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EBA FINAL 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 points (b) and (c) of Article 363(4) of Regulation (EU) No 575/2013

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1. Executive Summary

The Capital Requirements Regulation (CRR) and the Capital Requirements Directive (CRD)¹ 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 draft RTS are considered an integral part of the efforts of the EBA to foster consistency in model outputs and comparability of the risk-weighted assets (RWAs) amounts. It is expected that these draft RTS should enable harmonisation of the supervisory assessment methodology across all EU Member States. They will therefore contribute to addressing some of the issues identified in the latest EBA Report on the comparability of RWAs and provide enhanced clarity on various aspects of the IMA application.

Main features of the draft RTS

In accordance with the mandate established in point (c) of Article 363(4) 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 establish two different methodologies for general and specific risk categories, both of them based on the standardised rules for market risk. The assessment of significance should be performed before and after competent authorities validate the model, though applying a lower threshold if the competent authority has decided, as a result of its 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 allow 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 authority's assessment of the institution's compliance with IMA requirements, as defined in Part Three, Title IV, Chapter 5 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 these draft RTS to assess whether an 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.

The draft RTS have 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.

¹ 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 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.

Finally, when finalising the RTS, 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) published in January 2016. These RTS introduce some elements that go in the direction of the Basel review but, at the same time, can be implemented within the CRR current legal setting. Examples are the requirements 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 1-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.

2. Background and rationale

Article 363(4) of the CRR contains three mandates for the EBA to develop Regulatory Technical Standards on (a) the conditions for assessing materiality of extensions and changes to use market internal models; (b) the assessment methodology under which competent authorities permit institutions to use internal models²; and (c) 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. Those RTS were adopted by the Commission on 19 June 2015³.

The present RTS cover the other two mandates included in 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.

2.1 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.***

² Similar mandates existed for credit and operational risks internal models.

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

2.1.1 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. In this regard, when applying for an internal model, a bank must identify which risk 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 the risk categories and/or legal entities within a group can, in principle, remain under the standardised approach on a permanent basis.

Accordingly, the RTS establish 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.

2.1.2 Methodology applied

Due to differences in the nature of general and specific risks, when assessing the significance of positions 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 approaches for general and specific risks are as follows:

For general risk:

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

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 distortion introduced by positions which receive a 0% capital charge for specific risk 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 those RTS the EBA stated that the use of RWAs 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.

2.1.3 Initial and regular assessment of significance

The assessment of 'significance' has to be performed regularly to ensure the significance requirement established in Article 363 is still met. The EBA considers that the positions excluded from the internal model at inception should not grow significantly after the initial validation. If 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' that might be performed by the institution prior to the model approval request.

However, the RTS are 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 propose using two simple metrics based on data that should be readily available: the proportion of (i) the P&L and (ii) the own funds requirements stemming from the positions included in the scope of the model compared with the total by risk category.

2.1.4 Minimum model 'stability period' prior to authorisation

The RTS establish that, at the moment when the model is approved, 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 1, 250 back-testing observations⁴ 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 1 year before the model is implemented. Banks will also be requested to

⁴ The CP originally required that the 250 days should be available when the model application was submitted by the institution. Following the feedback received, this requirement has been modified, so the 250 back-testing observations have to be available when the model is approved. Of course, the competent authority might still consider it necessary to have a significant number of observations before the validation work can be initiated.

provide their significance assessment calculations for the positions held in the four quarters of this 'run-up' year.

In addition, this 'model stability' requirement implies that, during this 1-year period, the model should not be subject to any material changes, defined in accordance with Commission Delegated Regulation (EU) No 529/2014. Alternatively, material changes may be introduced provided the institution is able to recalculate the VaR backwards and perform the back-testing.

Finally, 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, provide 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 may request that firms provide the results for the benchmarking portfolios published by the EBA during the 'run-up' year. If this data is requested, the results provided will be used as an additional assessment tool to be used by competent authorities.

2.1.5 Treatment of positions excluded by the competent authority

The RTS contemplate 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 competent authority, 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 competent authority.

Accordingly, the RTS request two calculations if positions have been excluded by the competent authorities during the initial validation process:

- a. When submitting a model application, banks are required to comply with a high threshold for the positions they intend to include in the internal model. The EBA consulted the level for this first threshold, considering a range between 5% and 10%, i.e. 90-95% of positions included. Taking into account the feedback received, a 10% level has been finally established.
- b. If 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 consulted on the level for this second threshold, considering a range between 30% and 40%, i.e. 60-70% of positions to be included. Taking into account the feedback received, a 40% level has been finally established.

Of course, if no positions have been excluded by the competent authority, only the first calculation is required. According to the rationale behind this treatment, when a competent authority 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 competent authority should not be computed when assessing the materiality of positions.

This would limit the discretion that competent authorities have to exclude positions as a result of their assessment (in order to avoid having 'empty' models), while at the same time giving enough flexibility to allow them to be strict enough in their assessment of the internal model. If the 90% level were to be met in all cases, the room for competent authorities 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.

2.1.6 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 state 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.

2.2 Application of the RTS requirements

2.2.1 Modelling application by risk category vs modelling standards by type of model

While the CRR establishes in Article 363 that the permission of 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'⁵.

⁵ 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'.

