it does specify to a greater extent some of the requirements related to the determination of the stressed period, as well as its regular monitoring and exceptional review in case the SVaR falls below the daily VaR metric.

The EBA is also requesting feedback on some of the requirements included in the SVaR guidelines (in particular related to the selection of proxies for SVaR), in order to assess whether they are still relevant and justified from a methodological perspective.

### 3.3.3 IRC

Just like with SVaR, the RTS builds on the 2012 guidelines produced by the EBA and also on the observed range of practices followed by institutions when implementing these guidelines. The RTS is more prescriptive than existing guidelines in a number of areas, such as the selection of ratings, PDs and LGDs, transition matrices or Liquidity Horizons used in the IRC model. It also introduces specific governance requirements for the inclusion of equity positions in IRC.

The RTS also includes requirements regarding the modelling assumptions and correlations, however these elements will be further elaborated in the Guidelines to be produced by the EBA in accordance with Article 372. Finally, the RTS excludes the use of zero PDs for modelling purposes; this is in line with the requirement, established in Article 373 of the CRR, to model in IRC all positions subject to specific interest rate risk *'including those subject to a 0% specific capital charge'* according to the standardized approach.

In addition, the assumption that there are no risk-default free assets is also consistent with the introduction of a 0.03% floor as part of the Default Risk Charge proposed under the Fundamental Review of the Trading Book conducted by the Basel Committee.

### 3.3.4 Internal model for correlation trading

The RTS establishes governance requirements for the inclusion of positions and appropriate segregation of instruments included in the correlation trading portfolio, including an explicit requirement to assess and monitor regularly the existence of a liquid two-way market.

Due to the technical difficulties of modelling jointly all the different risks included in the portfolio, the EBA has decided to allow explicitly, at least for consultation, the application of a 'building block-type approach to model all or some of the risk factors listed in Article 377(3) of the CRR. The RTS is requesting the use of full revaluation of all positions included in the correlation trading portfolio, though it also allows the possibility of introducing simplifications compared with the front office pricing systems provided these are not significant.



Finally, the EBA has to produce guidelines on the application of stress scenarios for the correlation trading portfolio. In the meantime, the RTS requires that, apart from the ad-hoc scenarios developed by the institution in accordance with Article 377(5), the event-driven general scenarios required under the stress testing programme are also applied to the correlation trading activities.

### 3.4 Exclusion of supervisory actions from the RTS Scope

Article 101 of Directive 2013/36/EU (CRD) provides competent authorities considerable flexibility regarding the range of measures to be taken (including imposing higher multipliers or ad-hoc capital add-ons) in case an internal model is not fully compliant with regulation. According to the legal mandate the RTS must specify the elements that competent authorities 'shall assess' when validating an internal model, without specifying the supervisory actions in case a particular requirement is not met or not fully met.

The RTS nevertheless provides the key elements that CAs must assess to determine any corrective measures, once the model has been approved, or, as previously mentioned, to determine the appropriateness of the VaR/SVaR multiplier and/or of any reserves which might have been proposed by the institution for the initial validation.

## 4. Draft regulatory technical standards on the specification of the assessment methodology for competent authorities regarding compliance of an institution with the requirements to use internal models for market risk and assessment of significant share under Article 363(4)(b) and (c) of Regulation (EU) No 575/2013

---

In between the text of the draft RTS/ITS/Guidelines/advice that follows, further explanations on specific aspects of the proposed text are occasionally provided, which either offer examples or provide the rationale behind a provision, or set out specific questions for the consultation process. Where this is the case, this explanatory text appears in a framed text box.

**COMMISSION DELEGATED REGULATION (EU) No .../..**

**of XXX**

**[...]**

**supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for the assessment of market risk internal models and significant share under Article 363(4)(b) and (c) of Regulation (EU) No 575/2013**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to 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<sup>8</sup>, and in particular the third subparagraph of Article 363(4) thereof,

Whereas:

- 1) The requirement, in Regulation (EU) No 575/2013, for competent authorities to assess the compliance of an institution with the requirements to use internal models for market risk include general conditions, in that they relate to all of the requirements for the use of internal models, irrespective of their degree of materiality, and implies compliance with the requirements at all times. As a result, such an assessment does not only relate to the initial application of an institution for the permission to use internal models for one or several risk categories referred to in Article 363(1) of Regulation (EU) No 575/2013, but also applies to the assessment of the application for material extensions and changes to the internal models for market risk that the institution has received permission to use in accordance with point (a) of Article 363(4) of that Regulation and Commission Delegated Regulation (EU) No 529/2014<sup>9</sup> on the conditions for assessing the materiality of extensions and changes of internal approaches when calculating own funds requirements for market risk, to the ongoing review of the internal models for market risk that the institution has received permission to use, and to changes to the internal models that

---

<sup>8</sup> OJ L 176, 27.6.2013, p. 1.

<sup>9</sup> Commission Delegated Regulation (EU) No 529/2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for assessing the materiality of extensions and changes of the Internal Ratings Based Approach and the Advanced Measurement Approach of 12 March 2014 (OJ L 148, 20.5.2014, p.36).

require notification in accordance with Article 143(4) of Regulation (EU) No 575/2013 and Regulation (EU) No 529/2014. Competent authorities should apply the same criteria to all of these particular aspects of the assessment of compliance with the requirements to use internal models for market risk, hence the rules that set out that assessment methodology should apply to all of the above cases, in order to ensure harmonisation of assessment methodologies by competent authorities and mitigate regulatory arbitrage.

- 2) In such cases as referred above, where competent authorities assess the compliance of an institution with the requirements to use internal models for market risk, other than at the initial application for permission by institutions, given that the assessment relates to a particular scope of application of the relevant internal models for market risk, competent authorities should apply only and all of those parts of this Regulation that are relevant to the scope of the assessment by the competent authority, in each case using the conclusions from the former assessments as the starting point.
- 3) Where the assessment relates to applications for the permissions referred to in point (a) of Article 20(1) of Regulation (EU) No 575/2013, the regulatory technical standards referred to in paragraph 8 of that Article in relation to the joint decision process apply.
- 4) In accordance with Article 363(1) of Regulation (EU) No 575/2013, institutions can apply for a permission to calculate their own funds requirements for market risk using an internal model for one or more of the risk categories referred to in that Article, provided the internal model covers a significant share of the positions of each category. On the other hand, several of the conditions for granting permission to use an internal model to calculate own funds requirements for certain risk categories, are common, such as the requirement to apply a VaR and stressed VaR model, or the qualitative requirements around the risk management and internal governance of the internal models. Further, there are overlaps resulting from the relationship established between the various models, such as that the standards for incremental default and migration risk (IRC) have to be met in case the institution requests permission to model specific risk. As a result, it would be appropriate to establish an assessment methodology for competent authorities that specifies: first those requirements that relate to internal models for all risk categories; and then separately specifies the requirements applicable in particular to internal models relating to each risk category.
- 5) Article 370 of Regulation (EU) No 575/2013 establishes requirements for internal models used to calculate own fund requirements for specific risk of equity and debt instruments which are 'additional' to the requirements stated in Articles 365 through to 369 of that Regulation. As a result, permission to use internal models for specific risk of equity or interest rate instruments is conditional to a previous permission, or simultaneous application for a permission, to use an internal model for general risk of equity or interest rate instruments. Similarly, Article 377 of Regulation (EU) No 575/2013 establishes that permission to use an internal model for correlation trading is conditional to a previous permission, or simultaneous application for a permission, to use an internal model for specific risk of debt instruments. Further, Article 372 of Regulation (EU) No 575/2013, establishes that permission to use an internal model for specific risk of debt instruments is conditional to a previous permission, or simultaneous application for a permission, to use an internal model for specific risk in VaR and incremental default and migration risk (IRC). All these preconditions for the use of internal models for market risk, should be

reflected also in the methodology for assessment by competent authorities of compliance with these conditions.

- 6) Article 363 of Regulation (EU) No 575/2013 refers to the assessment of compliance with the requirements of that Regulation in their entirety, and at all times. In that context competent authorities are required to verify compliance of institutions with the specific regulatory requirements, as well as evaluate the overall quality of the solutions, systems and approaches implemented by an institution, and request constant improvements and adaptations to changed circumstances in order to achieve continuous compliance with the requirements of the internal models for market risk. With that in mind, such an assessment inevitably involves, to a large extent, a subjective supervisory judgement by competent authorities, based on the circumstances at hand each time. Hence rules for the assessment methodology on one hand should allow the possibility for competent authorities to exercise their discretion as provided in Regulation (EU) No 575/2013 by carrying out additional checks, and using additional methods, to those specified therein and in this Regulation, as necessary, and on the other should ensure harmonisation and comparability of supervisory practices across different jurisdictions. Thus, competent authorities should be able to apply the assessment methodology in accordance with the principle of proportionality, which is a general principle of EU law, depending on various factors such as the nature, size and complexity of an institution's business and structure; the complexity of the models; the particularities of the situation; the specific solution implemented by the institution; the quality of evidence provided by the institution; the resources available to the competent authorities themselves. In the context of the proportional application of Regulation (EU) No 575/2013 and this Regulation, and, in particular, with regard to internal models for market risk, competent authorities should also consider the nature of products covered by the model, since that is a good indication of the complexity of the model. Given the broad range of products contemplated in trading activities, it is appropriate to facilitate the assessment by competent authorities under this Regulation by a classification of the products into non-exhaustive categories of increasing level of complexity which may help competent authorities in conducting the assessment in a proportionate manner. For the most complex and advanced models, competent authorities may also, to the extent appropriate, apply additional methods to those stated in this Regulation.
- 7) Point (b) of Article 368(1) of Regulation (EU) No 575/2013 requires that any internal model used for the calculation of own funds requirements shall be designed and initially validated by an independent risk control unit of the institution, which will be responsible for overall risk management system. Accordingly, the assessment methodology under this regulation provides that, while some risk tools, IT systems and risk management solutions may be purchased from external providers, all the key tasks, activities or functions related to the internal model should be conducted by the risk control unit. Furthermore, this regulation provides that adequate controls should be implemented and quality and validation tests should be performed by the risk control unit for any outsourced solution; full documentation should be available in all cases, ensuring sufficient in-house understanding of the model, including outsourced operations. Additionally, the methodology under this Regulation provides that competent authorities should assess any tools and IT solutions obtained from third party vendors in a manner similar to the cases where they have been developed fully via internal processes of the institution.

- 8) In order to ensure a material coverage by an internal model of all the positions of a certain risk category in accordance with the requirements on risk measurement provided in Regulation (EU) No 575/2012, and to avoid an inappropriate use of a model for a selection of positions within a given risk category, the significance of the positions covered by the model should be assessed considering all the positions subject to the relevant market risk category maintained in the institution or group of institutions which intend to use the internal model for the calculation of own funds requirements.
- 9) Under the classification of the risk categories in Regulation (EU) No 575/2013 and in accordance with the requirements provided therein for specific risk modelling, general and specific risk of positions are treated differently. In particular, positions subject to general risk of equity and debt instruments as well as foreign-exchange and commodities risks are treated differently from those positions to be included in the internal model for specific risk of equity and debt instruments. It is for this reason that the assessment of general risk should be based on the own fund requirements stemming from changes in broad market movements, unrelated to any specific attributes of individual securities, while the assessment of specific risk should be based on the net position in each individual security, in order to reflect idiosyncratic risk which, according to Article 373 of Regulation (EU) No 575/2013, for the purpose of internal model should include positions subject to a 0% capital charge under Article 336 of Regulation (EU) No 575/2013. Accordingly, the assessment of the significance of the share of positions included in the internal model for general risk of equity and debt instruments as well as for foreign-exchange and commodities risk should be measured by applying the standardised rules for the calculation of own funds requirements, in accordance with Chapters 2, 3 and 4 of Title IV of Regulation (EU) No 575/2013, whilst the assessment of the significance of the positions included in the internal model for specific risk of equity and debt instruments should be measured by applying the standardised rules for the calculation of net positions of debt and equity instruments, in accordance with Article 327 of Regulation (EU) No 575/2013, after recognising for debt instruments hedges by credit derivatives established in Articles 346 and 347 of Regulation (EU) No 575/2013. This treatment of specific risk is consistent with the the definition of materiality thresholds for specific risk in the trading book under Article 77 of Directive 2013/36/EU provided in Delegated Regulation (EU) No 530/2014<sup>10</sup>.
- 10) For the purposes of a sound internal model, it is desirable that the significant share of positions of the intended model is maintained during some time before application for a permission. As a result, it is appropriate that the assessment of significance for the purposes of a permission is calculated covering the four most recent quarterly reporting dates.
- 11) The foreign exchange positions authorized by the competent authority to work as a hedge of institution's capital ratios in accordance with Article 352(2) of Regulation (EU) No 575/2013, should not be included in the assessment of significance of foreign exchange risk, at either individual or consolidated level, since these structural positions would not be subject to capital requirements.

---

<sup>10</sup> Commission Delegated Regulation (EU) No 530/2014 of 12 March 2014 supplementing Directive 2013/36/EU of the European Parliament and of the Council with regard to regulatory technical standards further defining material exposures and thresholds for internal approaches to specific risk in the trading book (OJ L 148, 20.5.2014, p. 50).

- 12) Given that Article 371 of Regulation (EU) No 575/2013 excludes securitisation positions from the calculation of specific risk own funds requirements using an internal model, these positions should not be computed when assessing the significance of specific interest rate risk, unless the institution decides voluntarily to include them in the internal model used for the calculation of own fund requirements for specific risk, or if they are part of the correlation trading portfolio for which the institution is requesting permission to calculate own funds requirements using an internal model according to Article 377 of Regulation (EU) No 575/2013.
- 13) It is generally appropriate to assess the significance of the positions that institutions intend to include in the scope of application for the market risk internal model applying a low threshold; this is in order to ensure that the requirement of significant coverage by the model referred to in Article 363(2) of Regulation (EU) No 575/2013, is met indeed. Further, as part of the assessment methodology, and in order for the requirement of significant coverage to be meaningful, competent authorities should be able to exclude positions from the scope of application of the model; and consequently an assessment methodology for competent authorities for the purposes of model approval should also include the specification of general cases where such exclusion should be necessary. Where, based on those specifications, competent authorities subsequently exclude positions from the scope of application of the model, it is appropriate to recompute the relevant ratios for the assessment of significant share of the positions before the permission is granted; this is in order to avoid abuse of the provisions on significant share. Nevertheless, at that stage, in order to guard against granting modelling permission for an excessively limited subset of the positions subject to market risk, it is appropriate to establish a higher threshold to be met by the ratios computed after the exclusion of positions by the competent authorities during the approval process.
- 14) Regulation (EU) No 575/2013 requires compliance with qualitative requirements for the use of internal models with regards to governance, independence and resources which are applicable to all types of models independently from the risk categories or the application of specific risk requirements, where relevant. Institutions should meet these standards regardless of the particular internal model or models for which they are submitting an application for permission. Accordingly, this Regulation specifies the assessment methodology for those common qualitative requirements under a specific chapter.
- 15) In accordance with point (b) of Article 368(1) of Regulation (EU) No 575/2013 the risk control unit is responsible for both (i) the design and implementation and (ii) the initial and ongoing validation of any internal models used for the calculation of own funds requirements. Article 369 of Regulation (EU) No 575/2013 further provides that the validation process is conducted by suitably qualified parties independent of the development process. Accordingly, the methodology developed under this Regulation should take into account that independence is a precondition to allow for an objective assessment of the model, minimise the incentive to disguise the model deficiencies and weaknesses, as well as provide a fresh view on the internal model by parties not involved in the development process. To this end, from a governance perspective, the existence of a completely independent validation unit that is exclusively responsible for the validation process would be the most appropriate organisational arrangement to ensure independence. However, it should be noted that highly qualified staff, which may be available in limited numbers in the job market, is required to conduct both model

development and model validation appropriately. Therefore, requiring a fully independent unit for validation purposes might be too burdensome especially for smaller institutions; nonetheless at a minimum, it is appropriate to require that the staff who developed a model cannot be the same as those who validate it.

- 16) Article 369 of Regulation (EU) No 575/2013 states that internal models should be validated by the institution initially, i.e. prior to the permission by the competent authority, and on a periodic basis thereafter especially when there are significant structural changes in the market or in the composition of the portfolio which may lead to the internal model no longer being adequate. Furthermore, Article 368(2) of Regulation (EU) No 575/2013, which sets out an independent review of the internal models as part of the institution's internal auditing process, requires that the risk management process is reviewed annually by the internal audit of the institution. In order to assess compliance with those requirements, taking into account that input from the validation function to the internal audit might be necessary, it is appropriate that the internal validation of the model should be required to be performed at least annually. The methodology further provides that, while initial validation should cover all methodologies applied throughout the internal model, in consideration of staff and resources constraints, it is appropriate that the annual validation focuses on the main issues detected either in previous validations or previous internal audit reviews, as well as on any changes or new methodologies introduced in the model.
- 17) Article 368(1) of Regulation (EU) No 575/2013 requires, among other qualitative elements, that internal models are closely integrated in the risk management process of the institution, with an independent risk control unit responsible for the overall risk management system and with active involvement of the institution's management body and senior management in the risk control process. To ensure compliance with those requirements, in consideration of the the evolving nature of trading activities, in particular for institutions using internal models, it is necessary to incorporate qualitative and procedural standards for the assessment concerning the introduction and formal approval of new instruments and products in the trading area by the institution. Those standards for a formal new product approval policy are needed to ensure that the flexibility to introduce new instruments, which may pose additional risk factors or require methodological changes, is fully compatible with the comprehensive control and validation by the risk control unit of all new risks factors within the market risk model, as required by point (b) of Article 368(1) of Regulation (EU) No 575/2013.
- 18) The multiplication factors established in Article 366 of Regulation (EU) No 575/2013 for VaR and stressed VaR calculations incorporate an addend between 0 and 1 depending on the number of overshootings for the most recent 250 business days. According to that provision, it is necessary that any VaR model has a back-testing data for the preceding 250 days from the time of approval of the model, before the model may be used for the purposes of the calculation of the own funds requirements. Hence the requirements that, during this period, the model should not have been subject to any material changes, defined in accordance with Delegated Regulation (EU) No 529/2014, or, where it has been subject to material changes, that the institution needs to be able to recalculate the VaR during the preceding year after computing any changes introduced in the VaR model.



- 19) Unreliable, inaccurate, incomplete or outdated data would lead to errors in the risk estimation and in the calculation of own funds requirements and this issue is particularly acute for market risk models due to the fast changing and evolving nature of financial markets. Further, when used in the risk management processes of the institution such data may also lead to wrong management decisions. Consequently, in order to ensure reliability and high quality of data, the infrastructure related to gathering and storing of data as well as the relevant procedures have to be well documented, and there needs to be a full description of the characteristics, quality checks, automatic filters and specific sources of daily data in order to ensure their proper use in the internal processes and the processes for the calculation of own funds requirements. Hence competent authorities, in the assessment of market risk internal models, should place particular attention to the quality and reliability of the data used for modelling purposes, together with the processes applied to ensure that such quality is maintained.
- 20) The quality of data and the correctness of risk estimation and of calculation of own funds requirements for market risk are highly dependent on the reliability of the IT systems used for this purpose. Further, the continuity and consistency of the risk management processes and the calculation of own funds requirements for market risk can only be ensured when the IT systems are safe, secure and reliable and the IT infrastructure is sufficiently robust. As a consequence, it is necessary that, in the course of the assessment of the market risk internal models, competent authorities also check the reliability of the institution's IT systems and the robustness of the IT infrastructure used for the models.
- 21) **[OPTION FOR CONSULTATION]** In accordance with Article 33 of Regulation (EU) No 575/2013, gains or losses on liabilities and on derivative liabilities of the institution that result from changes in the institution's own credit standing are not included in any element of the own funds. Further in accordance with Article 327 of that Regulation, institutions' holdings of their own debt instruments are disregarded when calculating specific risk own funds requirements under the standardised approach. Article 363 of Regulation (EU) No 575/2013 provides that competent authorities grant permission to institutions to use internal models for calculating their own funds requirements by risk categories for the positions calculated under the standardised approach and further provides that institutions continue to calculate own funds requirements according to the standardised approach for those positions in risk categories that institutions have not been granted the above permission. Therefore, when determining the scope of the positions in the internal model, the specific risk stemming from positions in own debt should not be included in the scope of the internal model since, in accordance with Article 327 of Regulation (EU) No 575/2013, those positions are excluded from the calculation of specific risk own funds requirements and, in accordance with Article 33 of that Regulation, they are not included in any element of the own funds. Accordingly any changes in valuation stemming from the institutions' own creditworthiness on any financial instrument held in the trading book should be disregarded for the internal model calculation of own funds requirements and should also be eliminated from the valuation of daily changes applied for the back-testing of the VaR model.

### **Explanatory text Box for consultation purposes**

In accordance with prudential filters defined in Article 33 of Regulation (EU) No 575/2013 (CRR), gains or losses on liabilities and on derivative liabilities of the institution that result from changes in the institution's own credit standing are not included in any element of the own funds unless the institution does so for liabilities in the form of covered bonds in accordance with Article 33(3) of the CRR. This is subject to some transitional provisions specified in Part 10, Title 1, Chapter 1 of the CRR.

Article 327 of the CRR describes the treatment of institutions' holdings of their own debt instruments in the standardised approach for market risk. In accordance with Article 327, institutions' holdings of their own debt instruments are disregarded in calculating specific risk own funds requirements under Article 336 of the CRR.

In contrast, the CRR remains silent on the treatment of holdings of own debt instruments, resp. of own credit standing under the internal models approach (IMA).

On one hand, it could be argued that, although changes in an institution's own creditworthiness have an effect on the fair value of both own debt held as an 'asset' and/or any liabilities maintained in the Trading Book, the combination of Article 33 and Article 327 of the CRR advocates for any changes in valuation stemming from the institutions' own creditworthiness on any financial instrument held in the trading book (asset, liability or derivative) to be disregarded for the internal model calculation for the specific risk of debt instruments, including VaR, SVaR and IRC capital charges. This treatment would also be justified by the fact that, under Article 363 of the CRR, any model permission should be granted for a set of positions for which own funds requirements are calculated under the standardised rules; accordingly, since positions in own debt are entirely excluded from the scope of the standardized specific risk capital charges, the specific risk stemming from positions in own debt should neither be included in the scope of an internal model for specific risk. Consistently, any effect in P&L would also be eliminated from the valuation daily changes applied for back-testing purposes: profit and loss stemming from changes in the own credit standing of the institution would also be excluded from the calculation of both hypothetical and actual profit and loss.