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 365-367 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 are 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 have been organised following a 'modelling' structure. A common 'governance' section covers 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 have been structured around the different modelling standards for VaR, SVaR, IRC and internal models for correlation trading.

2.2.2 General-specific risk hierarchy

The EBA consulted on the possibility of introducing a hierarchy between general and specific market risks. This proposal was based on the fact that the CRR distinguishes between 'general' and 'specific' market risks, and establishes different requirements included in different articles. In this regard, Article 367(2) establishes 'general' quantitative requirements that any model should meet, whilst Article 370 introduces 'additional' requirements 'particular to' specific risk modelling.

Of course it is worth highlighting that the distinction between general and specific risks will not be relevant any more once the FRTB has been fully implemented (the same thing can be said about the risk categories listed in Article 363 of the CRR). Accordingly, following the feedback received during the consultation, and to avoid introducing any unnecessary burden, the hierarchy of general-specific risk for equity and interest rates has been dropped.

2.2.3 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 RTS explicitly acknowledge that competent authorities shall apply any 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 RTS link the complexity of the model to the complexity of the instruments that are negotiated in the trading area. Accordingly, as a guide in assessing the complexity of any internal model, competent authorities should consider a series of product categories that group financial products in increasing order of complexity. The three product categories included in the RTS are:

- a. Category 1: simple instruments, such as spot positions, cash equities, bonds, interest rate swaps, cross-currency swaps, credit default swaps, inflation swaps, equity swaps, volatility swaps, forward rate agreements, forwards and futures;
- b. Category 2: instruments, other than those included in point (a), without path dependent features, on a single underlying, including indices, with a continuous payoff in the same currency as the underlying;
- c. Category 3: instruments with path dependent features, instruments on multiple underlyings and underlyings across different asset classes, instruments with payoffs in different currencies from the underlying, and any instruments not included in categories 1 and 2.

In addition, 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.

2.3 Assessment methodology of market risk internal models

2.3.1 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 RTS group the 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, among others, the following elements:

Segregation and independence of the risk unit

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

More specifically, the ultimately 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 require that the risk unit is represented at Board meetings at a minimum when it discusses areas that are relevant to 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, at the same time this analysis should facilitate a broader assessment of the independence of the risk unit.

Variable remuneration of the risk unit/internal audit personnel

The RTS include 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 probably be hindered if the variable remuneration of the staff working in these areas were linked to the performance of the activities they are supervising.

Outsourcing

The RTS also include an article on outsourcing. The article is intended 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, at a minimum, the risk unit shall review the internal model annually. 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, and for which it is envisaged that some input from the internal validation will be needed.

However, for this periodic validation, the assessment may focus on 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 RTS list 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.

A formal report reflecting the conclusions obtained from the initial and periodic validations shall be produced by the responsible unit, and shall be reported to the senior management as well as 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*'.

At a minimum, this requirement implies that the staff members who have developed and implemented a model shall not be the same as the ones 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 model⁶) 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 by the likely reciprocity (i.e. 'tit for tat') after several cycles of modelling development, validation and implementation.

An improvement from the previous option would be to have an independent validation function within the risk unit, which would be fully responsible for the validation. Though this function would finally report to the risk unit responsible, this scheme clearly promotes independence.

Finally, it is clear that a separate validation function that reports to a senior manager, different from the responsible of the risk unit, is the best option in terms of independence, but it is also the most burdensome. The RTS text requires global systemically important institutions (GSIs), in the meaning of Article 131 of Directive 2013/36/EU, to comply with this third scheme.

New product approval policy

Given the evolving nature of trading activities, in particular for advanced institutions using internal models, it is necessary to incorporate a stable framework around the introduction and formal approval of new instruments and products into market risk models. 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 in September 2011 the EBA provided guidelines on internal governance that refer to

⁶ It is worth noting that, according to Article 368.1(h), internal audit shall also review the internal models annually.

this element. However, the requirements in the RTS have been articulated in a more detailed way so they are relevant for banks applying an internal model for market risk.

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 of the institution's management to review these daily reports produced by the risk unit and, if needed, enforce reductions both of positions taken by individual traders as well as in the institution's overall risk exposures. Accordingly, the RTS request that all the reports produced by the risk unit are appropriately approved and documented.

During the consultation the industry raised concerns regarding excessive prescriptiveness in the governance section of the CP, in particular as regards the committee structure. Institutions agreed with the overall objectives of the RTS in this point, though they were against forcing banks to change their internal structures.

As a consequence, the requirements on the internal committee structure are now more flexible and no specific structure of committees is established in the RTS. The RTS legal text is now flexible enough to allow different organisational arrangements, provided the institution's structure facilitates the fulfilment of the objectives, in particular an efficient control of internal limits. However, the final draft RTS still require that, as part of the new product approval policy mentioned above, the institution establishes a 'new product committee', comprising all parties affected by the negotiation of new products, to monitor appropriately any risks posed by the introduction of new activities in the trading area.

Finally, 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 RTS require that the structure is appropriately documented and approved by the Board.

Internal limits and limit breach approval process

Internal limits are a central risk control 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 financial instruments freely and instantly; in this regard, it should be noted that, in general, a trader does not have to request any permission for a new trade provided it has an authorisation to operate in the specific instrument and the new trade does not breach any of the internal limits the trader has been assigned.