On the other hand, it could be argued that according to Article 363 of the CRR internal models are used instead of the standardized approaches and Article 367(1) of the CRR requires that internal models capture 'all material price risks'. This would provide a legal basis for the capture of own creditworthiness - where material - in the specific VaR, SVaR and IRC capital charges. This interpretation would also be in line with the interpretation in the IRC Guidelines, whereby long and short positions in an institution's own debt should be included for migration risk purposes within the scope of the IRC model, while the default risk in own debt should not be modelled. This seems to correspond to banks' current practice for IRC purposes. Likewise, for back-testing purposes, any effect in P&L would be kept in the valuation daily changes applied. Nevertheless, this could in some cases contradict the treatment retained at the

numerator of the capital ratio.

Regardless of the approach for an institution's own creditworthiness for the calculation of own funds requirements for specific risk of debt instruments, it is worth noting that these positions would still be subject to the rest of market risk requirements (such as those established for Interest Rate or FX risks).

Any approach for the capture or exclusion of an institution's own creditworthiness adopted in these RTS would have to be reflected in the Guidelines on IRC to be revised for consistency.

Finally, the capture or exclusion of an institution's own creditworthiness may also raise operational issues or boundary issues:

- It may be operationally difficult to exclude changes in the own credit standing from both hypothetical and actual profit and loss
- It is unclear whether, for specific risk purposes, only 'direct' positions in own debt instruments should be excluded (e.g. positions in own debt instruments arising from trading or market-making activity in its own bonds) or whether also 'indirect' positions should be excluded (e.g. positions which may arise from the inclusion in the trading book of structured bonds or indices referencing the institution's own name)

**Q1: What are stakeholders' views regarding the two proposed interpretations for the capture or exclusion of an institution's own creditworthiness as a risk factor in internal models (non-default only), and consistent treatment for back-testing purposes?**

**Q2: What is industry current practice in this regard for VaR, SVaR and IRC?**

**Q3: What are the main operational challenges?**

- 22) Given that the third subparagraph of Article 366(3) of Regulation (EU) No 575/2013 requires that the profit and loss is 'cleaned' by excluding fees, commissions and net interest income from the actual changes in the portfolio's value, the end-of-day portfolio value used as a starting point to compute the actual profit and loss used for back-testing purposes should reflect all the results obtained by the trading area, including all cash flows and any other accrued income stemming from fees, commissions, interests and intraday activity.
- 23) This Regulation is based on the draft regulatory technical standards submitted by the European Banking Authority (EBA) to the Commission.
- 24) EBA has conducted open public consultations on the draft regulatory technical standards on which this Regulation is based, analysed the potential related costs and benefits and

requested the opinion of the Banking Stakeholder Group established in accordance with Article 37 of Regulation (EU) No 1093/2010<sup>11</sup>,

HAS ADOPTED THIS REGULATION:

**SECTION 1**  
***Applicable modelling standards by risk category***

*Article 1*

*General risk of equity instruments*

Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for general risk of equity instruments by using internal models, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, as well as Article 58 of this Regulation.

*Article 2*

*Specific risk of equity instruments*

1. Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for specific risk of equity instruments by using internal models, in addition to the requirements stated in Article 1, competent authorities shall apply the assessment methodology set out in Article 59 of this Regulation.
2. Where, in accordance with Article 373 of Regulation (EU) No 575/2013, an institution requests to consistently include all listed equity positions and derivatives positions based on listed equities in the scope of application of the internal IRC model, competent authorities shall also apply the assessment methodology set out in Section 6 of this Regulation.

---

<sup>11</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).

### *Article 3*

#### *General risk of debt instruments*

Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for general risk of debt instruments by using internal models, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, as well as Article 55 of this Regulation.

### *Article 4*

#### *Specific risk of debt instruments*

1. Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for specific risk of debt instruments by using its internal models, in addition to the requirements stated in Article 3, competent authorities shall apply the assessment methodology set out in Article 56 .
2. Where an institution that has permission to model specific risk of debt instruments requests to consistently include all listed equity instruments and derivative positions in the scope of application of the internal IRC model, in accordance with Article 373 of Regulation (EU) No 575/2013, competent authorities shall also apply the assessment methodology set out in Section 6 of this Regulation.
3. Where an institution with a permission to calculate the own funds requirements for specific risk of debt instruments by using internal models also requests permission to calculate own funds requirements for the correlation trading portfolio by using internal models, as referred to in Article 377 of Regulation (EU) No 575/2013, or where an institution applies for both permissions at the same time, in addition to the requirements set out in paragraph 1, competent authorities shall also apply the assessment methodology set out in Section 7 of this Regulation.

### *Article 5*

#### *Foreign-exchange risk*

Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for foreign-exchange risk by using its internal models, competent authorities shall apply Sections 2, 3, 4 as well as Article 57 of this Regulation.

## *Article 6*

### *Commodities risk*

Where, according to Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for commodities risk by using its internal models, competent authorities shall apply Sections 2, 3, 4, as well as Article 60 of this Regulation.

#### **Explanatory text for consultation purposes:**

The CRR distinguishes between the abovementioned risk categories in article 363. In addition, it also establishes different requirements for ‘general’ (interest rate, general equity, commodity and FX) and ‘specific’ (credit and equity) risks. The EBA considers that the way the requirements for general and specific risks are articulated in the CRR allow banks to apply for general risk approval without applying simultaneously for specific risk, but not vice versa. In this regard, Article 367(2) establishes ‘general’ quantitative requirements that ‘any model used to calculate capital requirements’ should meet, whilst Article 370 introduces ‘additional’ requirements ‘particular to specific risk modelling’.

Accordingly, (though this is not explicitly introduced in Article 363) the EBA is proposing in the RTS that banks would not be able to request permission to model specific risk, of either equity or debt instruments, without having authorisation (or applying simultaneously) to model ‘general risk’ for equity and debt respectively. FX and Commodities would always be treated independently since they have the consideration of general risks.

**Q4: Do stakeholders agree with the General-Specific model application hierarchy introduced by the RTS?**

## *Article 7*

### *Proportionality - Product Categories and model complexities*

Competent authorities shall apply the modelling standards set out in this Regulation by risk category in a manner proportionate to the size and complexity of the institution and of the trading activities included in the scope of application of the internal model. To this end, competent authorities shall consider the following product categories that group financial products in increasing order of complexity, as a guide in assessing the complexity of any internal model:

- (a) category 1: simple products without optionality including spot positions, cash equities, bonds, interest rate swaps, credit default swaps, forward rate agreements, forwards, futures .
- (b) category 2: American, European or Bermudan options on a single type of underlying whose gamma is a continuous function in the price of the underlying and whose vega is a continuous function in the implied volatility, with a simple payoff in the same currency as the underlying, and products which have embedded American, European or Bermudan optionality, including warrants, convertible bonds and callable bonds.
- (c) category 3: barrier, digital or path-dependent options, and any other product that has a risk profile that is more complex than the products in category 2.

**Explanatory text for consultation purposes**

**Q5: Do Stakeholders consider that the categories of instruments listed above provide an appropriate guide to assess the complexity of an internal model?**

*Article 8*

*Quality and auditability of documentation*

1. Competent authorities shall verify the quality and auditability of the documentation provided by the institution in relation to the application of the methodology specified in this Regulation to grant permission to use an internal model.
2. In assessing the quality of the documentation referred to in paragraph 1, competent authorities shall verify that it is sufficiently detailed and accurate in order to allow its examination by third parties. Competent authorities shall, in particular, verify that:
  - (a) the documentation is approved at the appropriate management level of the institution with sufficient authority and delegation from the management body for the purposes of internal models;
  - (b) the institution has in place policies outlining specific standards of high quality of internal documentation and that there is a specific accountability for ensuring that the documentation maintained is complete, consistent, accurate, updated, approved as appropriate and secure;
  - (c) the layout of the documentation set out in the policy referred to in point (b) provides for the identification of at least the following items: type of document; author; reviewer; authorising agent and owner; dates of development and approval; version number; history of changes to the document;

- (d) the institution adequately documents its policies, procedures and methodologies referred to in this Regulation.
3. In assessing the auditability of the documentation referred to in paragraph 1 competent authorities shall verify in particular that:
- (a) the documentation on the internal model, including the pricing functions used in the model, is sufficiently detailed to allow qualified third parties to understand the reasoning and procedures underlying its development;
  - (b) the documentation of the risk methodologies, including the pricing functions used in the model, is sufficiently detailed in order to allow third parties to understand how each model and risk parameter operates, its limitations and key assumptions and to replicate the model development.

## *Article 9*

### *Outsourcing*

1. Competent authorities shall verify that the outsourcing by an institution of any tasks, activities or functions related to the design, implementation and validation of internal models does not prevent or hinder in any way the application of the methodology specified in this Regulation for the purpose of assessing the institution's compliance with the requirements of Chapter 5, Title IV of Regulation (EU) No 575/2013.
  2. For the purpose of paragraph 1 competent authorities shall verify in particular that:
    - (a) the outsourcing is not extended to tasks and responsibilities reserved to the risk control unit according to point (b) of Article 368(1) of Regulation (EU) No 575/2013;
    - (b) the senior management and the management body or the committee designated by it, are actively involved in the supervision of the tasks outsourced by the institution and of any IT risk management tool solutions obtained from third parties;
    - (c) there is sufficient in-house understanding of the outsourced tasks, activities or functions and of the structure of any data and methodologies obtained from a third party;
    - (d) the internal audit and the ongoing monitoring by the institution of the outsourced tasks, activities and functions is not limited or inhibited by the outsourcing;
    - (e) full access is granted to competent authorities or outsourcing party to all relevant information.
  3. Competent authorities shall verify that third parties involved in the development of any risk methodologies used by the institution are not involved in the initial and ongoing internal validation of the model by the institution.
  4. For the purpose of applying paragraphs 1 to 3, competent authorities shall in particular review the written outsourcing agreement; in addition, competent authorities may also to the extent appropriate:
-



- (a) obtain written statements or interview the staff and senior management or the management body or the committee designated by it or the third party to whom the task, activity or function is outsourced;
- (b) review other relevant documents of the institution or of the third party.

### *Article 10*

#### *Temporary non-compliance with the requirements of this Regulation*

For the purposes of Article 101(4) of Directive 2013/36/EU, where the institution has been requested to present a plan for a timely restoration of compliance with the requirements for a permission to use an internal market risk model, competent authorities shall:

- (a) review the institution's plan to return to compliance, and in particular verify that the planned actions are sufficient and that the timeline is reasonable taking into account the materiality of non-compliance, the scope of work required to return to compliance and available resources;
- (b) monitor on a regular basis the progress in the implementation of the plan as referred to in point (a);
- (c) after the implementation of the plan, verify the institution's compliance with the relevant requirements by applying this Regulation in the scope relevant to the scope of previous non-compliance.

## **SECTION 2**

### ***Assessment of significance***

### *Article 11*

*Significant share of positions for general risk of equity instruments, general risk of debt instruments, foreign exchange risk and commodity risk at the phase of initial application*

1. For the purposes of assessing the significance share of positions in accordance with Article 363 (2) of Regulation (EU) No 575/2013, at the phase of initial application, the internal model shall be deemed to cover a significant share of the positions of each risk category where the ratio referred to in paragraph 2, when computed independently for each of the risk categories for which permission to use internal models is sought, for the four most recent quarterly reporting dates from the date of application for the permission, does not exceed **[5-10]**%.

2. The ratio referred to in paragraph 1 shall be as follows:

$$\frac{x}{x + y}$$

where:

- $x$  is the standardised own funds requirements, calculated independently for each risk category in accordance with Chapters 2, 3 and 4 of Title IV of Regulation (EU) No 575/2013, for those positions for which the institution does not, in applying for permission in accordance with Article 363 of Regulation (EU) No 575/2013, intend to use the internal model ('non-modelled positions');
  - $y$  is the standardised own funds requirements, calculated independently for each risk category, in accordance with Chapters 2, 3 and 4 of Title IV of Regulation (EU) No 575/2013 for those positions for which the institution intends to use the internal model ('modelled positions').
3. Those foreign exchange positions which, in accordance with Article 352(2) of Regulation (EU) No 575/2013, have been authorized by the competent authority to be excluded from the calculation of net open currency positions, either at consolidated or individual level, shall not be included at any level in the calculation referred to in paragraph 1.

### *Article 12*

#### *Significant share of positions for specific risk of equity instruments and specific risk of debt instruments at the phase of initial application*

1. For the purposes of assessing the significant share of positions in accordance with Article 363 (2) of Regulation (EU) No 575/2013 at the phase of the initial application, the internal model shall be deemed to cover a significant share of the positions of each of the risk categories of specific risk of equity instruments and specific risk of debt instruments where the ratio referred to in paragraph 2, when computed independently for each one of the risk categories for which permission to use internal models is sought, for the four most recent quarterly reporting dates from the date of application for the permission does not exceed [5-10]%.
2. The ratio referred to in paragraph 1 shall be as follows:

$$\frac{x}{x + y}$$

where:

- $x$  is the sum of long and short net positions for non-modelled positions, taken in absolute value, calculated in accordance with Article 327 of Regulation (EU) No 575/2013 and, where relating to debt instruments, computed after recognizing hedges by credit derivatives in accordance with Articles 346 and 347 of Regulation (EU) No 575/2013;
  - $y$  is the sum of long and short net positions for modelled positions, taken in absolute value, calculated in accordance with Article 327 of Regulation (EU) No 575/2013 and, where relating to debt instruments, computed after recognizing hedges by credit derivatives in accordance with Articles 346 and 347 of Regulation (EU) No 575/2013.
3. Securitisation positions shall not be included in the calculation under paragraph 1, unless:
- (a) the institution decides voluntarily to include them in the internal model used for the calculation of own fund requirements for specific risk; or
  - (b) the securitisation positions are part of the correlation trading portfolio for which the institution is requesting permission to calculate own funds requirements using an internal model.

### *Article 13*

#### *Assessment of the scope of application of the internal model*

In assessing the scope of application of the internal model, competent authorities shall verify both of the following:

- (a) that irrespective of the positions excluded from the internal model all material risks are captured, and the non-capturing of any material risks is appropriately justified rather than aiming at mere capital optimization;
- (b) that institutions do not deliberately represent certain positions or risk factors inappropriately, in particular those subject to a 0% risk weight under the standardized approach, with the aim of excluding those positions from the scope of the internal model and from the assessment methodology of this Regulation.

### *Article 14*

#### *Exclusions of positions by competent authorities*

When assessing the scope of application of the internal model, based on the assessment methodology set out in this Regulation and having regard to the requirements set out in Sections 2, 3, 4 and 5, Chapter 5, Title IV, of Regulation (EU) No 575/2013, competent

authorities may, in particular, exclude those positions for which the model does not capture appropriately one or more of the following:

- (a) one or more material price risks in accordance with point (a) of Article 367(1) of that Regulation;
- (b) a sufficient number of risk factors in accordance with point (b) of Article 367(1) of that Regulation;
- (c) non-linearity, correlation or basis risk in accordance with point (b) of Article 367(1) of that Regulation.

#### *Article 15*

##### *Scope of positions for the calculation of significant share in case of exclusions by competent authorities*

1. Where competent authorities have excluded some positions in accordance with Article 14, they shall verify that the ratios referred to in Articles 11 and 12 are calculated again, in accordance with both of the following:
  - (a) they are calculated for the most recent quarterly reporting dates at the time of the exclusion;
  - (b) they are calculated updating the scope of modelled and ‘non modelled positions’ that are used as inputs for the ratios, to take into account the exclusion of positions from the scope of application by the competent authority.
2. For the purposes of this Article, where competent authorities have excluded some positions from the scope of application of an internal model, they shall ensure that the ratios referred to in Articles 11 and 12, do not exceed **[30-40]**%.

#### *Article 16*

##### *Significant share of positions at the phase of subsequent reviews of the model*

1. For the purposes of assessing the significance share of positions in accordance with Article 363 (2) of Regulation (EU) No 575/2013, at the phase of model review after the initial approval is provided, including as part of the annual model validation in accordance with Article 369(1) of Regulation (EU) No 575/2013, competent authorities shall comply with the requirements of paragraphs 2 and 3.

2. Competent authorities shall verify that the risk control unit of the institution regularly assesses all of the following:
  - (a) the materiality of the non-modelled positions;
  - (b) whether it is still appropriate that such non modelled positions remain outside the model;
  - (c) that all material risks of the portfolio are still being captured despite those non-modelled positions not being covered by the model.
3. Competent authorities shall deem the internal model to cover a significant share of the positions of each of the risk categories for which permission is sought where either of the following requirements are met:
  - (a) where the ratios referred to in Articles 11 and 12 are met;
  - (b) where the daily profit and loss, and the quarterly own funds requirements, resulting from the positions excluded from the scope of application of the model, relative to the sum of the same metrics resulting from the positions excluded and from the positions included in the scope of the model, does not provide an indication of growth of the positions excluded from the model.

**Explanatory text for consultation purposes**

**Q6: Do stakeholders agree with the use of two differentiated approaches for general and specific risk to assess the significance of positions included in the scope of the model?**

**Q7: What levels do stakeholders consider are appropriate for the proposed thresholds? Please provide your answer considering the calculation before and after positions have been excluded by the competent authority.**

**Q8: Do stakeholders agree with the two metrics required to assess regularly the relevance of positions excluded from the scope of the internal model?**

**SECTION 3**  
***Assessment of Governance requirements for the use of internal models***

**Sub-section 1**

**Independence and resources of the risk control unit, internal audit and validation process; adequacy of the internal governance structure and regular reporting**

*Article 17*

*General aspects of internal model governance*

1. For the purposes of assessing that an internal market risk model is conceptually sound and implemented with integrity, in accordance with Article 368 of Regulation (EU) No 575/2013, the competent authority shall verify the internal model governance arrangements as a whole and shall not verify those arrangements separately from each other.
2. In conducting the assessment referred to in paragraph 1, the competent authority shall verify that an institution has a clear organisational structure for the governance and management of the market risk model with well defined, transparent and appropriate lines of responsibility taking into account the nature, scale and complexity of the activities of the institution.
3. The competent authority shall ensure that the decision-making process of the institution regarding all aspects of market risk internal models is clearly laid down in the institution's internal documentation, in accordance with Article 8.
4. In order to assess whether an institution is compliant with the requirements on internal governance, including requirements on senior management and management body, internal committee structure, reporting, risk control unit, internal audit, oversight and validation, as referred to in Articles 368 and 369 of Regulation (EU) No 575/2013, competent authorities shall verify in particular:
  - (a) the role of senior management and management body, in accordance with Article 18;
  - (b) the independence and resources of the risk control unit, in accordance with Article 19;
  - (c) the independence and resources of the internal audit, in accordance with Article 20;
  - (d) the process for addressing the conclusions and recommendations raised by internal audit in their review of the internal models in accordance with Article 20;

- (e) the adequacy of the internal committee structure, in accordance with Article 21;
- (f) the independence and resources of the internal validation process, in accordance with Article 22;
- (g) the adequacy of the validation methods and procedures as well as the completeness of the initial validation, the frequency and completeness of the periodic validation, in accordance with Article 23;
- (h) the process for addressing the conclusions and recommendations from the initial or periodic validation, in accordance with Article 23;
- (i) the adequacy of the internal regular reporting, in accordance with Article 24.

### *Article 18*

#### *Role of senior management and management body*

1. In assessing the soundness of the role of senior management and management body as referred to in point (a) of Article 17(4), competent authorities shall ensure that the senior management and the management body of the institution have a good understanding of the market risk internal models used for the calculation of own funds requirements. Competent authorities shall in particular verify that:
  - (a) following a proposal from the risk control unit, the management body or the committee designated by it approves all relevant policies and procedures related with the implementation of the internal model, including the appropriate organizational structure ensuring that the model is implemented with integrity;
  - (b) the senior management of the institution undertakes relevant measures, where weaknesses of the internal model are identified by the risk control unit, the qualified parties tasked with the validation of the model, the internal audit function or any other control function of the institution;
  - (c) the senior management is aware of, and follows up on, the recommendations raised by the internal audit, or the risk control unit or the validation function in relation to the internal model, in accordance with point (a) of Article 20(1), Article 20(3) and point (j) of Article 23(2);
  - (d) the management body, or the committee designated by it, has approved the structure of internal committees, including a clear delimitation of their functions, permanent members and meeting periodicity in accordance with Article 21;
  - (e) following a proposal from the risk control unit, and after due consideration of the conclusions and recommendations raised in the validation report referred to in point (j) of Article 23(2), the management body or the committee designated by it approves the market methodologies applied in the internal model;
  - (f) following an assessment from the risk control unit, and after due consideration of the conclusions and recommendations raised in the validation report referred to in point (j) of Article 23(2), the management body or the committee designated by it approves any new products in accordance with Article 29;

- (g) following a proposal from the risk control unit, and after due consideration of the conclusions and recommendations raised in the validation report referred to in point (j) of Article 23(2), the management body or the committee designated by it approves the methodology applied to identify the stressed period used to determine the Stressed VaR;
- (h) following a proposal from the risk control unit, the management body or the committee designated by it approves and updates the internal limits, referred to in Article 25, together with the risk appetite and annual target budget by desk referred to in Article 26;
- (i) the management body or the committee designated by it approves the limit breach approval procedure referred to in point (a) of Article 28(1) and approves, or requires corrective actions, in relation to any breaches in the internal limits escalated by the risk control unit, in accordance with point (b) of Article 28(1);
- (j) the senior management of the institution is able to ensure the overall quality of the institution's valuation governance in accordance with Article 30;
- (k) following a proposal from the risk control unit the management body, or the committee designated by it, approves the stress testing programme to be applied in accordance with Articles 32 and 33. It also discusses the results of the stress tests, assesses potential actions and, where deemed necessary, decides corrective actions;
- (l) the senior management of the institution is aware of the number of back-testing overshootings calculated at the different levels of disaggregation and considering the two types of valuation changes in accordance with the back-testing programme referred to in Article 40.

### *Article 19*

#### *Risk control unit independence and resources*

1. In assessing the internal governance and oversight of the institution in relation to the risk control unit referred to in point (b) of Article 368(1) of Regulation (EU) No 575/2013, competent authorities shall verify in particular that:
  - (a) the risk control unit is completely separate and independent from the personnel and the management functions responsible for the trading business areas;
  - (b) the risk control unit is appropriately represented in the institution's decision-making bodies and, at a minimum, is involved in the decision-making process when any of the following issues is in the agenda:
    - (i) approval of new market risk methodologies and any methodology changes, validated in accordance with Article 23;
    - (ii) approval or update of the report inventory in accordance with Article 24;
    - (iii) risk appetite setting in accordance with Article 26;



- (iv) setting of the types, structure and levels of market risk limits or renewal in accordance with Articles 25 and 27;
  - (v) approval of limit breaches in accordance with Article 28;
  - (vi) approval of new products or new business lines in accordance with Article 29;
  - (vii) approval of pricing models used for risk purposes in accordance with Article 30;
  - (viii) changes in IT infrastructure systems that affect risk management tools in accordance with Article 34;
- (c) the risk control unit is adequate, proportionate to the size of the firm and risks of the business and have the appropriate resourcing to be functional for performing their tasks.
2. In the course of the assessment referred to in paragraph 1(a), competent authorities shall verify in particular that:
- (a) the risk control unit is one or more distinct organizational structures in the institution's organizational chart;
  - (b) the head of the risk control unit or units are senior managers of the institution;
  - (c) the staff and the senior management responsible for the risk control unit are not responsible for any trading business activities;
  - (d) senior managers of the risk control unit and those responsible for business areas have different reporting lines at the level of the management body of the institution or the committee designated by it;
  - (e) the variable remuneration of the staff and senior management responsible for the risk control unit is not linked to the performance of the tasks related to trading business areas under their supervision in a way that hinders or impedes their independence.
3. In the course of the assessment referred to in paragraph 1(b), competent authorities shall review, in particular:
- (a) the documented proposal from the risk control unit when any of the issues listed in paragraph 1(b) is discussed at the appropriate management level;
  - (b) the minutes of the institution's internal bodies, including the management body; in particular competent authorities shall review the action points to assess the degree of involvement of the risk control unit when the relevant issues listed in paragraph 1(b) are discussed as well as to assess those cases where there has been a divergence from the proposal of the risk control unit in the final decision;
  - (c) the reports produced by the risk control unit in accordance with point (b) of Article 368(1) of Regulation (EU) No 575/2013 relating to internal limits, as well as any decisions taken regarding limit breaches, in accordance with Article 28;
  - (d) written statements or interviews of the staff and senior management of the institution where appropriate.

4. In the course of the assessment referred to in paragraph 1(c), for the purposes of point (d) of Article 368(1) of Regulation (EU) No 575/2013, competent authorities shall verify, in particular, that:
  - (a) the risk control unit is proportionate to the nature, size and degree of complexity of the institution's business and organizational structure, and in particular to the complexity of the trading instruments, risk models and their implementation;
  - (b) the risk control unit has adequate resources, and experienced and qualified personnel to undertake all relevant activities, the personnel shall be sufficient in number and are sufficiently senior, knowledgeable and skilled to be able to challenge adequately other units' views, in particular those coming from trading business units;
  - (c) the risk control unit's personnel is appropriately trained.

## *Article 20*

### *Internal audit*

1. For the purposes of the independent review of the internal model as part of the internal audit process, in accordance with point (c) of Article 17(4), competent authorities shall verify that the internal audit is independent and that the resources assigned to it are appropriate, as well as that the process established within the institution to address the recommendations coming from the internal audit is adequate, in accordance with point (d) of Article 17(4). Competent authorities shall verify in particular that:
  - (a) the internal audit of the institution reviews at least annually all internal models, including those used for capital calculation purposes, and reflects the conclusions obtained from this review in a report submitted to senior management and the management body, as referred to in point (c) of Article 18(1);
  - (b) the report referred to in point (a) provides sufficient information to the senior management and the management body of the institution on the compliance of the internal model with all applicable requirements referred to in Article 368(2) of Regulation (EU) No 575/2013 and identifies the areas in the annual work plan where it is necessary to carry out a detailed review of compliance with those requirements;
  - (c) the internal audit is independent, adequate, proportionate and effective for performing its tasks.
2. In the course of the assessment of paragraph 1 competent authorities shall verify in particular that:
  - (a) the internal audit is proportionate to the nature, size and degree of complexity of the institution's business and organizational structure, and in particular to the complexity of the models and their implementation;
  - (b) the internal audit has adequate resources and experienced and qualified personnel to undertake all relevant activities;

- (c) the internal audit is not involved in any aspect of the design and implementation of the internal model which is the subject of the review;
  - (d) the internal audit is independent from the personnel and management function responsible for the business and risk control units and report directly to senior management;
  - (e) the variable remuneration of the staff and senior management responsible for the internal audit function is not linked to the performance of the tasks related to the trading business areas in a way that hinders or impedes their independence;
3. Competent authorities shall review the latest, and other relevant, reports produced by internal audit in accordance with paragraph 1, and shall verify that the remediation of issues identified by the Internal Audit are relevant, material and credible.

### *Article 21*

#### *Internal committee structure*

In assessing the soundness of the institution's internal committee structure relating to the aspects of model approval as referred to in point (e) of Article 17(4), competent authorities shall verify in particular that:

- (a) the internal committee structure is clearly laid down in the institution's internal documentation, including its functions, hierarchy, reporting lines, permanent members, meeting periodicity and levels of responsibility;
- (b) the management body, or the committee designated by it, has approved the structure of committees, as referred to in point (d) of Article 18(1);
- (c) the institution documents committees' agendas, and reflects the main meeting action points, which shall be distributed to the permanent members before and after the meetings respectively;
- (d) the specific internal committee structure, assigned functions and denomination may vary from institution to institution, however, at a minimum, the structure shall include:
  - (i) a committee conducting the assessment and, if deemed appropriate, escalation of any new product for approval to senior management. In accordance with Article 29 this committee shall meet periodically and shall be responsible for the monitoring of any new product ('new product committee'). The risk control unit, together with all other functions affected by the introduction of a new product, shall be represented in this internal committee;
  - (ii) a committee responsible of the review of limits and monitoring of business units' positions and general market developments ('risk committee'). Apart from the risk control unit, all business units with internal market risk limits assigned shall be represented. In accordance with point (b) of Article 28(1) this committee shall analyse, approve or propose corrective actions for any

breach of limits which were assigned by this committee. In case the limits were approved by the management body or the committee designated by it, the committee shall document the causes of the breach, propose corrective actions and escalate the breaches to the board for its approval. The management body shall define materiality conditions in which any limit breaches are escalated to the board irrespectively of the committee level where the limits were approved.

### **Explanatory text for consultation purposes**

While the EBA does not intend to fully establish the committee structure for institutions applying internal models, it also considers that a minimum structure is necessary to fulfil the tasks and responsibilities established in the CRR. These ‘responsibilities’ may be appropriately assigned to existing committees (i.e. there is no need to create a specific structure to fulfil the RTS requirements).

The EBA considers that the level of daily involvement in the monitoring and control of the internal limits required in the CRR implies that this task is formally assigned to a committee that meets frequently enough to study any limit breach and take corrective action or escalate it to the Board if necessary. In addition, the EBA also considers that the institution must also establish a ‘new product committee’, comprising all affected parties by the negotiation of new products, to monitor appropriately any new risks posed by the introduction of new activities in the trading area.

In order for competent authorities to be able to assess the appropriateness of the committee structure and evaluate its functioning on a day-to-day basis, the EBA considers that the structure should be appropriately documented and approved by the board. In addition, meeting agendas and action points shall be documented.

**Q9: What are stakeholders views regarding the proposed requirements on the internal committee structure?**

## *Article 22*

### *Independence and resources of the internal validation process*

1. For the purposes of assessing the independence of the internal validation, in accordance with Article 17(4)(f), competent authorities shall verify that:
  - (a) the validation process is conducted, at a minimum, by different personnel from the one which was responsible or was involved in any other way in the development of the internal model validated;

- (b) where the function responsible for the validation process is organisationally separate from the risk control unit and both report to different members of the senior management, then competent authorities shall verify, in particular:
- (i) that the validation process has adequate resources, including experienced and qualified personnel to perform its tasks;
  - (ii) that the variable remuneration of the staff and senior managers responsible for the validation process is not dependent from the performance of the tasks related to risk control and business areas in a way that hinders or impedes their independence;
  - (iii) that all necessary corrective measures resulting from the validation process are reflected in the validation report, referred to in point (j) of Article 23(2), and implemented in a timely manner;
- (c) where the function responsible for the validation is organisationally separate from the risk control unit but both report to the same member of the senior management, competent authorities shall, in addition to (b) above, verify that:
- (i) there is a decision-making process in place to ensure that the conclusions, findings and recommendations of the validation process are properly taken into account by the senior management of the institution;
  - (ii) no undue influence is exercised on the validation conclusions;
  - (iii) internal audit regularly assesses the fulfilment of the conditions referred to in points (i) to (ii);
- (d) where the staff performing the validation process is separate from the staff responsible for the model design or development but no separate validation function exists, competent authorities shall, in addition to (b) and (c) above, verify that:
- (i) there is effective separation between the staff performing the validation function and the staff performing the other tasks;
  - (ii) the institution is not a global systemically important institution in the meaning of Article 131 of Directive 2013/36/EU.
2. In performing the overall assessment of the independence of the validation process, competent authorities shall pay particular attention to the degree of correspondence of the organizational options referred to in points (b) to (d) of paragraph 1 as employed by the institution to the nature, size, scale and complexity of the risks inherent in its business model.
3. For the assessment of the validation process, referred to in paragraph 1, in addition to the requirements referred to in paragraph 2, competent authorities shall review, in particular:
- (a) the roles, responsibilities and expertise of all staff involved in the validation process;
  - (b) the adequacy and appropriateness of the periodic validation work plan in accordance with Article 23;
  - (c) the validation manuals used in the validation process;

- (d) the process of categorization of the findings and the relevant recommendations in accordance with their materiality;
- (e) the consistency of the conclusions, findings and recommendations of the validation process;
- (f) the role of validation process in the internal approval procedure of new products in accordance with Article 29;
- (g) the action plan of each relevant recommendation stemming from the validation process, also in terms of its follow-up, as approved by the appropriate management level in accordance with point (d) of Article 23(1).

### *Article 23*

#### *Adequacy, completeness and frequency of the internal validation process*

1. For the purposes of assessing the adequacy of the internal validation, in accordance with Article 369 of regulation (EU) No 575/2013, competent authorities shall verify the adequacy of the validation methods and the completeness of initial and periodic validation as well as the process for addressing any recommendations raised during the validation, as referred to in points (g) and (h) of Article 17(4). Competent authorities shall verify, in particular, that:
  - (a) for the validation conducted when the model is initially developed, as stated in Article 369(1) of Regulation (EU) No 575/2013, the institution has performed and documented a complete validation process for all methodologies applied in the internal model;
  - (b) for the periodic validation to be conducted after the initial one referred to in point (a), the institution identifies the relevant areas to be validated as a result of the changes referred to in paragraph 3, new methodologies required by the introduction of new products in accordance with Article 29, as well as the conclusions from previous validations and internal audit reviews.
2. In assessing the completeness of the validation process competent authorities shall verify that as part of the process it:
  - (a) critically reviews all the aspects of specification of any new methodologies and pricing functions applied, including those applied to new products referred to in Article 29. The validation process shall include the consideration of strengths and weaknesses compared to other alternative methodologies;
  - (b) in accordance with Article 40, analyses the results of the back-testing based both on hypothetical and actual changes in value, at the different levels established in point (d) of Article 25(1), considering the effect of any missing risk factors which the institution might be using for pricing in accordance with point (b) of Article 367(1) of Regulation (EU) No 575/2013, as well as the importance of intra-day or new trades in the daily profit and loss of the trading area, as referred to in Article 40(11). At a minimum, it performs statistical test that accounts for the timing as well as the

- number of overshootings and it also analyses those cases where daily valuation ‘gains’, calculated in accordance with the two daily P&L calculations referred to in Article 366(3) of Regulation (EU) No 575/2013, exceed the 1% percentile; additionally, as required in Article 370(d) of Regulation (EU) No 575/2013, it performs back-testing aimed at assessing whether specific risk of debt and equity instruments is being accurately captured;
- (c) analyses the VaR methodology assumptions; at a minimum, it shall perform statistical test concerning any distributional or stochastic assumptions as well as any parameters of the stochastic processes, such as volatility and correlation; it also assesses the soundness of any empirical correlations used both within and across the risk categories, as referred to in point (b) of Article 46(2), reviews whether any sensitivities applied as part of the VaR may also be acceptable for the computation of the Stressed VaR measure;
  - (d) assesses the adequacy of the methodology applied to identify the stressed period used to calculate the SVaR in light of the relationship between the SVaR and corresponding daily VaR metric as referred to in Article 51(3);
  - (e) analyses the results of the stress testing programme conducted in accordance with Article 32, extracting relevant conclusions, if any, around methodological flaws or weaknesses stemming from particular market scenarios;
  - (f) applies and analyses the risk metric results, including, where relevant, VaR, SVaR, IRC and internal models for correlation trading, obtained for the hypothetical portfolios required in point (c) of Article 369(1) of Regulation (EU) No 575/2013, to ensure that the internal model is able to account for structural features, including at least the following:
    - (i) material basis risks between different yield curves, in particular yield curves in the same currency in accordance with point (a) of Article 367(2) of Regulation (EU) No 575/2013;
    - (ii) similar but not identical commodities in accordance with point (d) of Article 367(2) of Regulation (EU) No 575/2013;
    - (iii) name-related basis risk and basis stemming from similar but not identical credit or equity positions in accordance with point (e) of Article 370 of Regulation (EU) No 575/2013;
    - (iv) concentration risk for equity or credit positions in accordance with point (b) of Article 370 of Regulation (EU) No 575/2013;
  - (g) verifies the adequacy of the implementation in IT systems, in accordance with Article 34(1), and ensures methodologies are applied consistently across business and support units and geographic areas of the institution; as required in Article 16, it also assesses the materiality of the positions excluded from the internal model, to ensure the significance of positions included in the scope remains appropriate;
  - (h) verifies the performance, including both risk differentiation and quantification, and the reactivity of the risk metric results to changes in market conditions;

- (i) verifies the appropriateness and materiality of the proxies used in the model calculation, as referred to in Article 44(3), independently for VaR, Stressed VaR, IRC and internal models for correlation trading, by evaluating both of the following:
    - (i) the materiality and potential impact of the proxy in the risk metric calculation by assessing the percentage of proxy time series used and the percentage marginal contribution of these time series;
    - (ii) the extent to which the proxy used for the missing risk factor is being hedged using the same proxy;
  - (j) verifies and consistently follows up on its own conclusions and recommendations, which shall be appropriately reflected in a validation report, in particular:
    - (i) the validation report identifies and describes the validation methods used, the tests performed, the reference dataset used and the respective data cleansing processes and include the results of these tests, the conclusions, the findings and the relevant recommendations;
    - (ii) the conclusions and recommendations of the validation report are directly communicated and considered by the management body, of the institution or to the committee designated by it, before approving any model to be applied for capital purposes as well as any subsequent changes in the methodologies applied, as referred to in points (e), (f) and (g) of Article 18(1) .
3. In assessing the frequency of the periodic validation process as referred to in paragraph 1(c), competent authorities shall verify that this process is performed at least annually, but also where there have been significant structural changes in the market or changes to the composition of the portfolio, which might lead to the internal model no longer being adequate. Factors that may trigger such a validation include but are not limited to the following:
- (a) back-testing exceptions in excess of that anticipated by the model calibration;
  - (b) large market losses relative to the level shown by the risk metrics;
  - (c) large pricing discrepancies with counterparties;
  - (d) significant changes in IT systems;
  - (e) significant change in a firm's business that may challenge the assumptions on which the model was approved;
  - (f) changes to the model considered as material according to the RTS on model changes;
  - (g) large potential losses observed as a result of the application of the stress tests scenarios, in accordance with Articles 32 and 33, which are not indicated by the existing model;
  - (h) significant decrease in the Stressed VaR relative to the VaR results for the same portfolio, which may challenge the adequacy of the methodology used to determine the stressed period.
4. Where there are applications for permission to use new products, in accordance with Article 29, that imply introducing methodological changes, competent authorities shall



verify that the institution performs the validation referred to in points (a) and (f) of paragraph 2 before the updated methodology is used for own funds calculation and internal purposes.

5. Competent authorities shall verify that if the institution applies new techniques and practices to their internal model it does so only in case they are fully justified and validated. Competent authorities shall verify that any methodological change introduced as a result of these evolving practices is validated in accordance with paragraph 2 and produces a better capture of the particular risks relevant to the portfolio or instruments affected by the change.

**Explanatory text for consultation purposes**

**Q10: Do stakeholders agree that the internal validation requirements are relevant and capture all material risks?**

**Q11: Are there any missing elements that should be incorporated or current elements that may be too burdensome?**

*Article 24*

*Soundness of the regular reporting process*

In assessing the soundness of the reporting produced by the risk control unit, in accordance with Article 17(4)(i), competent authorities shall verify that the institution documents an inventory of the reports to be produced by the risk control unit, as required in Article 17(4)(i), establishing the content, frequency and recipients. This inventory shall be approved and updated at the appropriate management level, in consultation with the risk control unit;

**Sub-section 2**

**Governance requirements on internal limits, new product approval, valuation, back-testing and stress testing; integrity of positions**

*Article 25*

*Approval of the internal limit structure*

1. For the purposes of assessing the involvement of the senior management and the management board of the institution and in the integration with the risk management

process, competent authorities shall verify, in relation to the adequacy of the internal limit structure referred to in point (h) of Article 18(1), that:

- (a) the institution has a clear breakdown of VaR limits which shall be consistent with the risk appetite and target budget by trading desk or area referred to in Article 26;
- (b) the management body or the committee designated by it sets, following a proposal from the risk control unit, at a minimum:
  - (i) the VaR limit for the maximum level of portfolio aggregation at which the internal model is applied. This VaR limit shall be understood as the sum of individual VaR limits when, in accordance with Article 36, a VaR calculation is not performed at consolidated level;
  - (ii) in case of internationally active banks, the VaR limit applicable to the portfolio at jurisdiction level;
  - (iii) a VaR limit breakdown one level below the levels referred to in (i) and (ii);
- (c) the institution has further breakdown in the VaR limits, proportional with its trading strategies. The more granular limits may be generally proposed by the business unit responsible of the 'upper' limit, the institution may establish limits by desk or even at the individual trader level;
- (d) all internal limits, included those referred to in (c), must be properly documented and formally approved. Apart from the limits referred to in (b), the rest of internal limits shall, at a minimum, be approved at the level of the committee referred to in point (d)(i) of Article 21;
- (e) as part of the limit approval and update process established in Article 27, the risk control unit assesses and documents the consistency and compatibility between the global VaR limits approved by the management body, or the committee designated by it, and the rest of internal limits not based in VaR, such as sensitivities or loss trigger;
- (f) the institution properly documents and formally approves, at a minimum, at the level of the committee referred to in point (d)(ii) of Article 21, an inventory of authorized instruments and underlying risk positions that traders can enter.

2. For the purposes of paragraph 1 competent authorities may also, to the extent appropriate:

- (a) request that institutions establish internal limits for other regulatory models other than for VaR, such as for Stressed VaR, IRC as well as internal models for correlation trading;
- (b) review other internal limits established by the risk control unit which are used in the day-to-day management of the trading area to control the positions taken by individual traders, such as sensitivities, loss trigger and other relevant limits within market risk scope.

## *Article 26*

### *Risk appetite*

In assessing the adequacy of the risk appetite as far as internal models for market risk are concerned and its consistency with the internal limit structure, the internal capital allocation and the target budget by trading desk or area, as referred to in point (h) of Article 18(1), competent authorities shall, in particular, verify that:

- (a) the risk control unit assesses, articulates and documents a proposal of ‘risk appetite’ to be submitted for approval to the management body or the committee designated by it;
- (b) the management body, or the committee designated by it, approves the risk appetite, internal limits and budget objectives by trading desk or area.

## *Article 27*

### *Regular update of the internal limit structure*

1. In assessing the adequacy of the update process of the internal limit structure as referred to in point (h) of Article 18(1), competent authorities shall, in particular, verify that:
  - (a) the update process is coordinated and appropriately documented by the risk control unit;
  - (b) the limit update proposal reflects any changes in the risk appetite as well as in the expected activity and in the budget objectives by a desk or area, established by the management body or the committee designated by it in accordance with Article 26;
  - (c) the limit update proposal takes into account the average utilization of the limit as well as number and magnitude of limit breaches, in accordance with Article 28, over the previous year.
2. In assessing the frequency of the update process of the internal limit structure as referred to in point (h) of Article 18(1), competent authorities shall verify that the process is conducted, at least, on a yearly basis and more frequently in case there are changes in the organisation or new business lines or instruments are introduced.

## *Article 28*

### *Limit breach approval process*

1. In assessing the adequacy of the limit breach approval process of the internal limit structure as referred to in point (i) of Article 18(1), competent authorities shall, in particular, verify that:
-

- (a) there is a clear and documented limit breach approval procedure which has been approved by the management body or the committee designated by it;
  - (b) limit breaches are documented by the risk control unit and reported to the committee referred to in point (d)(ii) of Article 21; that committee shall either take action on the limit breached or, escalate it according to the requirements established in point (d)(ii) of Article 21;
  - (c) the documentation referred to in (b) includes the magnitude and main cause(s) of the limit breach, such as an increase in the trading positions, any methodological changes introduced in VaR or developments in market conditions.
2. Competent authorities shall verify that the frequency and magnitude of limit breaches, as well as the measures taken by the risk control unit and management in response to these breaches, in particular in case a unit has exceeded limits frequently over the previous year, are appropriate. While an excessive number of limit breaches may be seen as an indicator of leniency, the absence of any breaches may not be entirely appropriate, since this may indicate that limits are non-binding in practice, and that limits are not aligned with the institution's risk appetite as referred to in Article 26.