In this context, the RTS reflect the fact that VaR limits are not the only method that institutions use to control traders' activities; the RTS recognise that institutions generally establish other types of limits apart from VaR (based on sensitivities, or loss-trigger type) and state that these other methods shall be consistent with the ones based in VaR metrics, 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 so it is given a predominant role in the RTS.

Regarding other regulatory capital metrics apart from VaR, in line with guidelines on SVaR and IRC published by the EBA in May 2012, 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 RTS establish that a formal approval process for any limit is necessary. Specifically for the VaR limits, the RTS require 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 (an)other internal committee(s).

In this regard, the RTS establish that 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' level is also requested.

Another requirement relates to the back-testing, which shall 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 also be established. The RTS require 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 it should always be escalated to the Board. Limits shall be updated regularly and, at a minimum, yearly.

Stress testing programme

In accordance with point (g) of Article 368(1) of the CRR, the RTS require 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 request 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; the RTS require that credit and other event losses are also used to assess the reasonableness of the IRC and/or correlation trading model assumptions, in particular regarding the capture of credit risk concentrations.

2.3.2 VaR and SVaR sections

Calculation of VaR and SVaR at consolidated level

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

In this regard, 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 undertaking⁷.

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

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

While agreeing on the relevance of some of the issues flagged in the CP, such as the timing of risk capture, which will become even more relevant in the context of the future P&L attribution tests in the FRTB, the industry raised concerns regarding the potential burden that these requirements would pose in the near term. Accordingly, following the feedback received during the consultation, the RTS only require in the end that the institution simply documents and justifies appropriately any differences in the timing applied during the daily end-of-day valuation process for VaR purposes.

In addition, the RTS require 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).

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 specify how the two profit and loss (P&L) calculations referred to in Article 366(3) of the CRR shall be calculated:

- Hypothetical;
- Actual.

⁷ The RTS do not introduce any requirement linked to transactions between institutions within the same group (i.e. 'intragroup') since this is a general issue that cuts across all risk types (i.e. credit, CVA, large exposures etc.). Nevertheless, intragroup transactions would have to be considered for capital purposes at individual and/or sub-consolidated levels whilst at consolidated level intragroup transactions would be completely offset/eliminated, provided the requirements in Article 325 are met, if a single capital calculation were performed at this level; if this is not the case, the capital charges have to be summed without offsetting any transactions.

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, while back-testing calculations applying the actual P&L shall be used as a 'reality check' testing, since this actual P&L 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 consulted on 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 were included in the scope of the model or not.

For the back-testing based on actual P&L, the CP established that institutions had to consider 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.

Following the feedback received during the consultation, the RTS maintain the requirement that the actual P&L is computed considering all risk factors (including those that are not in the scope of the model); however, for the hypothetical P&L, institutions have to consider only the risk factors which are included in the scope of the model. Nevertheless, taking into account that the FRTB will make these requirements irrelevant, the RTS allow competent authorities to authorise those firms that may be currently calculating the hypothetical P&L for all risk factors to carry on performing the same calculation, provided the effect of the risk factors outside the model is immaterial and performing the alternative calculation is burdensome.

Finally, the RTS establish that, despite the possibility of computing only hypothetical back-testing exceptions, it is still not acceptable that a material number of overshootings are 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 have to be captured when modelling 'specific risk' (both for equities and debt instruments); however, event risk is not defined, or 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 by 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 to capture default and migration risks in their 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 of IRC) VaR models must still capture event risk. The definition of ‘event risk’ was therefore modified in a new footnote (no 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 establish 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 if 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 the 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 establish that the VaR and SVaR model shall capture ‘event 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 model approach (IMA), though Article 367(1) of the CRR requires that internal models capture ‘all material price risks’. Accordingly, the EBA consulted on two possible interpretations regarding the treatment of own credit risk for internal model purposes. Specifically, the CP asked stakeholders about the appropriateness of either including or excluding an institution’s own creditworthiness from market risk internal models.

While the feedback received was not unanimous, a majority of firms defended the inclusion of this risk factor in the model. Institutions also agreed that the exclusion would have raised several operational issues (in particular for derivative or index-related positions) and it would pose greater implementation costs. In addition, this way of dealing with the own creditworthiness risk is consistent with the treatment established in the 2012 IRC guidelines.

Accordingly, the final RTS request that internal models should include consistently in their VaR, SVaR and the two P&L calculations an institution's own creditworthiness, where this is a material risk factor. Therefore, the IRC treatment established in the 2012 guidelines also remains valid.

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, of between 0 and 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, if the competent authority allows the back-testing to be based solely on hypothetical exceptions, 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 recognise that, on occasions, instead of increasing the multipliers, institutions compute reserves to address, totally or partially, any known model flaws or shortcomings.

SVaR specificities

As mentioned previously, the SVaR section builds on existing EBA 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 to regular monitoring and exceptional review if the SVaR falls below the daily VaR metric.

2.3.3 IRC

Just like with SVaR, the RTS build 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 are 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 include requirements regarding the modelling assumptions and correlations and clarifies that, for determining the losses due to default, institutions shall consider any valuation losses already reflected in the market valuation of the instrument at the time of default.