### **Explanatory text for consultation purposes**

The EBA considers that internal limits are a central element necessary for the control of trading activities. The EBA acknowledges that VaR limits are not the only method that institutions use to control traders' activities; the RTS recognizes institutions generally establish other type of limits apart from VaR (based on sensitivities, or lost trigger type). The RTS states that these other methods shall be consistent with the ones based in VaR metrics and shall also be formally approved and might be reviewed by competent authorities as part of the validation process. At the same time, VaR is a central element of the regulatory model and so it is given a predominant role in the RTS.

Regarding other regulatory metrics apart from VaR, in line with guidelines on SVaR and IRC published by the EBA in May 2012, the EBA is proposing that only VaR limits shall be considered compulsory. In principle, neither SVaR nor IRC or Correlation Trading Modelling limits are ex ante obligatory, however competent authorities might still be able to request that limits for these regulatory metrics are established, if appropriate.

As previously noted, regardless of the type of limits established internally, the EBA considers that a formal approval process for any limit is always necessary. Specifically for the VaR limits, the EBA is proposing a two-tier limit setting process, with some VaR limits being necessarily established and reviewed, at least yearly, by the institution's Board, and a second tier of VaR internal limits being established and updated (also yearly) by an internal committee.

The Board should be responsible for the regulatory 'top of the house' VaR limit (i.e. at

the level where the VaR is used to determine the capital requirement, in accordance with Article 366). In addition, another level of VaR limits below the ‘top of the house’ and/or ‘jurisdiction’ levels is also requested.

For all the VaR limits established in the organisation (regardless of the committee responsible) a ‘formal’ limit breach approval process shall be established. The CP RTS proposes that the committee dealing with the breach will be the one that established the limit in the first place, though if a breach exceeds certain thresholds they should always be escalated to the Board. Limits shall be updated regularly and, at a minimum, yearly

**Q12: Do stakeholders agree that the proposed requirements on limit structure, regular limit update and limit breach approval processes are appropriate?**

### *Article 29*

#### *New product policy*

In assessing the adequacy of the internal policy regarding the introduction of any financial instrument, activity, market or business line which has some new specific features or characteristics (‘new product’) as referred to in point (f) of Article 18(1) competent authorities shall, as far as internal models for market risk are concerned, verify that:

- (a) the risk control unit has documented, and the management body, or the committee designated by it, has approved a new product policy, which includes an internal definition of ‘new product’;
- (b) the new product committee assesses, controls and monitors all issues arising from the introduction of new products, including where relevant:
  - (i) assessing regulatory compliance;
  - (ii) reviewing any pricing models used for internal risk models purposes;
  - (iii) defining the market parameters to be used for calibration purposes, the way the calibration is done and the frequency of update of the calibration
  - (iv) introducing any new risk methodologies, to be validated in accordance with Article 23(4);
  - (v) assessing the impacts on risk profile, capital adequacy and profitability;
  - (vi) ensuring the availability of adequate front, back and middle office resources and adequate internal tools and expertise to understand and monitor any associated new risks;
  - (vii) specifying and proposing to the management body, or the committee designated by it, the restrictions in terms of maturities, underlying, counterparties and internal limits, in accordance with Article 25, for this new product;

- (viii) assessing the adequacy of accounting schemes and ensuring the internal reporting appropriately reflects the underlying risks;
- (c) based on an assessment by the committee referred to in point (d)(i) of Article 21, the management body, or the committee designated by it, authorizes the trading in a new product; **[Option for consultation, to be dropped or maintained depending on the outcome]:** *the management body, or the committee designated by it, may delegate to the committee referred to in point (d)(i) of Article 21 the authority to allow individual trades in a new type of product up to a specific volume limit established for that particular product, the volume allowed in the limit for the new product shall be restrictive enough to prevent that any material losses stem from these new products; the authority shall be delegated individually for each type of new product and always for a limited period of time, with a maximum of six months; this authorisation may be renewed once by the management body, or the committee designated by it; after this one year period, all relevant aspects referred to in point (b) shall have been addressed or no additional trading in this new product shall be allowed;*
- (d) without the specific approval from the committee referred to in point (d)(i) of Article 21, the business areas have no authorization to trade a new product before the relevant aspects referred to in (b) are addressed; **[Option for consultation, to be dropped or maintained depending on the outcome]:** *in the specific cases where traders are allowed to trade new products which do not fulfill all the aspects listed in point (b) the transactions have to be approved on an individual basis by the committee referred to in point (d)(i) of Article 21 and always within the limits referred to in point (c) established by the management body or the committee designated by it;*
- (e) the committee referred to in point (d)(i) of Article 21 meets frequently enough to evaluate the approval of any new product transaction and to monitor all the potential issues listed in point (b) which these transactions may pose;
- (f) transactions are monitored individually until all issues listed in point (b) have been fully addressed and, based on an assessment by the committee referred to in point (d)(i) of Article 21, the management body, or the committee designated by it, approves that the transactions are fully incorporated to all relevant IT production systems and controlled via the regular risk management system;
- (g) regardless of their degree of incorporation to the IT systems, all new products shall be computed both in the internal model as well as the two daily P&L calculations used for back-testing purposes as referred to in Article 40.

### Explanatory text for consultation purposes

The EBA is consulting on the possibility of allowing the new product committee authorise individual trades in new products before they are fully incorporated to the institution's risk management and control systems. On the one hand, allowing this flexibility may not be a sound practice, on the other hand it can be argued that banks need some flexibility when

introducing new instruments in order to be able to ‘test the waters’ and decide whether the new product is fully incorporated to the institution’s systems or is finally abandoned.

The EBA considers that, if this possibility is finally introduced in the RTS, the authorisation from the board should be limited in terms of volume (measured by notional) and time (with a maximum of 6+6 months) in order to ensure that this process is quite exceptional and does not become a permanent ‘backdoor’ to permit material trading occurring in instruments that have not been fully integrated in the model.

**Q13: Do stakeholders agree with the rationale to provide some flexibility for the introduction of new products?**

**Q14: What are stakeholders’ views regarding the specific limitations introduced in the RTS regarding the delegation of authority to the new product committee?**

### *Article 30*

#### *Valuation governance*

1. In assessing the adequacy of the governance around valuation of positions included in the internal model as referred to in point (j) of Article 18(1), competent authorities shall verify:
  - (a) the resources and expertise of valuation control units and their ability to challenge risk-taking departments;
  - (b) the structure and effectiveness of internal committees responsible for independent price verification, valuation model validation and valuation uncertainty. This should include a review of the agendas, minutes and composition of these committees as well as the management information that they review and the processes through which issues are selected for escalation to them;
  - (c) the quality of policies, procedures and methodologies in the areas of independent price validation, valuation model validation and fair value adjustments. The extent to which risk taking units are accountable, alongside control units, for the impact of transactions to which prudent valuation methodologies applies;
  - (d) independent validation and analysis of the sources and drivers of P&L. The linkage of this analysis to valuations, risk representations used for internal and regulatory risk measurement and the regulatory back-testing process.
  - (e) the quality of the product definitions within the product inventory used for valuation model validation and of controls aimed at ensuring that this inventory is complete.

- (f) the extent of integration of this inventory to trader mandates and restrictions and the new product approval referred to in Article 29;
  - (g) the extent to which the product inventory is referenced in the design of policies and procedures in (c) above.
2. Competent authorities shall consider the appropriateness of the governance structure, in light of the complexity of the underlying business and the extent to which the internal risk model is reliant on these processes.

### *Article 31*

#### *Modelling accuracy track record*

1. In accordance with point (f) of Article 368(1) of Regulation (EU) No 575/2013 competent authorities shall verify that any internal model used for calculating own funds requirements has a proven track record of reasonable accuracy in measuring risks, in particular they shall verify:
- (a) the conclusions reflected in the internal validation report in accordance with point (j) of Article 23(2);
  - (b) the conclusions from the most recent reviews of the internal models conducted by the institution's internal audit, reflected in the reports produced in accordance with point (a) of Article 20(1);
  - (c) the history of back-testing overshootings, documented in accordance with Article 40, observed over the previous 250 business days before the VaR model is presented for initial approval, calculated at the different levels established in point (b) of Article 25(1). For the calculation of the back-testing overshootings based on the previous 250 business days, the internal model shall be stable and incur no changes considered as a material change or extension according to Delegated Regulation (EU) 529/2014. Alternatively, in case a material change or extension is introduced during the 250 business days preceding the date where a model is presented for initial approval, the institution has re-computed the back-testing data for the period before the change was introduced, which is needed to complete the 250 business days of back-testing history.
2. In addition, competent authorities shall also request that the institution provides the results obtained for the most recent market risk portfolios contained in the implementing technical standards referred to in Article 78 of Directive 2013/36/EU. They shall compare the portfolio data provided by the institution with the results obtained by the rest of EU peers in the report obtained by the EBA in accordance with Article 78(3) of Directive 2013/36/EU, assessing the results in accordance with the relevant parts of the methodology included in the regulatory technical standards referred to in Article 78(7) of Directive 2013/36/EU.



**Explanatory text for consultation purposes**

**Q15: Do stakeholders agree that the model should have been working in a stable way during a minimum period of 250 days prior to application for permission to use the model?**

**Q16: Do stakeholders agree that the results obtained for the portfolios published by the EBA during this period are useful for validation purposes?**

*Article 32**Stress testing programme*

1. For the purposes of assessing the rigorous programme of stress testing by the institution, in accordance with point (g) of Article 368(1) of Regulation (EU) No 575/2013, competent authorities shall verify that:
  - (a) the scenarios applied as part of the stress testing programme are estimated at least annually;
  - (b) the risk control unit runs the stress test scenarios determined in the stress testing programme at an appropriate frequency; the absolute minimum shall be monthly calculation but institutions that have significant trading activities shall calculate stress test scenario at a higher frequency;
  - (c) the scenarios to be applied as part of the stress testing programme include, apart from historically observed or hypothetical scenarios, ad-hoc scenarios produced at least yearly as a result of either of the following:
    - (i) identifying scenarios after performing reverse stress tests in accordance with Article 33(1);
    - (ii) identifying specific scenarios designed to address the relevant risk drivers referred to in Article 33(2).
2. Competent authorities shall verify that the scenarios are applied by the risk control unit to assess the reasonableness of the VaR results when compared with potential losses stemming from market plausible scenarios; however the losses obtained for credit and other event scenarios shall also be used to assess the reasonableness of the IRC model assumptions, in particular regarding the capture of credit risk concentrations.
3. The same credit or event scenarios referred to in paragraph 2 shall be used to assess the internal model for correlation trading; in addition, as requested in Article 377(5) of Regulation (EU) No 575/2013, the institution shall develop a set of specific, predetermined stressed scenarios to assess the elements listed in paragraph 3 of that Article and shall report to its competent authority quarterly the results of the stress tests and immediately any results showing losses exceeding 50% of the output of the internal

model for correlation trading, without considering the regulatory floor established in Article 364(3) of Regulation (EU) No 575/2013.

4. Competent authorities may also request that the institution provides the results for relevant regulatory-determined stress testing frameworks as appropriate.

### *Article 33*

#### *Determination of reverse stress and ad-hoc stress scenarios*

1. In assessing the adequacy of the reverse stress testing scenarios referred to in point (g) of Article 368(1) of Regulation (EU) No 575/2013, competent authorities shall, in particular, verify all of the following:
  - (a) that the risk control unit applies the reverse stress test as a tool to identify possible combinations of severe events and risk concentrations within the institution that might not be generally considered;
  - (b) that the analysis performed with the reverse stress test complements the regular stress testing;
  - (c) that, when identifying the scenario or scenarios resulting from reverse stress testing the risk control unit assesses all of the following:
    - (i) those business lines where traditional risk management models indicate an exceptionally good trade-off between risk and return;
    - (ii) new products and new markets which have not experienced severe strains;
    - (iii) exposures where there are no liquid two-way markets;
    - (iv) foreign exchange exposures either pegged or subject to a cap or floor to other currencies;
    - (v) positions in deep out-of-the-money options, in particular digital options;
    - (vi) events which are not contemplated in the historical lookback period applied for VaR purposes and which are therefore not correctly captured in VaR.
2. In assessing the adequacy of the ad-hoc stress testing scenarios referred to in point (g) of Article 368(2) of Regulation (EU) No 575/2013, competent authorities shall verify that the risk control unit designs the relevant stressed scenarios considering the composition, at the last reporting date, of the portfolio of positions included in the scope of application of the internal model, and in particular they shall verify all of the following:

- (a) that the risk control unit uses the results obtained from sensitivity analysis towards single risk factors, such as general and specific equity risk, general and specific interest rate risk, foreign exchange and commodities, to identify scenarios that include a stress of a combined set of plausible risk factors without leaving any non-material risk factor left unstressed or unconsidered;
- (b) the risk control unit explicitly considers at least the following elements when establishing the scenario or scenarios:
  - (i) illiquidity of markets in stressed market conditions, gapping of prices, concentration risk and one way markets: this may be achieved by considering larger shocks to reflect the impossibility of unwinding positions, in particular for cash instruments, in a timely manner, either because positions are concentrated or due to a sharp increase in market illiquidity. Simultaneously, a rise in correlation across instruments or risk factors shall also be considered. In addition, institutions shall include a sharp foreign exchange shift scenario, stemming from any currencies currently subject to a peg, cap or floor breaking its relationship;
  - (ii) jump-to-default risks: institutions shall address event risk for equities and jump-to-default risk for credit positions by considering eight instantaneous defaults with zero recovery of the four specific interest rate risk long positions in the current portfolio with the largest exposure and the four largest equity long positions in the current portfolio. Alternatively, the event risk stemming from a sharp rise in equity prices should also be considered for the four largest short positions;
  - (iii) any other events different from those captured in point (ii);
  - (iv) non-linearity of products, deep out-of-the-money positions: the portfolio must be repriced applying full revaluation of all positions to accurately reflect non-linearity effects. The shocks applied shall be large enough to trigger some deep out-of-the-money options, in particular digital options;
  - (v) other risks that may not be captured appropriately in the internal models, such as those derived from the use of proxies: institutions shall assess the potential effect of a misalignment between a proxy and the underlying risk. In particular, institutions shall assess the potential hidden risk incurred by the firm when hedging positions subject to proxy valuation with the liquid proxy underlying. This shall be captured by assessing the effect of applying the stressed scenario movements to the underlying liquid instrument used as a proxy while keeping illiquid positions constant.

**Explanatory text for consultation purposes:**

**Q17: Do stakeholders agree with the requirements related to the model accuracy track record and Stress Testing programme?**

### *Article 34*

#### *Robustness of IT infrastructure; integrity of positions and market data*

1. Competent authorities shall be satisfied that the institution's IT systems related to market risk management and, in particular, the IT systems that support the internal model is robust enough to cope with several errors during execution. Competent authorities shall assess the robustness of the IT systems during the 250 days calculations prior to the initial approval of the model, as referred to in point (c) of Article 31(1); during this period no major system breakdowns shall occur; if exceptional breakdowns occur, the institution shall be able to re-compute the affected risk metrics; back-testing overshootings produced by technical problems, as referred to in point (d) of Article 40(12), shall be extraordinary.
2. Competent authorities shall be satisfied that the institution reconciles daily, all internal model positions and instruments between the risk management, front and back office systems. Any positions and instruments not fully reconciled shall be documented and monitored. The reconciliation process shall ensure that differences between front office and market risk model systems are justifiable. The circumstances where these differences are justifiable include all of the following:
  - (a) risk categories not included in the internal model;
  - (b) different representation of positions;
  - (c) simplified valuation models and P&L calculations for risk purposes.
3. Competent authorities shall verify that the institution documents the end-of-day valuation process for all positions covered by the internal model, including all of the following:
  - (a) the specification of the market data provider's industry codes, captured automatically by instrument or by underlying;
  - (b) the precise time of capture of each data point, in accordance with Article 36;
  - (c) any automatic data filtering and data error detection, implemented to detect stale or obviously incorrect data.

**Explanatory text for consultation purposes:**

**Q18: Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the governance section?**

## **SECTION 4**

### ***General requirements for VaR and stressed VaR calculation***

#### *Article 35*

##### *Reliability of daily calculation of VaR*

Competent authorities shall verify how malfunctions or incidents in the process of production of the daily computed VaR are addressed and reported by the institution.

#### *Article 36*

##### *Calculation of VaR and SVaR at consolidated level*

1. Where the conditions set out in Article 325 of Regulation (EU) No 575/2013 are not met for one or more of the institutions or undertakings included in the scope of application of the internal model, competent authorities shall verify that those institutions calculate the consolidated VaR as the simple sum of individual and separate VaR calculations performed at sub-consolidated, or individual, level.
2. Where, in accordance with Article 325 of Regulation (EU) No 575/2013 competent authorities have granted permission to offset positions across some or all institutions or undertakings included in the scope of application of the internal model, competent authorities shall verify that, where institutions perform a single VaR calculation for all the positions held in those institutions or undertakings, all of the following conditions are met:
  - (a) all positions from the different business units are captured by applying a consistent and coherent procedure, and the integrity of the position capture process is not hindered in any way by the legal or organizational setting;
  - (b) where the units operate in different time-zones, the requirements of paragraph 3 also apply.
3. For the purposes of paragraph 2(b), where the business units operate in different time zones, competent authorities shall verify that all of the following conditions are met:
  - (a) positions are captured consistently at the ‘close of business’ for each one of the different institutions or undertakings included in the scope of application of the internal model;
  - (b) for institutions using VaR methodologies based on the revaluation of positions according to historical market prices (‘historical simulation’), the P&L historical time series is calculated daily based on the valuation changes computed at the same moment in time, regardless of the actual time-zone where units are located, for all positions included in the portfolio, except for the cases referred to in paragraph 4;

- (c) for institutions using other methodologies than historical simulation in order to determine their VaR, that the recalibration of the modelling parameters is done capturing the changes in market conditions for all risk factors included in the model, at the same moment in time, regardless of the actual time-zone where units are located;
  - (d) for the purposes of determining the hypothetical and actual daily changes in the portfolio's valuation of profit and loss ('two daily P&L calculations') referred to in Article 40(2), that the two daily P&L calculations are computed at the same time as the VaR, irrespective of the methodology used, including in the cases referred to in paragraph 4;
  - (e) where non-business days differ across jurisdictions where institutions or undertakings are located, competent authorities may deem it acceptable that no changes on 'local' price factors, such as local equities or corporate bonds negotiated locally, are considered for the purpose of points (b) to (d);
  - (f) the institution documents appropriately the different timing applied during the end-of-day valuation process, as referred to in Article 34(3), and in the P&L calculations referred to in Article 40(3).
4. By way of derogation from point (b) of paragraph 3, competent authorities may deem acceptable any of the following alternative timings of computation of the valuation changes where those are appropriately documented:
- (a) for those risk factors where, a less frequent than daily update may be acceptable, in accordance with Article 39, the incorporation of those risk factors in the P&L data series may also be less frequent than daily;
  - (b) the capturing of changes on 'local' price risk factors, such as local equities or corporate bonds only negotiated locally, following the standard closing time for the 'local' market.

### **Explanatory text for consultation purposes**

The EBA is consulting on what should be the most appropriate approach to perform a VaR at consolidated level. In addition to the requirements established in Article 325 of the CRR, there are additional complications when the scope of an internal model includes positions booked in different 'units' (subsidiaries, in case the conditions of Article 325 are met, but also branches) that operate under different time zones. In this context, the EBA has identified three possibilities (which may eventually be combined between them):

1. Consolidated VaR calculation following a single simultaneous risk factor capture: at consolidated level there is a single, joint VaR / SVaR calculation for the whole portfolio of positions capturing all risk factors simultaneously.

In this case, it might still be necessary to have a different timing for risk factor capture for the computation of VaR at subsidiary level (i.e. domestic market requirements may require that the time zone used is the same for 'local' banks use).

2. Consolidated VaR calculation following different timing for the risk factor capture: At consolidated level there is a single, joint VaR / SVaR calculation for the whole portfolio of positions, but the risk factors are captured at different times, depending on the time zone where the branch/subsidiary is located.

In principle, in this case, the capture for the computation of VaR at subsidiary level would be with the same timing as the one performed at consolidated level.

3. Aggregated (i.e. non-consolidated) VaR calculation: at consolidated level there is an aggregation of locally calculated VaRs (i.e. without diversification across the different local portfolios). In effect this is equivalent to not recognising the treatment allowed in Article 325. This approach might be simpler as, in effect, there is not 'consolidated' calculation.

The three possibilities have implications for back-testing, in particular how the two P&Ls (Hypothetical, Actual 'cleaned') are calculated at consolidated level (the regulatory one, where the multiplier is calculated). It is worth remembering that the two P&L used for back-testing are based on daily changes in value of the portfolio; accordingly, the potential effect in the daily P&L of risk factors captured at significantly different time zones (i.e EU vs USA or Japan) can be quite significant.

If the bank intends to compute a single VaR calculation at consolidated level, in addition to compliance with the requirements on Article 325 of the CRR, the EBA requests that VaR is calculated for the positions held at 'close of business' time (which of course may be different in the different units) consistently, as if all positions were held in a single jurisdiction (i.e. a 'simultaneous' revaluation-recalibration). However, it is acknowledged that on occasions some instruments ('local') might only be traded in specific markets, so some flexibility is allowed to accommodate non-fully consistent timing. A similar treatment is proposed in case of inconsistent bank holidays.

Whatever choices might be taken by the bank, the end of day valuations used to compute the two P&L used for back-testing purposes, under Article 366 of the CRR, should be calculated consistently with how the VaR is computed for the different positions included in the model held in units that operate in different time-zones.

It is also proposed that CAs verify) how these differences are taken into consideration, both for VaR calculation and for the two P&L computations used for back-testing purposes. In particular the following should be properly documented:

**Computation for VaR purposes** – how differences in time zones are taken into account in the process of production and how risk / VaR figures are aggregated. In addition how bank holidays are taken into account should also be documented.

**Computation of P&L for back-testing purposes:** in case of different time zones, how the two P&Ls used for back-testing at consolidated level (Hypothetical and Actual ‘cleaned’) are calculated.

**Q19: What are stakeholders’ views on the proposed requirements for the computation of VaR and P&L at consolidated level?**

**Q20: Do stakeholders’ agree with the distinction between ‘global’ and ‘local’ price risk factors?**

### *Article 37*

#### *Holding period*

Where, according to the second subparagraph of Article 365(1) of Regulation (EU) No 575/2013, an institution uses VaR numbers calculated using a shorter holding period than 10 days, and scaled up to 10 days, competent authorities shall verify that the methodology used is appropriate by verifying in particular that both of the following requirements are met:

- (a) that the methodology is subject to review at least annually as part of the internal validation review process referred to in Article 23;
- (b) that the review referred to in point (a) includes an analysis of the composition of the portfolio of the institution and a comparison over a relevant period of time of VaR numbers calculated using a non-scaled 10-day holding period with scaled up VaR numbers calculated over the shorter holding period.

### *Article 38*

#### *Observation period*

1. Where competent authorities verify that the VaR numbers are computed using an effective historical observation period of at least one year, in accordance with point (d) of Article 365(1) of Regulation (EU) No 575/2013, competent authorities shall verify that a minimum of 250 business days is used. Where institutions use a weighting scheme in calculating their VaR, competent authorities shall verify that the weighted average time lag of the individual observations is not less than 125 business days.

Where, according to point (d) of Article 365(1) of Regulation (EU) No 575/2013 the calculation of the VaR is subject to an effective historical observation period of less than one year, competent authorities shall verify that the institution has in place procedures to ensure that the application of a shorter period results in daily VaR numbers greater than daily VaR numbers computed using an effective historical observation period of at least one year.



### *Article 39*

#### *Frequency of data set updates*

1. Competent authorities shall verify that both the market data sets and the positions used as part of the end of day valuation process referred to in Article 34(2) are updated and validated daily.
2. Where institutions use VaR methodologies based on historical simulation, competent authorities shall verify at least the following:
  - (a) that the institution documents and is able to explain those cases where those market data sets have been updated less frequently than daily;
  - (b) that market data sets used for the computation of the VaR risk measure are updated at least monthly and that institutions have the technical capability to update them more frequently where necessary.
3. Where institutions use VaR methodologies other than historical simulation, competent authorities shall verify that, where data sets are updated monthly, the institution has a procedure in place to update the data sets more frequently when this is necessitated by volatility in market prices.

#### **Explanatory text for consultation purposes:**

Depending on the type of model used (such as historical VaR, parametric VaR, Monte-Carlo VaR or a combination of these approaches), the update of the data may be burdensome to conduct at a frequency higher than monthly. This may in particular be the case for correlation structure and variance covariance matrices used in the parametric and/or Monte-Carlo VaR. However, for other types of models, such as historical VaR, it could be prudent to require a more frequent update as referred to in Paragraph 2 of this Article.

**Q21: What are stakeholders' views on the burden a more frequent update than monthly creates? What are stakeholders' views on the burden a daily update for the historical VaR might create?**

### *Article 40*

#### *Back-testing programme*

1. In assessing the adequacy of the back-testing programme as referred to in point (g) of Article 18(1), competent authorities shall, in particular, verify all of the requirements in paragraphs 2 to 13.

2. Competent authorities shall verify that the risk control unit complies with all of the following requirements:
  - (a) that it is responsible for the back-testing programme;
  - (b) that it assesses daily the performance of the internal model via back-testing;
  - (c) that it carries out the assessment referred to in point (b), at a minimum, by comparing the two daily P&L calculations and the daily VaR number at least at the different levels referred to in point (b) of Article 25(1);
  - (d) that the risk control unit examines the difference between the two daily P&L calculations and the official P&L used for accounting purposes and confirms that they are justified ('reconciles them');
  - (e) that it does the reconciliation referred to in point (d) regularly and at least monthly.
3. Competent authorities shall verify that the basis for determining the two P&L calculations is clearly documented including for the actual profit and loss elements that are not updated every day.
4. Competent authorities shall verify that, when performing the hypothetical P&L calculation, all of the following requirements are met:
  - (a) that in order to calculate the daily changes in value of the positions included in the scope of the model, assuming that the positions remain unchanged, in accordance with the second subparagraph of Article 366(3) of Regulation (EU) No 575/2013, the risk control unit applies the end-of-day valuation process referred to in Article 34(3), and the requirements in Article 36 for consolidated VaR calculations;
  - (b) **[OPTION 1]** that any profit and loss stemming from changes in the own credit standing of the institution is excluded from the calculation of the hypothetical profit and loss;  
**[OPTION 2: to delete this point altogether]**

#### **Explanatory text for consultation purposes**

This text would be kept or removed depending on the outcome of the consultation on own creditworthiness. See Explanatory Box after the relevant recital.

- (c) **[OPTION 1]** that only the changes in value of the risk categories as defined in Article 363(1) of Regulation (EU) No 575/2013 included in the scope of the model are computed;  
**[OPTION 2]** that all the changes in value of the risk factors and market risk parameters related to the risk categories defined in Article 363(1) of Regulation (EU) No 575/2013, including those that are not part of the scope of the VaR, are computed;
- (d) that any other profit and loss element, such as valuation adjustments, fees, commissions or net interest, are not included.

**Explanatory text for consultation purposes:**

For the set of positions included in the internal model, the EBA is considering two possible P&L computations for the ‘hypothetical’ back-testing: (i) incorporating only the P&L stemming from the risk categories included in the scope of the model and (ii) incorporating the P&L stemming from all the risk categories independently of whether they are included in the scope of the model or not.

The rationale for the first alternative would be to apply the ‘hypothetical’ back-testing as a ‘pure’ statistical test of the adequacy of the model. In this regard, the model cannot capture the risk stemming from risk factors that are not included in the scope of the risk metric calculation.

However this may not always be conservative, under the second alternative the regulatory back-testing would ensure that the requirement of Article 367 para. 1 CRR (*‘(...) the model shall capture accurately all material price risks; (...)’*) is adequately tested, ultimately leading to the inclusion of a larger set of risk factors if they prove to be material. This alternative would also ensure that the unexplained part of the hypothetical P&L is included in the regulatory back-testing and would foster the reliability and validity of the model used for reporting relevant risk exposures to the senior management.

For the back-testing based on the ‘actual’ P&L (see paragraph 5(c) below), the EBA is proposing to incorporate all of the risk categories to the calculation, regardless of its inclusion in the scope of the internal model. This back-testing is seen as a ‘reality check’, i.e. used to assess to what extent the model can capture the risk shown in the daily P&L produced by the trading area. Accordingly, with the exceptions of fees, commissions and net interest established in Article 366(3) of the CRR, the P&L should reflect changes produced in all the risk factors. It is worth noting that, according to Article 366(4) of the CRR, competent authorities may allow the add-on calculation to be based on the hypothetical back-testing, if the overshootings do not stem from deficiencies in the model. Of course, an overshooting caused by a movement of a risk factor not included in the scope of the model is one of the circumstances where the exception does not stem from model deficiencies, though these overshootings would always have to be reportable to the competent authority under Article 366(5) of the CCR. The EBA considers that these exceptions should be registered and duly discussed and explained to the competent authority.

**Q22: For “partial use” IMA, do you agree with the use of a hypothetical P/L calculated from mark to market P&L including all pricing factors of the portfolio’s positions?**

**Q23: If your answer to Q22 is no, what impact does this have on the P&L used for back-testing purposes and how do you monitor the appropriateness of the model? Are there alternatives to ensure a proper reporting to senior management?**

**Q24: What are stakeholders’ views regarding the relative merits of the inclusion of all risk factors for the actual P&L computation?**

5. Competent authorities shall verify that, when performing the actual profit and loss calculation, all of the following requirements are met:

- (a) that in order to calculate the daily change in value in accordance with the third subparagraph of Article 366(3) of Regulation (EU) No 575/2013, the risk control unit applies the end-of-day valuation process referred to in Article 34(2) and the requirements of Article 36 for consolidated VaR calculations;
- (b) **[OPTION 1]** that any profit and loss stemming from changes in the own credit standing of the institution is excluded from the calculation of the actual profit and loss;

**[OPTION 2:** to delete this point altogether]

#### **Explanatory text for consultation purposes**

This text would be kept or removed depending on the outcome of the consultation on wn creditworthiness. See Explanatory Box after the relevant recital.

- (c) that all the changes in value of the risk factors and market risk parameters related to the risk categories defined in Article 363(1) of Regulation (EU) No 575/2013, including those that are not part of the scope of the VaR are taken into account;
- (d) that the profit and loss stemming from intraday activities is included in the calculation;
- (e) that, for the purpose of excluding net interest income from the calculation of the actual profit and loss in accordance with Article 366(3) of Regulation (EU) No 575/2013, net interest income is understood as the net result of computing the explicit or implicit interest produced by all assets and liabilities included in the trading book, as well as any ‘internal interest rate transfer’ that the trading area pays or receives to or from the rest of the institution’s balance sheet to cover the funding cost or income, respectively, stemming from the non-trading book.

#### **Explanatory text for consultation purposes**

##### **Definition of Net interest income**

Article 366(3) second subparagraph requires that the back-testing based on actual changes in value should exclude ‘... *net interest income*’.

The CRR does not specify what is exactly meant by ‘net interest income’. In this regard, it is clear that some instruments subject to market risk capital charges incorporate an explicit (and/or implicit, in case the instrument has not been purchased at its notional value) interest rate. However there are other instruments (such as, for instance, equities) that do not incorporate an explicit or implicit rate, but are subject to funding cost (known also as ‘cost of carry’). In addition, the trading area does generally invest the exceeding liquidity stemming from the rest of the balance sheet or, alternatively, does provide the funding needed by the rest of activities of the bank. In general, banks establish an ‘internal rate’ that is used to assign a cost/revenue to the available liquidity or required funding.

Accordingly the EBA is proposing the use of the following common definition of ‘Net interest income’ in paragraph 5(e) above:

Net result of computing the interest (either explicit or implicit) produced by all assets and liabilities included in the trading book, as well as any 'internal interest rate transfer' that the trading area pays or receives to/from the rest of the bank's balance sheet to cover the funding cost/income stemming from the non-trading book..

**Q25: What are stakeholders' views regarding the proposed definition of 'Net interest income'?**

6. Competent authorities shall verify that the risk control unit uses the two daily profit and loss calculations referred to in paragraph 2 to assess the relationship between calculated risk measures and trading outcomes at the different levels where the VaR calculation is performed, at least at the levels referred to in point (b) of Article 25(1).
7. Competent authorities shall verify that the risk control unit analyses in detail all overshootings of the two daily profit and loss calculations referred to in paragraph 2, in order to determine their causes.
8. Competent authorities shall verify that, with regard to the analysis of the overshootings the risk control unit carries out at least the following, as documented in the notification to the competent authority required by Article 366(5) of Regulation (EU) No 575/2013:
  - (a) it identifies which portfolios or sub-portfolios primarily caused the overshooting;
  - (b) it analyses the differences in the two daily profit and loss calculations;
  - (c) it analyses whether and which market movements or risk factors or parameters caused the overshooting;
  - (d) it analyses whether any modelling issues, or missing risk factors, or aggregation of risk numbers contributed to the overshooting, including an explanation of which part of the profit and loss can be explained by the model and which cannot;
  - (e) it analyzes whether process failures, including positions not being properly captured or missing updates of data, contributed to or caused the overshooting.
9. Competent authorities shall verify that, where the analysis referred to in paragraph 8 identifies a material weakness or inaccuracy in the model or processes, the risk control unit assesses the issue and promptly develops a plan for a timely restoration to compliance in accordance with Article 10, to be assessed as part of the regular validation referred to in Article 23.
10. Competent authorities shall verify that, where an overshooting is observed it is communicated, together with the conclusions of the analysis referred to in paragraph 8, in less than 3 working days to senior management as referred to in point (l) of Article 18(1).
11. Where competent authorities have allowed the limitation of the addend to that resulting from overshootings observed for the hypothetical P&L, in accordance with Article 366(4) of Regulation (EU) No 537/2013, they shall take into account the number of

overshootings observed for the actual P&L, which have been primarily caused by positions taken and entirely unwound on the same day ('intraday trading') and by new trades in the course of assessing the adequacy of the multiplication factors proposed by the institution, as referred to in Article 48.

### **Explanatory text for consultation purposes**

It is clear that the effect of intraday activity and new trades in the daily P&L cannot, by definition, be captured by a model which relies on the positions held at the end of the previous day, accordingly, from a methodological perspective, this cannot be considered as a deficiency of the model. However, it may be the case that the P&L from some trading portfolios may be particularly biased by intra-day activity, such as a portfolio that is only 'open' to risk during the day and then all positions are completely unwound (consider a desk that trades only Exchange Traded Derivatives, 'opening' the book during the session and unwinding it entirely when the market closes). In these cases, the VaR would be based on a 'snapshot' of the positions which would have been taken, precisely, when 'no position' was held.

This situation raises general issues related the whole market framework (i.e. the situation does not improve if we apply the standardised approach), however the only possible solution would be to capture the positions incurred by the institution at some point during the session. Considering all the IT batch processes involved, this possibility would be highly burdensome and does not seem to be acceptable from a legal perspective (for example, the two P&L used for back-testing have to be based on the end-of-day valuations).

To try to address this issue, the EBA is proposing that the back-testing based on actual changes should be used to assess the importance of these intra-day and new trades in the overall P&L observed for the whole trading area. In case Competent Authorities allow firms to base their back-testing addend on the hypothetical P&L, these exceptions should be considered when assessing the appropriateness of the multiplication factors proposed by the firm.

**Q26: What are stakeholders' views regarding the requirement to assess the importance of intra-day and new trades to determine the VaR and SVaR multipliers?**

**Q27: What alternative methodology, if any, might be appropriate to capture this intra-day risk?**

12. Competent authorities may deem that the number of overshootings under actual changes does not result from deficiencies in the internal model, as required in Article 366(4) of Regulation (EU) No 575/2013, at least in the following cases:

- (a) where an overshooting occurs as a result of a valuation adjustment calculated less frequently than daily, and it could be reasonably expected that such a movement would have occurred over the whole readjustment period rather than on a discrete date, on the condition that the back-testing that would have been observed over the preceding 250 business days without computing this valuation adjustment, does not lead to more overshootings;

**Explanatory text for consultation purposes:**
**Q28: What are stakeholder's practices regarding adjustments computed less regularly than daily?**

- (b) where an overshooting occurs as a result of a mark-to-market loss caused by a risk of a position that is not included in the scope of the internal model including the specific risk of any CVA hedge positions recognized in accordance with Article 386 of Regulation (EU) No 575/2013;
  - (c) where an overshooting occurs from a movement in a risk category as defined in Article 363 of Regulation (EU) No 575/2013, which is not included in the scope of the internal model;
  - (d) where an overshooting occurs due to a technical problem during the profit and loss calculation and this error is discovered after the five day notification time-limit referred to in Article 366(5) of Regulation (EU) No 575/2013.
13. In order to verify that the number of overshootings under actual changes does not result from deficiencies in the internal model, in accordance with Article 366(4) of Regulation (EU) No 575/2013, competent authorities shall verify that this treatment is appropriate every time the institution requests it.

*Article 41*
*Appropriateness of modelling assumptions and integrity of modelling processes*

1. In order to assess compliance with the requirement of point (a) of Article 367(1) of Regulation (EU) No 575/2013 on the accuracy of the model, competent authorities shall verify both of the following:
  - (a) that the distributional and any other relevant stochastic assumptions of the model and parameters of the underlying stochastic processes, including volatility and correlation, are well justified, including with regard to the tails of the distributions relevant for the VaR calculation;
  - (b) that, irrespective of whether the calibration of those parameters is done using historic market data or market implied data, the approach selected is applied consistently by type of parameter.
2. Where VaR calculations are based on a Montecarlo simulation methodology, competent authorities shall also verify all of the following:
  - (a) that the number of simulations used is well justified and sufficient to avoid material simulation errors, when compared to the results of using a higher number of simulations;

- (b) that the random nature of the number sequences is ensured by the institution performing statistical tests which assess at least the autocorrelation, the repeating patterns and the probability distribution;
- (c) that the use of variance reduction methods does not increase the simulation error.

#### *Article 42*

##### *Pricing model risk factors omitted from VaR*

1. In order to assess compliance with the requirement of point (b) of Article 367 of Regulation (EU) No 575/2013 that the model captures a sufficient number of risk factors, competent authorities shall verify that, where the risk factor incorporated into an institution's pricing model, but not into its risk-measurement model referred to in that Article, that the institution provides an appropriate justification for such an omission.
2. Where the institution justifies the exclusion referred to in paragraph 1 based on computational reasons, competent authorities shall verify that the effect of the missing risk factor is immaterial for VaR purposes, but has been introduced because it is material in the valuation for price accuracy.
3. Competent authorities may accept the exclusion of a risk factor where the institution justifies it based on a low level of activity of the firm in the respective market.
4. Where a risk factor incorporated in the institution's pricing model is excluded, in particular, from the risk-measurement model of an institution holding material positions in instruments included in categories 2 and 3 of Article 7 competent authorities shall ensure both of the following:
  - (a) that the institution assesses, as part of the initial and periodic validation process referred to in point (b) of Article 23(2), the extent to which the excluded risk factor is immaterial for risk-measurement purposes;
  - (b) that, in assessing the immateriality of the missing factor for risk-measurement purposes, referred to in point (a), institutions take into account instances where a back-testing exception has been produced by a missing risk factor, as referred to in point (d) of Article 40(8).

#### *Article 43*

##### *Capture of nonlinearities in VaR*

1. In order to verify compliance with the requirement of point (b) of Article 367 of Regulation (EU) No 575/2013 that the risk-measurement model captures nonlinearities for options and



other products, competent authorities shall verify that, where institutions use sensitivities to measure the risk from nonlinear positions, they comply with both of the following:

- (a) they compute at least the material first order and material second order terms of Taylor series approximations to reflect the change in the price for each position due to changes in relevant risk factors;
  - (b) they assess the materiality of the time effect where the time effect is also included in the VaR calculation.
2. Competent authorities shall verify that institutions capture all material risk drivers with respect to implied volatility, by applying both of the following:
- (a) where appropriate they differentiate risk by underlying;
  - (b) they consider both of the following:
    - (i) the maturity of the options;
    - (ii) the absolute or relative distance of the price of the underlyings to the strike prices ('moneyness') of the options ('volatility surface').
3. Where institutions use Taylor series approximations to capture nonlinearities, competent authorities shall verify all of the following:
- (a) that those institutions do not have material positions in options and warrants whose Taylor series approximations do not capture their underlying risks adequately;
  - (b) that they capture the risk of simultaneous moves in risk factors ('cross gammas');
  - (c) that institutions using Taylor approximations do not hold material positions in options included in Category 3 of Article 7.

#### **Explanatory text for consultation purposes**

Integration of time effect in VaR and P&L and question of consistency.

According to the quantitative standards included in the Basel Market Risk amendment – see paragraph 718(LXXXVI)(b) below - the computation of VaR assumes an instantaneous shock:

(b) In calculating value-at-risk, an *instantaneous price shock equivalent to a 10 day movement in prices* is to be used (...)

Therefore, it may be derived that, under the Basel text, the Theta effect would not be captured in VaR. It is worth noting that, in the CRR, the notion of 'instantaneous shock' for VaR is not explicitly introduced, so it could be defended that, under the CRR treatment, Theta should be captured in VaR.

Accordingly, while it is not clear whether Theta shall be computed for VaR purposes, its effect in the P&L used for back-testing may be present, leading to potential inconsistencies between VaR and the P&L used for back-testing.

**Q29: What are stakeholders' views regarding the treatment of Theta in VaR and as a component of P&L?**

*Article 44*

*Use of proxies*

1. In order to assess compliance with the requirements of point (e) of Article 367(2) of Regulation (EU) No 575/2013 with regard to the use of proxies, competent authorities shall verify that proxies are used only where data is deemed insufficient, including for the following reasons:
  - (a) the data contains missing data points;
  - (b) there is no data due to IT issues or 'quiet' market;
  - (c) there are data points which contain stale data;
  - (d) there is insufficient data history.
2. Competent authorities shall verify all of the following:
  - (a) that the risk control unit has documented and assessed any proxies used in the VaR internal model;
  - (b) that the proxy documentation includes all of the following:
    - (i) areas where proxies equal to market data, without any further transformation, are used;
    - (ii) areas where weighted proxies are used;
  - (c) the institution's assessment of whether the proxy adequately 'mimics' the risk factor;
  - (d) the institution's proxy selected does not underestimate the volatility of the missing risk factor, including under stress conditions.
3. Competent authorities shall verify that, as part of the periodic internal validation, the institution reviews the necessity for the proxies used, assessing the degree of data reliance on the risk factors proxied in accordance with point (i) of Article 23(2).

### *Article 45*

#### *Risks arising from less liquid positions*

In order to assess compliance with the requirement of point (e) of Article 367(2) of Regulation (EU) No 575/2013, that the internal model conservatively assesses the risk arising from less liquid positions, competent authorities shall verify both of the following:

- (a) that institutions reflect illiquidity in their valuations of the less liquid positions and positions with limited price transparency under realistic market scenarios;
- (b) that, where institutions use proxies for some illiquid positions, the requirements of Article 44 are applied.

### *Article 46*

#### *Model correlations*

1. When assessing whether the risk model is capturing all material price risks, as referred to in point (a) of Article 367(1) of Regulation (EU) No 575/2013, competent authorities shall verify all of the following:
  - (a) that the risk control unit assesses the extent to which the price risk of instruments is sensitive to changes in market implied correlations; this shall be material where institutions hold material positions in instruments included in Category 3 of Article 7;
  - (b) that the VaR calculation does not rely on correlation assumptions which are not appropriately supported by market data.
2. Where, in accordance with Article 367(3) of Regulation (EU) No 575/2013, institutions use empirical correlations within risk categories and across risk categories, competent authorities shall verify all of the following:
  - (a) that those correlations are reviewed at least monthly;
  - (b) that, as part of the periodic validation process referred to in point (c) of Article 23(2), the institution assesses the potential effect of alternative, historically observed, high and low correlations could produce in the VaR calculation.