Finally, the RTS require that PDs used for modelling purposes shall be higher than zero, without providing an explicit floor value. 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 standardised approach.

2.3.4 Internal model for correlation trading

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

In addition, the RTS request the use of full revaluation of all positions included in the correlation trading portfolio, though it also allows exceptionally the possibility of introducing simplifications compared with the front office pricing systems provided these are not significant.

2.4 Exclusion of supervisory actions from the RTS scope

Article 101 of Directive 2013/36/EU (CRD) provides competent authorities with considerable flexibility regarding the range of measures to be taken (including imposing higher multipliers or ad-hoc capital add-ons) in cases where an internal model is not fully compliant with regulation. According to the legal mandate referred to in Article 363 of the CRR, the RTS must specify the elements that competent authorities 'shall assess' when validating an internal model, without specifying the supervisory actions if a particular requirement is not met or not fully met.

Accordingly, the RTS do not include these supervisory actions in their scope. Nevertheless, they provide the key elements that competent authorities 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.

3. EBA FINAL 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 points (b) and (c) of Article 363(4) of Regulation (EU) No 575/2013



Brussels, **XXX**
[...](2015) **XXX** draft

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

(Text with EEA relevance)

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 points (b) and (c) of Article 363(4) of Regulation (EU) No 575/2013**

(Text with EEA relevance)

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 648/2012⁸, and in particular the third subparagraph of Article 363(4) thereof,

Whereas:

- (1) Regulation (EU) No 575/2013 provides for competent authorities to assess the compliance of an institution with the requirements to use internal models for market risk. These 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 529/2014⁹ on the conditions for assessing the materiality of extensions and changes of internal approaches when calculating own funds requirements for market risk and to the ongoing review of the internal models for market risk that the institution has received permission to use. 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

⁸ OJ L 176, 27.6.2013, p. 1.

⁹ 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).



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 set of positions included in the relevant internal models for market risk ('scope of application'), competent authorities should apply only and all of those rules 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. Other conditions are common to all risk categories, 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. It is therefore appropriate to establish an assessment methodology for competent authorities that specifies the requirements that relate to internal models for all risk categories and separately specifies the requirements applicable to internal models relating to each risk category.
- (5) Article 363 of Regulation (EU) No 575/2013 refers to the assessment of compliance with the requirements of that Regulation in their entirety. 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 should also allow competent authorities to carry out additional assessments at their discretion, and by using additional methods, as necessary, and apply the assessment methodology in accordance with the principle of proportionality, depending on various factors such as the nature, size and complexity of an institution's business and structure, the complexity of the models and the nature of products covered by the model, the quality of evidence provided by the institution and the resources available to the competent authorities themselves. Given the broad range of products available in trading activities, it is appropriate to classify products into non-exhaustive categories of increasing level of complexity to assist competent authorities in conducting the assessment in a proportionate manner.



- (6) 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 implemented by an independent risk control unit of the institution, which will be responsible for overall risk management system. Accordingly, rules on the assessment methodology should provide 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 are conducted by the risk control unit. They should also require that adequate controls are implemented and quality and validation tests are performed by the risk control unit for any outsourced solution and that full documentation is available in all cases, ensuring sufficient in-house understanding of the model, including outsourced operations. For the same reasons, competent authorities should assess any tools and IT solutions obtained from third party vendors in a manner similar to cases where they have been fully developed via internal processes.
- (7) In order to ensure a material coverage by an internal model of the positions of a certain risk category are covered by an internal model, and to avoid the 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 taking into account 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.
- (8) Positions subject to general risk of equity and debt instruments as well as foreign-exchange and commodities risks are treated differently in Regulation (EU) No 575/2013 from positions to be included in the internal model for specific risk of equity and debt instruments. The assessment of general risk should therefore 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 and include positions subject to a 0% capital charge pursuant to 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 Part Three 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 the effect of credit derivative hedges on debt instruments according to Articles 346 and 347 of Regulation (EU) No 575/2013. Such treatment of specific risk is consistent with the definition of materiality



thresholds for specific risk in the trading book set out in Article 77 of Directive 2013/36/EU provided in Delegated Regulation (EU) No 530/2014¹⁰.

- (9) In order to ensure a sound internal model, the significant share of positions of the intended model should be maintained for some time before an institution applies for permission to use that model. The assessment of whether a share of positions is significant for the purpose of granting permission to use an internal model should therefore be calculated by taking into account the four most recent quarterly reporting dates.
- (10) The foreign exchange positions authorized by a 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.
- (11) Given that Article 371 of Regulation (EU) No 575/2013 provides that institutions may exclude securitisation positions from the calculation of specific risk own funds requirements using an internal model, such 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.
- (12) It is appropriate to assess the significance of the positions that institutions intend to include in the scope of application of the market risk internal model by applying a low threshold for positions outside the model; 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. Where 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 permission is granted so as to avoid abuse of the provisions on significant share. It is also 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 in order to guard against granting modelling permission for an excessively limited subset of the positions subject to market risk.
- (13) 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, rules on the assessment methodology for those common qualitative requirements should be included within a single chapter.

¹⁰ 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).



- (14) Given that, 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, and that Article 369 of Regulation (EU) No 575/2013 provides that the validation process is conducted by suitably qualified parties independent of the development process, rules relating to the assessment methodology should take into account that independence is a precondition to allow for an objective assessment of the model. They should also be designed to minimise the incentive to disguise any deficiencies and weaknesses in the model. While highly qualified staff may only be available in limited numbers, it is necessary to ensure that at a minimum, the staff who develop a model are not the same as those who validate it.
- (15) In order to assess compliance with the validation and review requirements of internal models laid down in Articles 368(2) and 369 of Regulation (EU) No 575/2013, 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 is performed at least annually. 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.
- (16) Considering the evolving nature of trading activities, in particular for institutions using internal models, it is necessary to incorporate qualitative and procedural standards in the assessment methodology with regard to the introduction and formal approval of new instruments and products in the trading area by the institution. Standards for a formal new product approval policy are necessary 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.
- (17) 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 required that any VaR model has back-testing data for the preceding 250 days 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 in the sense of Delegated Regulation (EU) No 529/2014, or, where it has been subject to material changes, that the institution recalculates the VaR for the preceding 250 days.
- (18) Unreliable, inaccurate, incomplete or outdated data results in errors in the risk estimation and in the calculation of own funds requirements, particularly in market risk models, due to the fast changing and evolving nature of financial markets. In the context of risk management processes of an institution, such erroneous data may also lead to poor management decisions. Consequently, in order to ensure the



reliability and high quality of data, the infrastructure related to the collection and storage of data as well as the relevant procedures should be well documented, including 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. Competent authorities, in the assessment of market risk internal models, should therefore give 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.

- (19) The quality of data and the accuracy 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. Equally, the continuity and consistency of the risk management processes and the calculation of own funds requirements for market risk can only be ensured when such IT systems are safe, secure and reliable and the IT infrastructure is sufficiently robust. It is therefore 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.
- (20) Given that Article 367(1) of Regulation (EU) No 575/2013 requires that any internal models used to calculate capital requirements for position risk, foreign exchange risk, commodities risk and correlation trading capture 'all material price risks' that fall within the scope of market risk, and given that an institution trading its own debt or holding material positions in derivatives that include the institution's name constitutes one such 'material price risk', the institution should include its own creditworthiness as an individual risk factor in the specific VaR, SVaR, IRC and correlation trading internal approaches.
- (21) Given that the third subparagraph of Article 366(3) of Regulation (EU) No 575/2013 requires that the profit and loss ('P&L') 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 P&L used for back-testing purposes should reflect all the results, stemming from the positions in the scope of the model, obtained by the trading area, including all cash flows and any other accrued income stemming from fees, commissions, interests and intraday activity.
- (22) This Regulation is based on the draft regulatory technical standards submitted by the European Banking Authority (EBA) to the Commission.
- (23) 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 1093/2010¹¹,

¹¹ 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).

HAS ADOPTED THIS REGULATION:

SECTION 1
ASSESSMENT METHODOLOGY PER RISK CATEGORY

Article 1
General risk of equity instruments

Where, in accordance with 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, 5 and Article 58 of this Regulation.

Article 2
Specific risk of equity instruments

1. Where, in accordance with 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, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5 and 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 internal IRC model, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5, 7 and in Article 59 of this Regulation.

Article 3
General risk of debt instruments

Where, in accordance with 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, 5 and Article 55 of this Regulation.

Article 4
Specific risk of debt instruments

1. Where, in accordance with 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 internal models, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5, 7, and Article 56 of this Regulation.
2. Where an institution which has been granted permission to calculate the own funds requirements for specific risk of debt instruments by using internal models in accordance with Article 363 of Regulation (EU) No 575/2013 also requests permission to calculate own funds requirements for the correlation trading portfolio by using internal models in accordance with Article 377 of that Regulation, or where an institution applies for both permissions at the same time,

competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5, 7, 8 and Article 56 of this Regulation.

*Article 5
Foreign-exchange risk*

Where, in accordance with Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for foreign-exchange risk by using internal models, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5 and Article 57 of this Regulation.

*Article 6
Commodities risk*

Where, in accordance with Article 363 of Regulation (EU) No 575/2013, an institution requests permission to calculate own funds requirements for commodities risk by using internal models, competent authorities shall apply the assessment methodology set out in Sections 2, 3, 4, 5 and Article 60 of this Regulation.

*Article 7
Proportionality - Product categories and model complexities*

Competent authorities shall apply the assessment methodology set out in this Regulation per risk category in a manner proportionate to the size and complexity of the institution and of the trading activities included in the internal model ('scope of application'). In particular, competent authorities shall assess the complexity of any internal model by applying the following product categories grouping financial products in increasing order of complexity:

- (a) simple instruments without optionality;
- (b) instruments, other than those included in point (a), without path dependent features, on a single underlying, including indices, with a continuous payoff in the same currency as the underlying;
- (c) instruments with path dependent features, instruments on multiple underlyings and underlyings across different asset classes, instruments with payoffs in different currencies to the underlying, and any other instruments not included in points (a) and (b) .