#### **Explanatory text for consultation purposes:**

The CRR requires that VaR models reflect appropriately correlation risk (point (b) of Article 367(1)). In this regard, the use of stochastic correlations seems to be the most appropriate way of capturing 'correlation risk'; however modelling stochastic correlations is quite challenging in practice. Accordingly, the EBA is not requesting in the RTS that correlations are fully modelled (though this would certainly be the preferred option). In any case the importance of

the ‘correlation risk’ which might not be fully captured, should be assessed by the risk unit, in particular for institutions with large portfolios of complex instruments.

In addition, the CRR allows the use of empirical correlations (Article 367(3)) within and across the risk categories referred to in Article 363 of Regulation (EU) No 575/2013, provided they ‘are sound and implemented with integrity’. The RTS distinguishes between these correlations and the ones used for ‘pricing’ of financial instruments. For those firms that use empirical correlations the RTS incorporates requirements regarding the need to review them monthly (at a minimum) and, as part of the periodic validation, test the effect in VaR of using high and low correlations, which shall be coherent with real historical scenarios.

**Q30: Taking into account the CRR requirement to capture ‘correlation risk’ do you consider that the use of stochastic correlations should be required?**

**Q31: Do stakeholders agree with the additional requirements introduced for banks using empirical correlations?**

#### *Article 47*

##### *Third party reporting of positions in a CIU*

1. In order to assess compliance with the requirement of point (b) of Article 367(2) of Regulation (EU) No 575/2013 for institutions to take into account the actual foreign exchange positions of a CIU, competent authorities shall allow institutions to rely on third party reporting of the trading positions held by a CIU, where the standards for this reporting are similar to the internal standards of the institution and, in particular, where there is a written agreement between the third party and the institution, stating the terms and conditions of the reporting which include both of the following:
  - (a) the third party reports daily all the positions of that particular day;
  - (b) provides for full access by competent authorities to all relevant information of the agreement.
2. Where the requirements established in paragraph 1 are not met, competent authorities shall ensure that the institution uses the standardised approach for any CIU positions.

#### *Article 48*

##### *Assessment of the adequacy of the multiplication factors and reserves proposed by the institution*

1. In order to assess compliance with the requirements on multiplication factors referred to in Article 366 of Regulation (EU) No 575/2013, competent authorities shall verify that the requirements of paragraphs 2, 3 and 4 are met.

2. Competent authorities shall verify that the multiplication factors  $m_c$  and  $m_s$  reflects conservatively at least the following flaws and shortcomings of the VaR and Stressed VaR models related to the risk categories covered by the model scope of application:
  - (a) where, in accordance with Article 366(4) of Regulation (EU) No 575/2013, competent authorities allow the back-testing addend to be calculated based solely on the number of overshootings under hypothetical changes, and back-testing exceptions under actual changes include overshootings caused primarily by intraday activity and new trades, in accordance with Article 40(11);
  - (b) the appropriateness of the distributional assumptions, in accordance with Article 41;
  - (c) any pricing model risk factors omitted from VaR, in accordance with Article 42;
  - (d) the inappropriate capture of nonlinearities in VaR, in accordance with Article 43, including where sensitivities are used to measure the risks for options and warrants whose second-order Taylor series approximations do not capture their underlying risks adequately;
  - (e) the inappropriate or extensive use of proxies, in accordance with Article 44;
  - (f) the partial compliance with the requirements on risks arising from less liquid positions in accordance with Article 45;
  - (g) the partial compliance with the requirements on model correlations, in accordance with Article 46;
  - (h) the partial compliance with the requirements on general risk of debt instruments, in accordance with Article 55;
  - (i) the partial compliance with the requirements on specific risk of debt instruments, in accordance with Article 56;
  - (j) the partial compliance with the requirements on general risk of equity instruments, in accordance with Article 58;
  - (k) the partial compliance with the requirements on specific risk of equity instruments in accordance with Article 59;
  - (l) the partial compliance with the requirements on commodity risk, in accordance with Article 60.
3. Competent authorities shall verify that the Stressed VaR multiplication factor ( $m_s$ ) is not lower than the one applied for VaR ( $m_c$ ).
4. Competent authorities shall assess the appropriateness of the Stressed VaR multiplication factor ( $m_s$ ), taking into account all of the following:
  - (a) any risk factors incorporated in VaR that might be missing from the Stressed VaR methodology, as referred to in Article 52(1), as well as any other simplifications compared with the VaR methodology;

- (b) the inadequacy of the sensitivities used for VaR computation when used for SVaR purposes, as referred to in Article 52(2);
- (c) any VaR enhancements that could not be incorporated to the Stressed VaR methodology, as referred to in Article 52(3);
- (d) the existence of additional proxies that are necessary to compute the Stressed VaR, as referred to in Article 54.

5. Competent authorities shall assess the appropriateness of either multiplication factor  $m_c$  or multiplication factor  $m_s$ , in accordance with both of the following:

- (a) taking into account any reserves computed by the institution to address, totally or partially, any of the flaws and shortcomings referred to in paragraphs 2 to 4;
- (b) they shall review the methodology used by the institution for the calculation of the reserves referred to in point (a), including the frequency of computation.

#### **Explanatory text for consultation purposes**

**Q33: Do you agree with the elements that should be considered when assessing any internal reserves and/or the VaR and SVaR multiplication factors?**

**Q34: Do you agree that the SVaR multiplier should always be the same or higher than the one used for VaR purposes?**

**Q35: Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the VaR section?**

### *Sub-section I* *Additional requirements for Stressed VaR*

#### *Article 49*

##### *Identification of the stressed period to be used in Stressed VaR*

1. In order to assess compliance with Article 365(2) of Regulation (EU) No 575/2013 competent authorities shall verify both of the following:
  - (a) that the historical data used to calibrate the Stressed VaR measure covers a continuous 12-month period;
  - (b) that the 12-months always include a scenario of stress, which may be shorter than 12 months, significant and relevant for the institution's portfolio.

2. Competent authorities shall verify that the risk control unit has developed an appropriate methodology for identifying a stressed period relevant to the material risk factors included in the institution's current portfolios, which shall be determined applying the results obtained from the sensitivity analysis towards single risk factors required to determine the *ad hoc* stress scenarios referred to in point (a) of Article 33(1). They shall verify, in particular, that:
  - (a) where institutions apply a judgement-based approach, they always include quantitative elements of analysis, in addition to expert judgement, justifying the choice made;
  - (b) where institutions apply a formulaic-based approach, that they also include some judgemental elements and that the formulaic elements of the methodology are risk-factor or VaR based;
  - (c) any methodology used provides a conservative capital outcome rather than merely corresponds to the period of highest volatility;
  - (d) any methodology provides evidence that the stressed period is relevant for the institution's current portfolio and that institutions have considered a range of potential historical periods of financial stress in their analyses;
  - (e) no weighting of historical data is applied when determining the relevant historical period or when calibrating the Stressed VaR model.
3. With regard to the application of the stressed period, competent authorities shall verify both of the following:
  - (a) that, where the permission refers to a group, a unique stressed period is used for the whole group;
  - (b) that, where the institution applies different stressed periods within a group, the differentiation is justified on the basis of local market specificities and portfolio composition.

#### *Article 50*

##### *Periodic review of the stressed period*

1. Competent authorities shall verify that the stressed period used to compute the Stressed VaR is reviewed by the risk unit, at least once annually, in accordance with the methodology referred to in Article 49.
2. Where an institution's portfolio is subject to a very high turnover or a frequent change in specific trading strategies, competent authorities shall verify that the identified stressed period is reviewed quarterly.

## *Article 51*

### *Monitoring and exceptional review of the stressed period*

1. Competent authorities shall verify that, in addition to the periodic review referred to in Article 50, the risk control unit has in place documented procedures to ensure that the specified stressed period remains representative on an on-going basis, including when market conditions or portfolio compositions are subject to significant change.
2. For the purposes of paragraph 1, competent authorities shall verify the soundness of the approach and more in particular that the institution monitors all of the following:
  - (a) monitors factors such as changes in market conditions, trading strategies or portfolio composition;
  - (b) monitors the ratio between Stressed VaR and VaR calculated for the days in which the SVaR is computed;
  - (c) assesses whether the ratio referred to in paragraph 2(b) has decreased significantly in comparison to the ratio measured when the stressed period was identified, and that, where the ratio decreases below 1, this event triggers an exceptional review of the stressed period, unless it has been produced by an exceptional spike in volatility affecting VaR.

## *Article 52*

### *Consistency with VaR methodology*

1. Competent authorities shall verify that an institution's stressed VaR methodology is based on the current VaR methodology. In particular, competent authorities shall verify that risk factors included in the VaR model are also reflected in the Stressed VaR model.
2. Competent authorities shall assess whether the use of sensitivities as part of the VaR is also acceptable for the computation of the Stressed VaR measure.
3. Competent authorities shall verify that the risk control unit documents all of the following:
  - (a) exceptional situations where the institution cannot incorporate VaR enhancements to the Stressed VaR methodology;
  - (b) exceptional situations where the institution has introduced simplifications of the VaR methodology into the Stressed VaR methodology;
  - (c) exceptional situations where the institution has not incorporated risk factors included in VaR to the Stressed VaR methodology.



### *Article 53*

#### *Selection of the day or days of the week applied to the Stressed VaR calculation*

1. Where an institution calculates the Stressed VaR less frequently than daily, competent authorities shall verify that the institution has appropriate procedures in place to assess whether, on the day of the week chosen for Stressed VaR calculation, its portfolio is representative of the portfolio held during the week.
2. Competent authorities shall verify that the selection of the day in which the Stressed VaR is calculated does not lead to a systematical underestimation of the Stressed VaR numbers when computed weekly. They shall do so by considering the evolution of the daily VaR metric during the week.

#### **Explanatory text for consultation:**

The purpose of paragraph 2 of Article 53 is to provide competent authorities a tool to assess whether there is any bias in the selection of the day(s) of the week in which SVaR is calculated. In this regard, if the VaR on the day of the week in which positions are taken to calculate the SVaR is generally lower than on the remaining days of the week it may be concluded that there is a 'day selection' bias.

It is worth acknowledging that, apart from the portfolio composition, other factors, such as spikes in volatility levels (in particular for firms using weighting schemes for their VaR calculations) will influence the VaR metric; however, if the levels of VaR on the day(s) selected are consistently located in the low range of the daily observations there would be a strong indication of a selection bias.

### *Article 54*

#### *Estimation of proxies for Stressed VaR*

1. Competent authorities shall verify that the institution reviews the adequacy and conservativeness of the proxies used as part of the VaR methodology for their use in the Stressed VaR.
2. Competent authorities shall verify that the institution assesses whether any additional proxies are specifically required for the Stressed VaR, including proxies of risk factors not present in the historical stress period, in accordance with Article 44(1).

**Explanatory text for consultation purposes**

The requirement to assess the adequacy of the proxies, which are appropriate for VaR, for SVaR purposes was in the 2012 EBA SVaR guidelines. The EBA would like to get feedback on the relevance of this requirement. In this regard, it may be argued that a Proxy that has been validated for VaR purposes should be directly applicable for SVaR, in particular given the requirement that the methodology applied in SVaR should be the same as the one used in VaR. According to this rationale, institutions would have to justify only the use of a different or additional proxy for SVaR, as required in paragraph 2 of this Article.

**Q36: Do stakeholders consider that any proxy validated for VaR should be acceptable for SVaR purposes?**

3. Where different proxies are used in the VaR and Stressed VaR methodologies for the same risk factor, competent authorities shall verify that this difference is justified. Competent authorities shall verify that the risk control unit documents the methodology followed for identifying appropriate proxies for any missing data and that the institution performs tests of the potential impact of the use of these proxies, including the assessment of the materiality of the proxy in risk measure.

**Explanatory text for consultation purposes**

**Q37: Do Stakeholders have any additional comments or concerns regarding the rest of requirements outlined in the Stressed VaR sub-section?**

## *SECTION 5*

### *Particular requirements on risk measurement by risk category*

#### *Article 55*

##### *General risk of debt instruments*

1. Competent authorities shall verify that the model incorporates risk factors corresponding to the interest rate in each currency for all the positions included in the scope of the model which produce interest rate sensitivity.
2. Competent authorities shall verify that all the yield curves per currency which are relevant to the instruments included in the scope of the model are modelled.

3. Competent authorities shall verify that the institution models all the yield curves consistently following a well-established methodology that shall be validated and assessed against alternative methodologies as established in Article 23(2)(a).
4. Competent authorities shall assess the appropriateness of the interpolation methodology, irrespective of whether it is purely linear or it applies some smoothing formula. Further, where the VaR methodology implies the mapping of positions to specific tenors, competent authorities shall assess the appropriateness of the formula applied in that mapping.
5. As required in Article 367(2)(a) of Regulation (EU) No 575/2013 a minimum of six maturity segments shall be captured but competent authorities shall verify both of the following:
  - (a) that institutions capture more tenors for liquid markets;
  - (b) that institutions establish the longest tenor for which liquid reliable data is available, considering market conditions for each one of the currencies modelled.
6. Competent authorities shall verify both of the following:
  - (a) that any extrapolation methodology produces at least the same volatility for the tenors extrapolated than for the longest tenor captured;
  - (b) that the institution assesses the importance of interest rate positions which have been modelled based on purely extrapolated tenors.
7. In order to assess the extent to which basis risk between different yield curves is appropriately reflected in VaR, competent authorities shall review the results obtained for the hypothetical portfolios required under Article 23(2)(f)(i) as part of the validation process.

#### *Article 56*

#### *Specific risk of debt instruments*

1. Competent authorities shall verify both of the following:
  - (a) that VaR models capture appropriately the basis risk between bonds and credit default swaps ('CDS') referencing the same issuer;
  - (b) that the different seniority of the debt instrument positions included in the scope of the model is captured.
2. **[OPTION 1]** Competent authorities shall ensure that the VaR model does not incorporate holdings of own debt instruments of the institution.

[**OPTION 2:** to delete this point altogether]

### **Explanatory text for consultation purposes**

This text would be kept or removed depending on the outcome of the consultation on Own Creditworthiness. See Explanatory Box after the relevant recital.

3. In assessing the compliance with the requirements referred to in paragraph 1, competent authorities shall review in particular:
  - (a) the results of the back-testing aimed at assessing whether specific risk is being accurately captured as referred to in point (b) of Article 23(2);
  - (b) the results obtained for the hypothetical portfolios required according to point (iii) of Article 23(2)(f) as part of the validation process to assess name-related basis risk and basis stemming from similar, but not identical, credit positions;
  - (c) the results obtained for the hypothetical portfolios required according to point (iv) of Article 23(2)(f) as part of the validation process to assess concentration risk for credit positions.
  
4. Where an institution has an IRC model which is compliant with the requirements established in Section 8 of this Regulation, the internal model is deemed to be capturing event risk for debt instruments, as required in point (f) of Article 370 of Regulation (EU) No 575/2013.

### **Explanatory text for consultation purposes**

#### **Treatment of Event risk**

‘Event risk’ is mentioned in point (f) of Article 370 of the CRR as one of the elements that has to be captured when modelling ‘specific risk’ (both for equities and debt instruments), however event risk is not defined, nor mentioned again, anywhere in the rest of the CRR.

The regulatory concept of ‘event risk’ was introduced in the 1996 BCBS Market Risk Amendment, where it was stated that banks’ specific risk models should be able to capture ‘event risk’. What was meant exactly with ‘event risk’ was established in a footnote (n° 5):

“Where the price of an individual debt or equity security moves precipitously relative to the general market, e.g., on a take-over bid or some other shock event; such events would also include the risk of default”.

Thus, according to the 1996 definition, “event risk” was part of “specific risk” and affected both equity and credit positions. However, the BCBS considered that, after the

implementation of the so-called ‘Basel 2.5’ package, the credit component of event risk (e.g. default and migration) was captured by the IRC.

Accordingly, a new footnote (n° 15) was added to paragraph 718 (Lxxxviii) of the text clarifying that banks do not need capture default and migration risks on their VaR specific models for positions subject to the incremental risk capital charge (IRC). So, according to the Basel Framework, for credit positions, VaR specific models do not need to capture event risk anymore.

However, for equity positions (which are not necessarily included in the scope for IRC) VaR models still had to capture event risk, which was redefined (in footnote 20 of the July 2009 regulatory package) as:

“Events that are reflected in large changes or jumps in prices must be captured, e.g. merger break-ups/takeovers. In particular, firms must consider issues related to survivorship bias.”

As mentioned above, the CRR does not differentiate explicitly between event risk for equities and credit. Both equity and credit are covered under Article 370 of the CRR, which includes the requirement to capture ‘event risk’ (without providing any particular definition) as part of the requirements to model ‘specific risk’.

In line with international standards, the EBA understands that there is no need to model event risk in VaR and SVaR for those positions included in the scope of a validated IRC model. This of course includes all positions subject to specific interest rate risk (i.e. credit) but also equity positions in case they have been included in the scope of the IRC model in accordance with Article 373 of the CRR. The rationale for this interpretation would be that event risk is largely, if not entirely, captured already in the IRC. Additionally it aligns the RTS with the international standards produced in Basel.

However, for those equity positions which are not included in the IRC calculation, the RTS establishes that the VaR and SVaR model shall capture ‘event risk’. The requirements for event risk, in line with Basel 2.5, relate entirely to equity risk.

**Q38: Do stakeholders agree with the EBA interpretation regarding the treatment of event risk for credit positions after the implementation of IRC?**

### *Article 57*

#### *Foreign Exchange risk*

1. Competent authorities shall ensure that the end-of-day foreign exchange positions by currency fully reflect all transactions with clients, which have occurred during that day in the non-trading book.
2. Where the integrity of positions in the non-trading book cannot be fully guaranteed, competent authorities may deem compliance of institutions where they rely on a

conservative foreign exchange position estimated per currency, based on an estimation of the largest position stemming from these non-trading book activities over the previous year.

3. Where institutions apply the treatment described in paragraph 2, competent authorities shall verify that the foreign exchange position is added, with the same sign, to the one stemming from trading activities, and that no offsetting between both positions takes place.

### **Explanatory text for consultation purposes**

Market risk capital charges affect FX and commodity positions across the whole Balance Sheet. The daily capture of the FX position stemming from BB activities may be challenging in many occasions, and it may be based on estimations in some cases. Accordingly the EBA is consulting on the possibility of introducing requirements regarding the integrity of these positions.

In addition, the EBA is consulting on the possibility of adding a ‘default’ treatment in case the institution cannot fully guarantee the positions are fully captured at the end of the day. This treatment assumes an ‘add-on’ for the BB position in each currency based on the highest one observed in the BB over the last year.

**Q39: What are stakeholders’ views regarding the capture of the FX position stemming from Banking Book activities and the treatment proposed in the RTS?**

### *Article 58*

#### *General risk of equity instruments*

1. Competent authorities shall verify that the institution captures general equity risk consistently by including in its model at least one risk factor for each of the equity markets in which the relevant institution holds positions.
2. Competent authorities shall assess the appropriateness of the criteria applied to identify each ‘equity market’ and shall ensure more in particular that the criteria allow the distinction of markets subject to different economic conditions.

### *Article 59*

#### *Specific risk of equity instruments*

1. Competent authorities shall verify both of the following:
  - (a) that for the purpose of modelling specific risk in VaR a separate risk factor for each equity is applied;

- (b) that, where proxies and Beta approximations are used, the VaR model reflects the idiosyncratic risk appropriately.
2. When an institution has an IRC model, which is compliant with the requirements established in Section 5 of this Regulation, and, subject to permission by the competent authority, has chosen to include consistently all equity positions in the scope of the IRC in accordance with Article 373 of Regulation (EU) No 575/2013, the model is considered to be capturing event risk for equities and thus, it is compliant with the requirement, established in point (f) of Article 370.
  3. Where equity positions are not included in the IRC model scope, competent authorities shall verify both of the following:
    - (a) that the VaR model appropriately captures the risk stemming from events that are reflected in large changes or jumps in prices including merger break-ups and takeovers;
    - (b) that firms consider the potential risk underestimation stemming from the ‘survivorship bias’ in the VaR calculation.
  4. In assessing the compliance with the requirements referred to in paragraphs 1 to 3, competent authorities shall review in particular all of the following:
    - (a) the results of the back-testing aimed at assessing whether specific risk is being accurately captured according to point (b) of Article 23(2);
    - (b) the results obtained for the hypothetical portfolios required according to point (iii) of Article 23(2)(f) as part of the validation process to assess name-related basis risk and basis stemming from similar, but not identical, equity positions;
    - (c) the results obtained for the hypothetical portfolios required according to point (iv) of Article 23(2)(f) as part of the validation process to assess concentration risk for equity positions.

#### *Article 60*

##### *Commodity risk*

1. Competent authorities shall verify both of the following:
  - (a) that VaR models reflect appropriately the basis risk between similar, but not identical, commodities and the different maturity of the different contracts;
  - (b) that institutions use a separate risk factor for each of the commodities in which the institution holds positions.

2. Where a VaR model uses a single risk factor for groups of positions in similar commodities, competent authorities shall verify that all of the following conditions are met:
  - (a) that this is done only for non-significant positions;
  - (b) that the institution ensures that the missing commodity risk factor is immaterial for VaR calculation purposes;
  - (c) that, as part of the periodic validation process referred to in point (b) of Article 23(1), the institution reassesses the materiality of the missing commodity risk factor.
  
3. In order to assess the extent to which the position risk between similar, but not identical, commodities is appropriately reflected in VaR, competent authorities shall review the results obtained for the hypothetical portfolios required under point (ii) of Article 23(2)(f) as part of the validation process.

## ***SECTION 6***

### ***Requirements for IRC***

#### *Article 61*

#### *Scope, inclusion of equity positions in the IRC scope*

1. For the purposes of Article 2(2), competent authorities shall verify that all of the following conditions are met:
  - (a) that the positions in listed equity and derivatives positions based on listed equity, for which the institution has requested permission to include in the scope of the IRC model, and related credit instruments are jointly managed by identified trading units;
  - (b) that the risk control unit has established and documented procedures, which shall be approved by the management body or the committee designated by it as referred to in point (a) of Article 18(1), to ensure that all listed equity positions and derivatives positions based on listed equity of the relevant trading units are included in the model;
  - (c) the internal audit verifies, as part of the annual review referred to in Article 368(2) of Regulation (EU) No 575/2013, the adequacy of the procedures established by the risk control unit and the integrity of the listed equity positions and derivatives positions based on listed equity included in the scope of the IRC.
  
2. Where all listed equity positions and derivatives positions based on listed equities included in the trading book are requested to be included in the scope of IRC, in accordance with the



second subparagraph of Article 373 of Regulation (EU) No 575/2013, the additional requirements referred to in paragraph 1 will not be applicable.

### *Article 62*

#### *Calculation of IRC at consolidated level*

1. When calculating the capital requirements at consolidated or sub-consolidated level competent authorities shall authorize institutions to compute a single IRC capital charge for all positions held in those institutions or undertakings, included in the scope of application of the internal model, that meet the requirements established in Article 36(2) for VaR and SVaR calculations.
2. Competent authorities shall ensure that institutions calculate the consolidated IRC as the simple sum of individual IRC calculations performed at sub-consolidated, or individual, level for those institutions or undertakings where the conditions established in paragraph 1 are not met.

### *Article 63*

#### *IRC modelling assumptions*

1. Competent authorities shall verify that the methodology used applies either a constant level of risk over the one-year time horizon or, consistently for all IRC instruments, a one-year constant position assumption.
2. Where the methodology used applies a constant level of risk over the one-year time horizon, competent authorities shall, in particular, verify that:
  - (a) institutions have determined for all IRC instruments liquidity horizons in accordance with Article 67;
  - (b) institutions have determined transition matrices over the one-year time horizon and the relevant liquidity horizons in accordance with Articles 65 and 66;
  - (c) institutions rebalance positions at the end of each liquidity horizon in order to attain the initial level of risk;
  - (d) when modelling the impact of correlations between default and migration events, institutions meet the requirements laid down in Article 69;
  - (e) when computing losses due to default and rating migrations at the 99,9% confidence interval over the relevant liquidity horizons and the one-year time horizon, institutions either revalue their positions as of the date of computation of the IRC risk charge and based on the latest available market data at that date or, where they are able to model

the ageing of positions over the liquidity horizon, comply with all of the following additional requirements:

- (i) they ensure that the model specifies the forecasting distribution for changes in the market value of IRC instruments, including any listed equity positions and derivatives positions based on listed equity included in the IRC scope in accordance with Article 61, which are attributable to changes in credit spreads other than changes resulting from rating migrations and defaults;
- (ii) they ensure that the model captures non-linearity and the characteristics of path dependent instruments over the liquidity horizon;
- (iii) they model all cash flows attached to IRC instruments, including coupon payments and, where relevant, dividend payments over the liquidity horizon, as well as all funding costs related to IRC instruments, in particular where positions are hedged via dynamic hedging strategies;
- (vi) they model the timing of default, the impact of the risks that could occur during the interval between the hedge's maturity and the liquidity horizon, as well as the potential for significant basis risks in hedging strategies.

#### **Explanatory text for consultation purposes**

This Article clarifies the modelling options available for IRC in line with the guidance provided in the EBA Guidelines on IRC.

Institutions should apply a constant level of risk over the one-year time horizon, whereby institutions determine for all IRC instruments appropriate liquidity horizons and rebalance their portfolio at the end of each liquidity horizon in order to attain the initial level of risk. Under the constant level of risk assumption, two possibilities are available for the computation of the P&L reflecting migrations and default that occurred during the liquidity horizon:

On a general basis, institutions should compute the P&L 'as of today' thus applying an instantaneous shock. This is broadly equivalent to applying a constant position assumption over the liquidity horizon, whereby at the start of a new liquidity horizon, the portfolio is rebalanced to the initial portfolio

Provided additional requirements are met, institutions could be permitted to reflect in the P&L computation the ageing of positions.

Alternatively, institutions have the choice to apply a one-year constant position assumption

**Q40: Do Stakeholders consider appropriate the requirements established in this Article regarding the constant level of risk and constant position assumptions?**

3. Where the methodology used applies a one-year constant position assumption, competent authorities shall, in particular, verify that:
  - (a) institutions do not apply liquidity horizons;
  - (b) institutions have determined migration matrices over the one-year time horizon in accordance with Article 65;
  - (c) where computing losses due to default and rating migrations at the 99,9% confidence interval over the one-year time horizon, institutions revalue their positions as of the date of computation of the IRC risk charge and based on the latest available market data at that date.
4. Irrespective of the methodology applied by institutions competent authorities shall ensure that:
  - (a) in order to capture basis risk appropriately, institutions only offset long and short positions when those positions refer to strictly identical financial instruments and that the valuation for the purposes of the IRC computation for related but not identical positions is differentiated;
  - (b) diversification or hedging effects are not overestimated, in particular that maturity mismatches between long and short positions occurring within the liquidity horizon are reflected in the models and are not material for their portfolio.

#### *Article 64*

##### *Source of ratings*

1. Competent authorities shall verify all of the following:
  - (a) that the risk control unit has documented a hierarchy of sources of ratings for determining the rating of an individual position;
  - (b) that, where an IRC model uses different sources of ratings the risk control unit consistently maps the ratings into a common Masterscale;
  - (c) that the risk control unit has assessed the risk homogeneity of positions assigned to each one of the grades of the rating Masterscale referred to in point (b).

#### **Explanatory text for consultation purposes**

The IRC guidelines incorporated the requirement that any hierarchy should prioritise the use of IRB PDs as well as PDs derived internally following an IRB-like standard. When this requirement was introduced, Directive 2010/76/EU established that the IRC model had to

meet a 'soundness standard comparable' to IRB. However this 'comparable to an IRB standard' requirement has not been kept in the CRR text.

In this context the EBA has not incorporated this 'IRB preference' to the RTS text, and would like to get feedback regarding the relevance of keeping this preference for IRB PDs in the RTS or updated guidelines.

**Q41: Do stakeholders agree that internally-derived ratings shall be prioritised for IRC?**

**Q42: Do you consider that PDs derived from spreads or external ratings are more appropriate for IRC modelling than those internally-derived?**

2. Where no internal or external ratings are available competent authorities shall verify all of the following in relation to the procedures established by the risk control unit for inferring ratings:
  - (a) that the risk control unit establishes a maximum size permitted for the individual positions with inferred ratings;
  - (b) that the risk control unit assesses the materiality of the positions with an inferred rating in the overall IRC calculation, at least quarterly.
3. Competent authorities shall verify that the effect of positions with inferred ratings in the IRC charge is appropriately assessed by the risk control unit, in accordance with paragraph 2, and that, where the effect of these positions is significant, appropriate measures are taken to mitigate the risk stemming from those positions.

### *Article 65*

#### *Transition matrices*

1. Competent authorities shall ensure that the transition matrices used for modelling the rating migration process are based on sufficiently long historical migration data series obtained from internal or external sources.
2. Regardless of the source of data used to establish the transition matrices, competent authorities shall verify that the risk control unit ensures that the historical migration data is sufficiently long to derive robust, accurate and statistically consistent estimates. In particular, the risk control unit shall assess the robustness of transition matrices for higher rating categories, where a few severe downgrades or defaults can affect the migration frequency significantly.

3. Competent authorities shall verify that the transition matrices over the one year capital horizon are appropriately derived from the longer historical migration data series referred to in Paragraph 1 and their conservatism is tested against other empirical data. In particular, competent authorities shall verify that the transition matrices over the one year capital horizon reflect the portfolio of IRC instruments of the institution in accordance with point (a) of Article 376(3) of Regulation (EU) No 575/2013 and that, depending on the size and complexity of the portfolio of positions, separate transition matrices are applied for specific groups of issuers and specific geographical areas, and that the IRC model contemplates at least one transition matrix specific to sovereign positions.
4. Competent authorities shall verify that one-year PDs are higher than zero.

#### **Explanatory text for consultation purposes**

It is known that the modelling of so-called ‘low default portfolios’ under the IRB framework is challenging due to the scarcity of data and observations. Of course, these challenges are also present when modelling IRC. The CRR explicitly requests in Article 373 that IRC models cover positions ‘subject to a 0% specific risk capital charge’ under the standardised rules, which obviously include these ‘low default’ positions.

In this context, the EBA considers that zero PDs are not acceptable for IRC, this may be needed both to ensure that a minimum capital is held for all exposures subject to IRC requirements and to partially address the modelling issues posed by these positions.

#### **Q43: Do stakeholders agree with the exclusion of zero PDs for IRC?**

#### *Article 66*

#### *Transformation of PDs and transition matrices resulting from the application of liquidity horizons*

1. Where in accordance with Article 63(1) the IRC model applies a constant level of risk, competent authorities shall verify that the risk control unit has developed a methodology to transform both of the following to fit the relevant liquidity horizon:
  - (a) the one-year PDs assigned to each of the grades in the rating Masterscale;
  - (b) the one-year transition matrices, determined in accordance with Article 65.
2. Competent authorities shall assess whether the transition matrix used over the liquidity horizon, when transformed back to the one year capital horizon, is consistent with the original one year transition matrix.

## *Article 67*

### *Estimation of liquidity horizons*

1. Competent authorities shall verify that the criteria established by the risk control unit to determine the relevant liquidity horizon applicable for a position or set of positions are documented and applied consistently for all positions.
2. Competent authorities shall verify that the risk control unit establishes the criteria to determine the liquidity based on past experience, and that the criteria applied is directly linked to the concentrated nature of positions, including at least all of the following:
  - (a) market activity, as reflected in number and volume of trades in an instrument or name, or in the size of historical bid-offer spreads;
  - (b) market structure, including the number of market makers and available quotes;
  - (c) size of position relative to average trading volumes or overall market size;
3. Competent authorities shall verify that where other criteria, including the investment quality of the instrument, the geographical location of the issuer or the instrument's maturity, are also considered, the risk control unit monitors and enhances the range of factors used to identify liquidity horizons based on historical market experience.
4. Competent authorities shall ensure that the risk control unit assesses systematically all positions against the criteria chosen and allocates them to the appropriate liquidity horizons.
5. Competent authorities shall ensure that, where limited data is available on a position or set of positions, institutions are conservative in determining the relevant liquidity horizon.

## *Article 68*

### *Monitoring and review of liquidity horizons*

Competent authorities shall verify all of the following:

- (a) that the risk control unit monitors the appropriateness of the liquidity horizons;
- (b) that the risk control unit establishes and documents a set of triggers that might lead to a review of the relevant liquidity horizon to ensure they remain appropriate, including in relation to events or any significant indicators that liquidity conditions have changed in a market, reflecting the possibility for the liquidity of markets to change rapidly as market participants enter and exit asset classes;

- (c) that the risk control unit reviews the adequacy of the factors used to determine the liquidity horizon, as referred to in Article 67(2) at least annually.

### *Article 69*

#### *Dependency structure*

1. Competent authorities shall verify that the IRC model reflects the impact of correlations of default and migration events and that the modelling approach is appropriate for the institution's portfolio and the one year time horizon.
2. Where interdependence between issuers is modelled using a combination of an idiosyncratic and several systemic risk factors including in the case of multi-factor asset return model, competent authorities shall verify all of the following:
  - (a) that the number and type of systemic factors retained reflect the institution's portfolio, including where it includes sovereign positions, and that those factors retained capture most relevant systemic effects;
  - (b) that the risk control unit has assessed the relevance and impact of different copula candidates, and has justified and documented the final choice made;
  - (c) that the correlations between single issuers and systemic risk factors are appropriately derived, and that in the absence of data proxy correlations, they are appropriately justified and documented.

### *Article 70*

#### *Establishment of distribution of losses over the time horizon*

1. Competent authorities shall assess how, for a given simulation, simulated rating migrations and defaults are converted into changes in the portfolio's value.
2. In the case of rating migrations, competent authorities shall assess how rating migrations are converted into variations of spreads by verifying all of the following:
  - (a) that the spread data is sufficiently differentiated by broad types of issuers;
  - (b) where correspondence tables between ratings and average spreads by rating class are used, that the tables are subject to at least quarterly update by the risk control unit.
3. In the case of default, competent authorities shall verify all of the following:

- (a) that the losses are computed using relevant recovery rates or LGDs;
  - (b) that LGDs used are differentiated according to the seniority of the underlying positions;
  - (c) that recovery rates or LGDs used for this purpose are updated at a frequency which is consistent with the frequency of the calculation of the IRC.
  - (d) that LGDs used in IRC distinguish between seniority of the underlying positions, and one of the following:
    - (i) where ratings are based in IRB standards, that the LGD is consistent;
    - (ii) where external ratings are used, that a market convention LGD is used.
4. **[OPTION 1]** When determining the losses due to default, institutions shall consider any valuation gains or losses reflected in the market valuation of the instrument at the time of default.

**[OPTION 2]** – no text]

#### **Explanatory text for consultation purposes**

The EBA is consulting on the possibility of considering not the principal of the instrument, but its market value (which may be reflecting valuation gains or losses) when determining the losses produced by a default event.

It may be argued that the market valuation of an instrument might be reflecting the losses due to migration of the issuer and the final step is a ‘migration to default’, so only those additional losses due to this event should be computed. On the other hand, computing losses based on the principal of the instrument is generally conservative (though not in case an instrument has been valued above its principal) and is simpler to implement in a consistent way.

**Q44: Do stakeholders consider that losses due to default should be based on the market value or the instrument’s principal?**

5. For the computation of P&L losses, competent authorities shall verify that institutions comply with either of the following:
- (a) they revalue their positions as of the date of computation of the IRC risk charge and based on the latest available market data at that date;
  - (b) where they are able to model the ageing of positions over the liquidity horizon, that they comply with the additional requirements of point (e) of Article 63(2) .



6. Competent authorities shall verify that the institution can justify an appropriate number of Monte Carlo simulations based on relevant tests of convergence, in particular when assessing whether the number of simulations is well justified and convergence is achieved within a conservative simulation error, compared with a higher number of simulations that the risk control unit verifies both of the following:
- (a) that the random number sequences are produced performing statistical tests that at least assess the autocorrelation, the repeating patterns and the probability distribution;
  - (b) the use of variance reduction methods does not increase the simulation error.

#### *Article 71*

##### *Adequacy of reserves proposed by the institution*

1. Competent authorities shall assess the adequacy of any reserves computed by the institution to address, totally or partially, any flaws and shortcomings of the IRC methodology as well as any elements of the methodology that might be partially compliant with the requirements included in this Section.
2. Competent authorities shall review the methodology used by the institution for the calculation of the reserves referred to in paragraph 1, including the frequency of computation.

#### *Article 72*

##### *Selection of the day or days of the week applied for the IRC calculation*

Where, in accordance with Article 374(1) of Regulation (EU) No 575/2013, an institution calculates IRC less frequently than daily, competent authorities shall verify that the institution calculates the IRC at least weekly and that it has procedures in place to ensure that, on the day of the week chosen for IRC calculation, its portfolio is representative of the portfolio held during the week.

#### **Explanatory text for consultation purposes**

**Q45: Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the IRC section?**

**SECTION 7**  
***Requirements for correlation trading internal models***

*Article 73*

*Calculation of the capital requirements for correlation trading at consolidated level*

1. When calculating the capital requirements at consolidated or sub consolidated level competent authorities shall authorize institutions to compute a single capital charge for all correlation trading positions held in those institutions or undertakings, included in the scope of application of the internal model, that meet the requirements established in Article 36(2) for VaR and SVaR calculations.
2. Competent authorities shall ensure that institutions calculate the consolidated capital charge for the correlation trading model as the simple sum of individual and segregated calculations performed at sub-consolidated, or individual, level for those institutions or undertakings where the conditions established in paragraph 1 are not met.

*Article 74*

*Conditions for the inclusion of positions in the correlation trading portfolio*

1. Competent Authorities shall verify that the risk control unit establishes and documents the policies and procedures to ensure that positions included in the scope of the correlation trading model fulfill the requirements established in Article 338 of Regulation (EU) No 575/2013.
2. Competent Authorities shall verify that the risk control unit establishes and documents the policies and procedures to ensure an adequate segregation between positions that are eligible for the correlation trading model and positions that are not eligible.
3. In the course of the assessment referred to in paragraphs 1 and 2, competent authorities shall verify, in particular, that all of the following conditions are met:
  - (a) the risk control unit evaluates the existence of a liquid two-way market for single-name credit derivatives, in accordance with Article 338(1) of Regulation (EU) No 575/2013, at least quarterly, considering appropriate available data;
  - (b) all the positions included in the correlation trading portfolio are jointly managed by identified trading units;
  - (c) the procedures referred to in paragraph 2 have been approved by the management body or the committee designated by it as referred to in point (a) of Article 18(1);

- (d) the internal audit verifies, as part of the annual review referred to in Article 368(2) of Regulation (EU) No 575/2013, the adequacy of the procedures established by the risk control unit and the integrity of the positions included in the scope of the correlation trading portfolio.

### *Article 75*

#### Methodology

1. Competent authorities shall verify that the internal model for correlation trading models the risk factors in an appropriate manner and in particular that all of the following conditions are met:
    - (a) that the stochastic processes are appropriate;
    - (b) the modelling of default and migration risks takes into account the particular risks of tranching products stemming from multiple defaults and ordering of defaults;
    - (c) the modelling of risk factors corresponds to the dynamics of the observed values;
    - (d) the modelling of the interdependence structure meets all of the following conditions:
      - (i) the assumptions on which their estimation is based is consistent with the assumptions used in the simulation;
      - (ii) where, for the purposes of describing the interdependence between risk factors, an institution selects possible copula candidates according to its ability to explain historical data, the choice of a particular copula is justified and documented;
      - (iii) the volatility of implied correlations is captured in accordance with point (c) of Article 377(3) of Regulation (EU) No 575/2013;
      - (iv) where constant correlation assumptions are used, their use is duly justified;
    - (e) the basis risk between the spreads of indices and single names as well as between the implied correlation of indices and bespoke portfolios is modelled using separate risk factors for each of them or applying an *ad hoc* factor to capture the basis.
  2. Where the internal model applies liquidity horizons shorter than the one year capital horizon, competent authorities shall verify that the model meets all the conditions laid down in Articles 67 and 68.
  3. Competent authorities shall verify both of the following:
    - (a) that institutions which do not apply full revaluation in order to revalue all positions included in the correlation trading portfolio capture all material non-linear dependencies;
-

- (b) that the revaluation methods used in the model for correlation trading do not incorporate excessive simplifications and are an approximation of the front-office models.
4. When assessing the performance of the model, competent authorities shall compare the model outcome with the losses stemming from the set of specific, predetermined stressed scenarios developed by the risk control unit, in accordance with Article 32(3).

#### *Article 76*

##### *Adequacy of reserves proposed by the institution*

1. Competent authorities shall assess the adequacy of any reserves computed by the institution to address, totally or partially, any flaws and shortcomings of the methodology applied for the correlation trading internal model as well as any elements of the methodology that might be partially compliant with the requirements included in this Section.
2. Competent authorities shall review the methodology used by the institution for the calculation of the reserves referred to in paragraph 1, including the frequency of computation.

#### *Article 77*

##### *Application of the regulatory floor*

In order to verify that the regulatory floor established in point (c) of Article 364(3) of Regulation (EU) No 575/2013 is calculated in accordance with Articles 337 and 338 of that Regulation, competent authorities shall assess the appropriateness of PDs and LGDs estimates derived from an IRC approach as inputs to the Supervisory Formula in accordance with Article 337(2) of that Regulation.

#### *Article 78*

##### *Selection of the day(s) of the week applied for the calculation*

Where, in accordance with Article 377(2) of Regulation (EU) No 575/2013, institutions calculate the requirements for the correlation trading portfolio less frequently than daily, competent authorities shall verify both of the following:

- (a) that institutions compute the requirements for the correlation trading portfolio at least weekly;

- (b) that institutions have procedures in place to ensure that on the day of the week chosen for the calculation, their portfolio is representative of the portfolio held during the week.

**Explanatory text for consultation purposes**

**Q46: Do Stakeholders have comments or concerns regarding the requirements outlined in the correlation trading section?**

*Article 79*

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the Commission  
The President*

*[For the Commission  
On behalf of the President*

*[Position]*

## 5. Accompanying documents

---

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

#### Introduction

---

Article 363(4) of the CRR contains three mandates for the EBA to develop Regulatory Technical Standards (RTS) on: (i) the conditions for assessing materiality of extensions and changes to use market internal models; (ii) the assessment methodology under which competent authorities (CA) permit institutions to use internal models, and (iii) the assessment of what is a 'significant share' of the positions to be included in an internal model, computed for each one of the market risk categories referred in paragraph 1 of the article.

The first of the three mandates has already been completed. On 4 July 2014 the EBA published the RTS on Model Changes and extensions, which were adopted by the Commission on 4 of March 2015. These RTS cover the other two mandates included on article 363(4), i.e. the assessment of significance of the positions to be included in the scope of the internal model by each one of the risk categories listed in article 363(1) as well as the assessment methodology under which CA permit institutions to use internal models.

As per Article 10(1) of the EBA regulation (Regulation (EU) No 1093/2010 of the European Parliament and of the Council), any RTS developed by the EBA – when submitted to the EU Commission for adoption - shall be accompanied by an Impact Assessment (IA) annex which analyses 'the potential related costs and benefits'. Such annex shall provide the reader with an overview of the findings as regards the problem identification, the options identified to remove the problem and their potential impacts.

This annex presents the IA with cost-benefit analysis of the provisions included in the RTS described in the present Consultation Paper.

## EBA questionnaire and additional survey

---

The draft CP RTS covers all 'internal models' for market risk, which, in addition to VaR, includes SVaR, IRC and correlation trading portfolio (CTP) models. In this context, it is worth reminding that the EBA already issued guidelines (GL), under CRD III mandate, on IRC and SVaR (both of them published on 16 May 2012). Those guidelines cover all significant aspects of both modelling standards and have been adopted by all EU Member States (MS), except Poland and Estonia.

Accordingly, those guidelines constituted the starting point to develop the legal requirements to be included in these RTS; at the same time, articles 365 and 372 of the CRR incorporate the requirement for the EBA to issue guidelines on SVaR and IRC, without establishing a specific deadline in neither case.

Taking into consideration the need to reconcile the RTS and Guidelines mandates, the explicit reference to the 'monitoring' of practices for the SVaR mandate included in Article 365(2), as well as the time that has passed since the guidelines were originally issued, it was decided to conduct a 'stock-taking' exercise, in order to gather information on the practical implementation of the existing guidelines and any other market developments related to SVaR and IRC.