*Article 8
Quality and auditability of documentation*

1. In order to assess the quality of the documentation submitted by an institution in support of its application for permission to use an internal model, competent authorities shall verify that it is of sufficient quality and it is sufficiently detailed and accurate in order to allow its examination by qualified third parties, and in particular that:



- (a) the documentation is approved at the appropriate management level of the institution with sufficient authority delegated by the management body for the purposes of internal models;
 - (b) the institution has established policies which ensure high quality standards of internal documentation including internal accountability for ensuring that the documentation maintained is complete, consistent, accurate, updated, approved as appropriate in accordance with point (a) and secure;
 - (c) the layout of the documentation set out in the policies referred to in point (b) provides for the identification of at least the type of document, author, reviewer, authorising agent and owner, dates of development and approval; version number and history of amendments to the document;
 - (d) the institution accurately and diligently documents the policies, procedures and methodologies it applies pursuant to this Regulation.
2. In order to assess the auditability of the documentation submitted by an institution in support of its application for permission to use an internal model competent authorities shall verify in particular both of the following:
- (a) that the documentation of 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) that the documentation of the risk methodologies, including the pricing functions used in the model, is sufficiently detailed in order to allow qualified 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 Part Three of Regulation (EU) No 575/2013.
2. For the purposes of paragraph 1, competent authorities shall verify in particular that:
 - (a) outsourcing is not extended to the tasks and responsibilities reserved for the risk control unit pursuant 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 any tasks outsourced by the institution and of any IT risk management tool solutions obtained from third parties;



- (c) there is sufficient in-house knowledge relating to 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 any outsourced tasks, activities and functions is not limited or inhibited by such outsourcing;
 - (e) full access to all relevant information is granted to competent authorities.
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 between the institution and the third party to which the outsourcing is made and where appropriate, may also:
 - (a) require the submission of 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
Restoration of compliance

For the purposes of Article 101(4) of Directive 2013/36/EU, where an institution is required 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 to ensure in particular 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 the progress of the implementation of the plan referred to in point (a) on a regular basis.

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 time 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 time 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, does not exceed 10% for the four previous quarterly reporting dates at the date of application for the permission.

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

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

where:

- (a) 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 Part Three of Regulation (EU) No 575/2013, for those positions for which the institution does not intend to use the internal model ('non-modelled positions');
 - (b) 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 Part Three of Regulation (EU) No 575/2013 for those positions for which the institution intends to use the internal model ('modelled positions').
3. Where the competent authority has granted permission to an institution to exclude foreign exchange positions from the calculation of net open currency positions, either at consolidated or individual level, in accordance with Article 352(2) of Regulation (EU) No 575/2013, those foreign exchange positions shall not be included 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 time 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 time of the initial application, an 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, does not exceed 10% for the four previous quarterly reporting dates at the date of application for the permission.
2. The ratio referred to in paragraph 1 shall be as follows:

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

where:

- (a) x is the sum of long and short net positions for non-modelled positions, taken in absolute value and calculated in accordance with Article 327 of Regulation (EU) No 575/2013 and, where referring to debt instruments, computed after recognizing hedges by credit derivatives in accordance with Articles 346 and 347 of that Regulation;
- (b) y is the sum of long and short net positions for modelled positions, taken in absolute value and calculated in accordance with Article 327 of Regulation (EU) No 575/2013 and, where referring 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 either of the following conditions is met:
 - (a) the institution includes securitisation positions in the internal model;
 - (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 appropriateness of the positions covered by the scope of application of the internal model

In assessing the appropriateness of 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 market risks are captured and the non-capturing of any material market risks is appropriately justified;
- (b) that institutions do not misrepresent and exclude from the scope of the internal model certain positions or risk factors, in particular those subject to a 0% risk weight under the standardized approach .

Article 14

Exclusions of positions by competent authorities

Where 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 Part Three of Regulation (EU) No 575/2013, competent authorities may, in particular, exclude those positions for which the internal 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 Regulation (EU) No 575/2013;
- (b) a sufficient number of risk factors in accordance with point (b) of Article 367(1) of Regulation (EU) No 575/2013;
- (c) non-linearity, correlation or basis risk in accordance with point (b) of Article 367(1) of Regulation (EU) No 575/2013.

Article 15

Positions to be taken into account for the calculation of significant share in case of exclusions by competent authorities

1. Where competent authorities have excluded positions in accordance with Article 14, they shall verify that the ratios referred to in Articles 11 and 12 are recalculated, 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 taking into account the positions included in the internal model ('modelled positions') and those excluded from it ('non modelled positions') that are used as inputs for the ratios.
2. For the purposes of this Article, where competent authorities have excluded 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 40%.

Article 16

Significant share of positions in subsequent reviews of the model

1. For the purposes of assessing whether a significant share of the positions is covered by the internal model in accordance with Article 363(2) of Regulation (EU) No 575/2013 in subsequent reviews of the model, after the initial approval is provided, including as part of the periodic model validation in accordance with Article 369(1) of Regulation (EU) No 575/2013, 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.
2. Competent authorities shall deem the internal model as covering a significant share of the positions of each risk category for which permission has been granted to calculate own funds requirements for general risk of equity instruments by using internal models in accordance with Article 363 of Regulation (EU) No 575/2013, where either of the following requirements is met:
 - (a) the ratios referred to in Articles 11 and 12 are met;
 - (b) the daily profit and loss ('P&L'), 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.

SECTION 3

ASSESSMENT OF GOVERNANCE REQUIREMENTS

Article 17

General aspects of internal model governance

1. For the purpose 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, competent authorities shall assess the internal model governance arrangements as a whole.