To this end, a questionnaire was elaborated to collect high-level information on the implementation of VaR, SVaR and IRC methodologies across credit institutions in the EU. That questionnaire was completed on a volunteer and best-effort basis by all MS with credit institutions applying market internal models for the purpose of calculating capital requirements. That questionnaire has been completed by AT, BE, CZ, DE, DK, EL, ES, FR, IT, NL, PT, SE and UK.

That information has been used to modify or directly 'upgrade' any element of the existing guidelines as part of CA's assessment methodology in the RTS and, subsequently, to be able to update and re-issue the guidelines covering only those parts that have not been incorporated in these RTS. In addition, it has provided useful input for this IA section.

In this regard, the EBA has considered the convenience of harmonising certain aspects of internal models. To this end the CP establishes common criteria for a number of elements that, according to the questionnaire on practice, are not fully common, such as:

- 250 days at a minimum to calculate the VaR (few banks used less than 250 days)
- Common set of requirements to allow a single VaR calculation to be performed at consolidated level, including in particular the situation where the group includes several entities and/or units working in different time zones.
- Common definitions applied for the two P&L definitions used for back-testing purposes in accordance with article 366 of the CRR
- The use of antithetic data to determine the stressed period for SVaR is not allowed



- Emphasise the importance of quantitative criteria (vs qualitative) when determining the stressed period
- Establishment of additional requirements to avoid possibility of cherry picking in the selection of the computation day for SVaR, IRC and CTP models
- Clarification and distinction between the constant level of risk and constant position for IRC
- Common masterscale of ratings to be applied. Consistency between PDs and transition matrices. Explicit recognition that external transition matrices will be needed
- Definition of specific additional requirements for modelling of ageing of positions in IRC (which was discouraged under existing guidelines due to lack of modelling consensus and potential misuse)
- Full revaluation of the positions included in correlation trading is not a prerequisite for modelling, though it is the RTS preferred approach.

Another element considered when drafting the CP has been the overall policy direction, which has been followed by the Basel Committee on Banking Supervision (BCBS) in the Fundamental Review of the Trading book (FRTB). The EBA objective is to introduce those elements that can be implemented within the CRR legal setting, which are included in or go in the direction of, the Basel review, such as:

- Establishment of VaR limits as well as back-testing requirements at a higher level of disaggregation than the 'top of the house' VaR
- Proposal to exclude the use of zero PDs for modelling purposes for all positions included in IRC, also due to lack of modelling data for Low Default Portfolios
- Clarification that modelling event risk in VaR should be applicable only for equity positions (Debt instruments captured via IRC)

In addition, for this IA, the EBA prepared a qualitative survey for CA. The qualitative survey aimed to collect data and information on the baseline and the expected costs and benefits of the draft RTS for the banking industry and supervisors. The section of the survey that is related to the baseline aims to indicate the level of current practices in each member state in relation to the draft RTS. Precisely, the survey collected information on the current practices against each chapter of the draft RTS to understand the extent to which the current practices overlap with the standards to be introduced under the draft RTS.

Secondly, the section of the survey that is related to the expected costs and benefits of the draft RTS aims to capture a negative correlation between the current practice and the potential costs and benefits of the draft RTS. In other words, if the current practice in a MS is very similar to the standards to be introduced under the draft RTS, the corresponding costs for credit institutions and CA in that MS are expected to be negligible and the benefits may be negligible or greater due





to positive externalities<sup>12</sup>. The presentation of the baseline and the analysis of the costs and benefits are based on the responses to the survey.

A total of 14 MS<sup>13</sup> responded to the survey. According to EBA's aggregate banking sector statistics, these MS account for more than 70% of the credit institutions resident in the EU<sup>14</sup>. The coverage in terms of their share of the European banking sector's total asset is more than 86 %.

## Problem definition

---

Under the current regulatory framework there are no common standards to assess the compliance of institutions with the requirements to use the Internal Model Approach (IMA). The criteria and procedures that the CAs may use in their assessment vary across jurisdictions.

The lack of common standards for the assessment of the IMA may lead to:

- uneven playing field: two institutions located in two different jurisdictions, can be treated differently if the conditions for the assessment of market risk internal models are not consistent between jurisdictions,
- regulatory arbitrage: institutions may have large leeway to decide on a specific model and related assumptions that are not necessarily prudent. In certain cases, the objective of the institution may be to reduce the own funds requirements rather than deciding on an appropriate level of capital, and
- differences in supervisory practices: asymmetric information and lack of comparability in home-host coordination when authorities handle cross-border cases.

At the larger scale, such problems in the regulatory framework may prevent the effective and efficient functioning of the EU banking sector as well as the Internal Market.

## Policy objectives

---

At high level, these RTS are drafted to contribute to promoting the convergence of banking supervisory practices in the EU as well as to safeguarding the integrity, efficiency and orderly functioning of the European banking sector and the EU Internal Market more generally.

---

<sup>12</sup> Although the current practice is 'fully compliant', i.e. overlaps with the draft RTS, the benefits for the MS may be great due to positive externalities. This largely depends on the level of practices in other EU MS.

<sup>13</sup> These are AT, CZ, DE, DK, EL, FR, HR, IT, LV, NL, PT, SE, ES and UK.

<sup>14</sup> <http://www.eba.europa.eu/supervisory-convergence/supervisory-disclosure/aggregate-statistical-data>



More specifically, the objective of these draft RTS is to establish a harmonised regulatory framework by introducing a set of criteria and methods that CAs have to use in the assessment of the IMA for which institutions request permission for the purpose of market risk own funds requirements calculation.

The policy intervention is expected to provide CAs with more information in terms of benchmarking and cross-jurisdiction comparison when they assess the robustness, consistency and accuracy of the rating systems used by the institutions.

## Baseline scenario

---

According to EBA's aggregate banking sector statistics, own funds requirements for market risk represent less than 5 % total own funds requirements in the large majority of MS. Only for individual MS, this share is above 10 %. According to a survey conducted by the EBA in 2015, there are currently around 66 banks using internal models for the purpose of calculating capital requirements for market risk.

As regards VaR methodology, a clear majority applies Historical Simulation (46 of 66, 70%), 10 banks apply Montecarlo (15%), 8 Parametric (12%) and the remaining 2 (3%) apply a combination of the three methodologies.

Regarding the risk categories contemplated in Article 363 of the CRR, all firms but one were authorised to model general interest rate risk, while FX (60) and general equity risks (57) are the categories most widely applied. All institutions applying internal models for specific equity (44) and credit (36) risks are authorised to model general risk. Last, commodities (36 banks) and, in particular correlation trading models with just 12 firms across the EU are the approaches least commonly used.

Risk category		Number of Banks
Equity Risk	general	57
	specific	44
Interest Rate Risk	general	65
	specific	36
	IRC	35
FX		60
Commodity		36
Correlation Trading		12



According to EBA's aggregate banking sector statistics, internal model calculations account for more than one quarter of banks' total own funds requirements for market risk in 14 MS.

In addition, the dedicated survey that the EBA conducted show that the number of market models is relatively low compared with IRB ones; however it is still significant, in particular in certain MS such as FR, DE and the UK. Therefore, these RTS are expected to have the greatest impact on these MS in absolute terms. These three MS have a share of about 50% of total number of IMA models in Europe.

The table below shows that the majority of MS does currently not have national rules in place concerning the issues addressed by the requirements contained in these RTS. For the assessment of significance, almost none of the responding MS has currently any corresponding requirement in place. Regarding the requirements concerning the assessment of internal models for market risk, at the overall level around two thirds of the responding MS lack relevant provisions in their national legal frameworks.

Very few MS responded having implemented legal requirements on national level for the assessment of CTP models and between two and four MS having implemented some kind of requirements for the assessment of VaR, SVaR and IRC models. Only for the assessment of common governance, more than half of the responding MS indicated to have requirements in place at national level. Most of those requirements are public and binding, four MS consider them fully compliant with the requirements contained in these draft RTS. To sum up, based on the results from the EBA questionnaire the requirements contained in these draft RTS are a novelty for most MS.

**Part A: Consistency**

Requirements	A.i. Do you have national rules on the following?	A.ii. If your answer to question A.i is yes, what is the form of that rule?			A.iii. If your answer to question A.i is yes, rate the overall level of compliance of these rules with draft RTS			
	<i>no</i>	<i>public and binding</i>	<i>public and non binding</i>	<i>non pub lic</i>	<i>fully complie d</i>	<i>mostly complie d</i>	<i>partially complied</i>	<i>not complie d</i>
1. Assessment of Significance (article 363(4)(a) of the CRR)	12	0	0	0	0	0	0	0
2. Assessment of the internal model, common governance requirements	5	5	0	0	4	1	1	0
3. Assessment of the internal model, VaR	7	1	0	2	2	1	2	0
4. Assessment of the internal model, Stressed VaR	9	2	1	0	1	2	1	0
5. Assessment of the internal model, IRC	8	2	0	0	1	2	1	0
6. Assessment of the internal model, Correlation Trading	11	0	0	1	1	0	0	0

## Assessment of the technical options

---

### Technical options

#### Options related to governance and validation

##### Independence of the validation function

**Option 1a:** No specific independence requirement

**Option 1b:** Specification of the independence of the validation function on the basis of proportionality principle

**Option 1c:** Specification of independence requirements in terms of staff, organisational unit and reporting lines up to the level of management board

#### Options related to back-testing

##### Inclusion of (all) risk categories in the hypothetical P&L calculation used for back-testing

**Option 2a:** Inclusion of P&L stemming from all risk categories

**Option 2b:** Inclusion of P&L stemming only from the risk categories included in the scope of the model

#### Options related to own creditworthiness

##### Inclusion / exclusion of own creditworthiness in the scope of the model

**Option 3a:** Exclusion both from Specific VaR and IRC

**Option 3b:** Inclusion for Specific VaR and only migration risk for the IRC calculation

**Option 3c:** Inclusion only for indirect positions (i.e. only those held via an index)

### Assessment of the technical options and the preferred options

#### Independence of the validation function

Current regulatory framework does not provide clear criteria for the independence of the validation process, leaving room for various interpretations. No requirement for independence of validation function in these draft RTS (option 1a) means that the setup of the validation function would remain unchanged, with significant differences across jurisdictions in terms of supervisory expectations. Such flexibility could allow better adjustment of the setup of the validation function



to the needs and complexity of the institution. However, in the cases where the framework fails to achieve independence from the risk control unit, the quality of the IMA methodology may decrease due to the lack of objective assessment of the models. In addition, the option 1a is not expected to address the identified problems and achieve the policy objectives.

Option 1c introduces full independence for all institutions in terms of staff, organisational unit and reporting lines up to the level of management board. Full independence is expected to ensure objective review of the models and therefore constant improvements of the models by addressing identified weaknesses. However, one major argument against this option is that it does not respect the concept of proportionality. Full independence requirement may be disproportionately burdensome for small institutions because the qualified staff for units should operate separately.

These RTS propose that the independence of the validation function based on the proportionality principle (option 1b) is the optimum level of requirement: it finds a balance between sufficient level of independence and proportionality. Depending on the size and complexity of the trading activities of a firm, the degree of independence should increase.

Given these arguments, option 1b is selected as the preferred option.

#### Inclusion of (all) risk categories in the hypothetical P&L calculation used for back-testing

The EBA is considering for consultation two possible P&L computations for the 'hypothetical' back-testing: (option 2b) incorporating only the P&L stemming from the risk categories included in the scope of the model and (option 2a) incorporating the P&L stemming from all the risk categories independently of whether they are included in the scope of the model or not.

The rationale for option 2b would be to apply the 'hypothetical' back-testing as a 'pure' statistical test of the adequacy of the model. In this regard, it is clear that the model cannot capture the risk stemming from risk factors that are not included in the scope of the risk metric calculation.

However this may not always be appropriate, under option 2a the regulatory back-testing would ensure that the requirement of Article 367(1) of the CRR ('(...) the model shall capture accurately all material price risks; (...)') is adequately tested, ultimately leading to the inclusion of a larger set of risk factors if they prove to be material. This alternative would also ensure that the unexplained part of the hypothetical P&L is included in the regulatory back-testing and would finally foster the reliability and validity of the model used for reporting relevant risk exposures to the senior management.

Both options seem plausible and present advantages and disadvantages, accordingly, this issue should be decided after gathering enough evidence during the consultation of the RTS.

### Inclusion / exclusion of own creditworthiness in the scope of the model

Article 33 of the CRR ‘filters out’ any gains or losses on liabilities and on derivative liabilities of the institution that result from changes in the institution’s own credit standing are not included in any element of the own funds, while Article 327 establishes that institutions’ holdings of their own debt instruments shall be disregarded in calculating specific risk own funds requirements under the standardised approach. In contrast, the CRR remains silent on the treatment of own credit standing under the IMA, though Article 367(1) of the CRR requires that internal models capture ‘all material price risks’ which would incorporate

Considering the lack of clarity of the CRR, the EBA is considering for consultation two possible interpretations regarding the treatment of own credit risk for internal model purposes.

- option 3a) Ignore these positions for the specific VaR, SVaR and IRC capital charges.
- option 3b) Fully include them for specific VaR and the migration component of IRC.

The option 3b is also in line with the EBA existing IRC Guidelines, whereby long and short positions in an institution’s own debt should be included for migration risk purposes within the scope of the IRC model, while the default risk of short positions in own debt should not be modelled. In addition it seems to reflect banks’ current practice for IRC purposes.

A total exclusion of own credit positions (option 3a) would imply the need that, for back-testing purposes, any effect in P&L would also be cleaned from the valuation daily changes applied. Finally, the capture or exclusion of an institution’s own creditworthiness may also raise boundary issues, since it may be unclear whether, for specific risk purposes, only ‘direct’ positions in own debt instruments should be excluded or also ‘indirect’ positions should be excluded (e.g. positions which may arise from the inclusion in the trading book of structured bonds or indices referencing the institution’s own name).

If under exclusion of own credit position from the specific VaR, SVaR and IRC capital calculations, ‘indirect’ positions were maintained inside the model we would effectively end up with a third possibility (partial ‘filtering’). This option 3c might exacerbate the technical difficulties of filtering out only part of the risk and P&L.

The options 3a and 3b seem plausible and present advantages and disadvantages, option 3c is more complex and seems to be more difficult to implement. Accordingly, the decision of which one of options 3a and 3b has to be selected should be taken after gathering enough evidence during the consultation of the RTS.

## Analysis of the overall costs and benefits

The qualitative survey asked the CAs about potential costs and benefits that can occur in their jurisdictions with the application of these draft RTS. The CAs have been requested to indicate<sup>15</sup> the expected costs and benefits associated with each chapter of these draft RTS. The table below shows the expected costs and benefits for the CAs.

### Part C: Costs and benefits for the Competent Authority

Requirements	C.i. Costs				C.ii. Benefits			
	<i>negligible</i>	<i>small</i>	<i>medium</i>	<i>large</i>	<i>negligible</i>	<i>small</i>	<i>medium</i>	<i>large</i>
<i>1. Assessment of Significance (article 363(4)(a) of the CRR)</i>	4	9	0	0	3	3	4	1
<i>2. Assessment of the internal model, common governance requirements</i>	4	6	2	0	2	3	4	2
<i>3. Assessment of the internal model, VaR</i>	3	6	2	0	3	3	4	2
<i>4. Assessment of the internal model, Stressed VaR</i>	4	6	2	0	3	4	4	1
<i>5. Assessment of the internal model, IRC</i>	4	6	3	0	3	3	3	2
<i>6. Assessment of the internal model, Correlation Trading</i>	5	4	0	1	4	1	4	0

The large majority of CA responding assessed the costs to be incurred by them for the implementation and supervision of these RTS to be small or negligible. Around half of the CA is expecting benefits of at least medium size by the issuance of these RTS.

<sup>15</sup> Indicate costs and benefits as negligible, small, medium or large.



**Part B: Costs and benefits for the Institutions**

<b>Requirements</b>	<b>B.i. Costs</b>				<b>B.ii. Benefits</b>			
	<i>negligible</i>	<i>small</i>	<i>medium</i>	<i>large</i>	<i>negligible</i>	<i>small</i>	<i>medium</i>	<i>large</i>
<i>1. Assessment of Significance (article 363(4)(a) of the CRR)</i>	3	6	2	0	3	4	3	1
<i>2. Assessment of the internal model, common governance requirements</i>	3	5	3	1	3	3	3	2
<i>3. Assessment of the internal model, VaR</i>	3	4	3	0	3	2	5	1
<i>4. Assessment of the internal model, Stressed VaR</i>	4	5	2	0	3	3	6	0
<i>5. Assessment of the internal model, IRC</i>	3	5	2	1	3	3	5	0
<i>6. Assessment of the internal model, Correlation Trading</i>	4	3	0	1	3	2	4	0

As shown in the table above, the large majority of respondents expect these RTS to cause negligible or small incremental costs for credit institutions in the EU. More than half of the respondents attribute benefits for credit institutions to the future implementation of the requirements contained in these RTS, with more than one third expecting benefits of at least medium size. The benefits specified include improvements in institutions' risk management and higher legal and regulatory certainty.

Overall, these RTS are expected to have a positive net incremental impact on both, CA and credit institutions, and to effectively contribute to the achievement of the policy objectives. The costs seem to be proportionate to its contribution to convergence of supervisory practices, the functioning of the European banking sector and the EU Internal Market and the consistency of capital requirements for market risk across EU credit institutions.

## 5.2 Overview of questions for consultation

**Q1:** What are stakeholders' views regarding the two proposed interpretations for the capture or exclusion of an institution's own creditworthiness as a risk factor in internal models (non-default only), and consistent treatment for back-testing purposes?

**Q2:** What is industry current practice in this regard for VaR, SVaR and IRC?

**Q3:** What are the main operational challenges?

**Q4:** Do stakeholders agree with the General-Specific model application hierarchy introduced by the RTS?

**Q5:** Do Stakeholders consider that the categories of instruments listed above provide an appropriate guide to assess the complexity of an internal model?

**Q6:** Do stakeholders agree with the use of two differentiated approaches for general and specific risk to assess the significance of positions included in the scope of the model?

**Q7:** What levels do stakeholders consider are appropriate for the proposed thresholds? Please provide your answer considering the calculation before and after positions have been excluded by the competent authority.

**Q8:** Do stakeholders agree with the two metrics required to assess regularly the relevance of positions excluded from the scope of the internal model?

**Q9:** What are stakeholders views regarding the proposed requirements on the internal committee structure?

**Q10:** Do stakeholders agree that the internal validation requirements are relevant and capture all material risks?

**Q11:** Are there any missing elements that should be incorporated or current elements that may be too burdensome?

**Q12:** Do stakeholders agree that the proposed requirements on limit structure, regular limit update and limit breach approval processes are appropriate?

**Q13:** Do stakeholders agree with the rationale to provide some flexibility for the introduction of new products?

**Q14:** What are stakeholders' views regarding the specific limitations introduced in the RTS regarding the delegation of authority to the new product committee?

**Q15:** Do stakeholders agree that the model should have been working in a stable way during a minimum period of 250 days prior to application for permission to use the model?



**Q16:** Do stakeholders agree that the results obtained for the portfolios published by the EBA during this period are useful for validation purposes?

**Q17:** Do stakeholders agree with the requirements related to the model accuracy track record and Stress Testing programme?

**Q18:** Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the governance section?

**Q19:** What are stakeholders' views on the proposed requirements for the computation of VaR and P&L at consolidated level?

**Q20:** Do stakeholders' agree with the distinction between 'global' and 'local' price risk factors?

**Q21:** What are stakeholders' views on the burden a more frequent update than monthly creates? What are stakeholders' views on the burden a daily update for the historical VaR might create?

**Q22:** For "partial use" IMA, do you agree with the use of a hypothetical P&L calculated from mark to market P&L including all pricing factors of the portfolio's positions?

**Q23:** If your answer to Q22 is no, what impact does this have on the P&L used for back-testing purposes and how do you monitor the appropriateness of the model? Are there alternatives to ensure a proper reporting to senior management?

**Q24:** What are stakeholders' views regarding the relative merits of the inclusion of all risk factors for the actual P&L computation?

**Q25:** What are stakeholders' views regarding the proposed definition of 'Net interest income'?

**Q26:** What are stakeholders' views regarding the requirement to assess the importance of intra-day and new trades to determine the VaR and SVaR multipliers?

**Q27:** What alternative methodology, if any, might be appropriate to capture this intra-day risk?

**Q28:** What are stakeholder's practices regarding adjustments computed less regularly than daily?

**Q29:** What are stakeholders' views regarding the treatment of Theta in VaR and as a component of P&L?

**Q30:** Taking into account the CRR requirement to capture 'correlation risk' do you consider that the use of stochastic correlations should be required?

**Q31:** Do stakeholders agree with the additional requirements introduced for banks using empirical correlations?

**Q33:** Do you agree with the elements that should be considered when assessing any internal reserves and/or the VaR and SVaR multiplication factors?



**Q34:** Do you agree that the SVaR multiplier should always be the same or higher than the one used for VaR purposes?

**Q35:** Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the VaR section?

**Q36:** Do stakeholders consider that any proxy validated for VaR should be acceptable for SVaR purposes?

**Q37:** Do Stakeholders have any additional comments or concerns regarding the rest of requirements outlined in the Stressed VaR sub-section?

**Q38:** Do stakeholders agree with the EBA interpretation regarding the treatment of event risk for credit positions after the implementation of IRC?

**Q39:** What are stakeholders' views regarding the capture of the FX position stemming from Banking Book activities and the treatment proposed in the RTS?

**Q40:** Do Stakeholders consider appropriate the requirements established in this Article regarding the constant level of risk and constant position assumptions?

**Q41:** Do stakeholders agree that internally-derived ratings shall be prioritised for IRC?

**Q42:** Do you consider that PDs derived from spreads or external ratings are more appropriate for IRC modelling than those internally-derived?

**Q43:** Do stakeholders agree with the exclusion of zero PDs for IRC?

**Q44:** Do stakeholders consider that losses due to default should be based on the market value or the instrument's principal?

**Q45:** Do Stakeholders have any additional comments or concerns regarding the requirements outlined in the IRC section?

**Q46:** Do Stakeholders have comments or concerns regarding the requirements outlined in the correlation trading section?