2. Competent authorities shall verify whether 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. Competent authorities 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 organisation, 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 and 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

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 takes appropriate corrective action 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 permanent members, meeting periodicity and structure of internal committees, including a clear delimitation of their functions, 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) the management body, or the committee designated by it, approves the stress testing programme to be applied in accordance with Articles 32 and 33 following a proposal from the risk control unit, and discusses the results

of the stress tests, assesses potential actions and, where necessary, takes corrective actions;

- (l) the senior management of the institution is aware of the number of 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 in accordance with point (b) of Article 17(4), competent authorities shall verify in particular all of the following:
 - (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 where any of the following issues are on 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) approval of IT infrastructure systems related to risk management tools in accordance with Article 34;
 - (c) the risk control unit is adequate and proportionate to the size of the firm and risks of the business and has the appropriate resources to perform its tasks effectively;
 - (d) the risk control unit is ultimately responsible for the quantitative outcome of any internal model that the institution is using for capital purposes.;
2. When conducting the assessment referred to in paragraph 1(a), competent authorities shall verify in particular all of the following:
 - (a) the risk control unit is one or more separate 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. When conducting the assessment referred to in paragraph 1(b), competent authorities shall take into account in particular all of the following:
- (a) the documented proposal from the risk control unit when any of the issues listed in paragraph 1(b) are discussed at the appropriate management level;
 - (b) the minutes of the institution's internal bodies, including the management body, in particular the action points to assess the degree of involvement of the risk control unit when any of the issues listed in paragraph 1(b) are discussed and to assess those cases where there has been a divergence from the proposal of the risk control unit in the final decision taken by the relevant institution's internal body;
 - (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 regarding limit breaches, in accordance with Article 28 of this Regulation;
 - (d) information provided by the staff and senior management of the institution, where appropriate.
4. When conducting 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 all of the following:
- (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 sufficient experienced and qualified personnel to undertake all relevant activities for the effective risk management of the internal model in monitoring and challenging the actions of other units and in particular of the trading business units;
 - (c) the risk control unit's personnel is appropriately trained.

Article 20
Internal audit

1. For the purposes of assessing the independent review of the internal model as part of the internal audit process referred to in point (h) of Article 368(1) of Regulation (EU) No 575/2013, in accordance with point (c) and (d) of Article 17(4) of this Regulation, competent authorities shall verify that the internal audit is independent, that the resources assigned to it are appropriate and that the process established within the institution to address the recommendations coming from the internal audit is adequate. Competent authorities shall verify in particular that:
 - (a) the internal audit of the institution reviews all internal models on at least an annual basis, including those used for capital calculation purposes, and includes the conclusions of that review in a report submitted to senior management and the management body, as referred to in point (c) of Article 18;
 - (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 performs effectively its tasks.;
2. When conducting the assessment of paragraph 1 competent authorities shall verify in particular all of the following:
 - (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

1. Competent authorities shall assess 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), by verifying in particular all of the following:
 - (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;
2. Competent authorities shall verify, in accordance with point (c) of Article 368(1) of Regulation (EU) No 575/2013, that the governance structure allows for the effective and timely control of all internal limits approved in accordance with Article 25 of this Regulation.
3. Competent authorities shall verify that the internal committee structure includes a specific committee ('new product committee') that assesses, proposes to senior management for approval and monitors any new product, verifying in particular that the risk control unit and any other function of the institution affected by the introduction of a new product are represented in such committee.

Article 22

Independence and resources of the internal validation process

1. For the purposes of assessing the independence of the internal validation process, in accordance with point (f) of Article 17(4), competent authorities shall verify in particular all of the following:
 - (a) the validation process is conducted by personnel that was not involved in any way in the development of the internal model validated;
 - (b) the validation process is conducted with adequate resources, including experienced and qualified personnel to perform its tasks;
 - (c) the variable remuneration of the staff and senior managers responsible for the validation process is not dependent on the performance of the tasks related to risk control and business areas in a way that hinders or impedes their independence;
 - (d) 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;
 - (e) where the function responsible for the validation is established by the institution as a function of the risk control unit which reports to the same member of the senior management overseeing that unit, competent authorities shall, in addition to points (a) to (d), 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) the validation conclusions effectively reflect the independence of the validation process and are not in any way biased;
 - (iii) internal audit regularly assesses the fulfilment of the conditions referred to in points (i) to (ii).
2. Where the staff performing the validation process is different from the staff responsible for the model design or development but no separate validation function exists, competent authorities shall, in addition to points (a) to (e) of paragraph 1, verify that:
 - (a) there is effective separation between the staff performing the validation function and the staff performing the model design or development;
 - (b) the institution is not a global systemically-important institution within the meaning of Article 131 of Directive 2013/36/EU.
 3. In performing the overall assessment of the independence of the validation process, competent authorities shall verify that the organizational arrangements and the resources assigned to that process are proportionate to the nature, size, scale and complexity of the risks inherent in the business model of the institution.
 4. For the assessment of the validation process referred to in paragraphs 1 and 2, in addition to the requirements referred to in paragraph 3, competent authorities shall review in particular the following:
 - (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 and follow up stemming from the validation process as approved by the appropriate management level, in accordance with point (j) of Article 23(2).

Article 23

Adequacy, completeness and frequency of the internal validation process

1. For the purposes of assessing the adequacy of the internal validation, as referred to in point (g) of Article 17(4), as well as the process for addressing any recommendations raised during the validation, as referred to in point (h) of Article

17(4), competent authorities shall verify the completeness of the initial and periodic validation, by verifying in particular, all of the following:

- (a) for the validation conducted when the model is initially developed, that 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 validation referred to in point (a), that the institution has conducted a complete validation, or has identified the relevant areas to be validated as a result of the changes referred to in paragraph 2, or has identified any new methodologies required by the introduction of new products in accordance with Article 29, as well as any conclusions from previous validations and internal audit reviews.

2. When assessing the completeness of the validation process competent authorities shall verify that the process complies with all of the following:

- (a) it 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) it analyses the results of the back-testing, in accordance with Article 40, based both on hypothetical and actual changes in value, at least at the maximum level of portfolio aggregation for which the internal model is applied and at least one level below, 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 P&L of the trading area, as referred to in Article 40(11) of this Regulation. At a minimum, it performs statistical tests that account for the number of overshootings as well as their independence from each other; additionally, as required in point (d) of Article 370 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) it verifies 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 and Stressed VaR calculations; and that 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) it 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 point (b) of Article 51(2);



- (e) it 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) it 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, where relevant, 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) it verifies the robustness of the implementation in IT systems, in accordance with Article 34, 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) it verifies the performance, including both risk differentiation and quantification, and the reactivity of the risk metric results to changes in market conditions;
- (i) it verifies the appropriateness and materiality of the proxies used in the model calculations, 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; in particular assesses the percentage of proxy time series used and the percentage marginal contribution of these time series by performing alternative calculations of the VaR and Stressed VaR numbers with proxies not moving;
 - (ii) the extent to which the proxy used for the missing risk factor is being hedged using the same proxy;
- (j) it 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.
3. Competent authorities shall verify that the periodic validation process referred to in paragraph 1(b) is performed at least annually and whenever 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) number of overshootings that deviate significantly from what is 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 change in a firm's business that may challenge the assumptions on which the model was approved;
 - (e) changes to the model considered as material according to the RTS on model changes;
 - (f) 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;
 - (g) significant decrease in the Stressed VaR relative to the VaR results for the same portfolio, which may challenge the adequacy of the VaR methodology or of the methodology used to determine the stressed period applied for the Stressed VaR.
4. Where an institution introduces new products which require methodological changes, competent authorities shall verify, in addition to the requirements of Article 29, 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 where the institution applies new techniques and practices to their internal model, it does so only where the use of such techniques and practices is fully justified and validated. Competent authorities shall verify that any methodological change introduced as a result of such evolving practices is validated in accordance with paragraph 2.
6. Where, in specific cases, simplifications are introduced to the model, competent authorities shall verify that, as part of the internal validation process, the

institution assesses the extent to which the simplifications produce a conservative capital outcome under a range of plausible and stressed situations.

Article 24

Soundness of the regular reporting process

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

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 as well as 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, 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, following a proposal from the risk control unit, sets at least the following:
 - (i) the VaR limit for the maximum level of portfolio aggregation at which the internal model is applied, and that this VaR limit is understood as the sum of individual VaR limits when, in accordance with Article 36, a VaR calculation is not performed at consolidated level;
 - (ii) a VaR limit breakdown one level below the level referred to in sub point (i);
 - (c) the institution has a 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, including those referred to in point (c), must be properly documented and formally approved;
 - (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, including sensitivities or loss trigger;
 - (f) the institution properly documents and formally approves 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, including 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, including 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, competent authorities shall verify in particular 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, competent authorities shall verify, in particular, all of the following:
 - (a) that the update process is coordinated and appropriately documented by the risk control unit;
 - (b) that the limit update proposal reflects any changes in the risk appetite and in the expected activity or 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) that the limit update proposal takes into account the average utilization of the current limit as well as number and magnitude of limit breaches, in accordance with Article 28, over the period where the current limit has been used.
2. Competent authorities shall assess the frequency of the update process of the internal limit structure as referred to in point (h) of Article 18 by verifying that the process is conducted at least on a yearly basis and more frequently where 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, competent authorities shall verify, in particular, all of the following:
 - (a) that 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) that the management body, or the committee designated by it, has defined materiality conditions in which any limit breaches are escalated to the board irrespectively of the level where the limits were approved.
 - (c) that limit breaches are documented by the risk control unit and reported to the responsible committee, sub-committee or individual manager in accordance with Article 21(2), and that those either take action on the limit breached, or escalate it according to the requirements established in point (b);
 - (d) that the documentation referred to in point (c) includes the magnitude and main causes of the limit breach, including 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, and the measures taken by the risk control unit and management in response to these breaches, are appropriate. Competent authorities shall conduct such verification in particular where a unit has frequently exceeded limits.

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, competent authorities shall verify all of the following:

- (a) that 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) that the new product committee, referred to in Article 21(3), 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 that new product;
 - (viii) assessing the adequacy of accounting schemes and ensuring the internal reporting appropriately reflects the underlying risks;
 - (ix) reviewing any methodology used by the institution for the calculation of reserves to address deficiencies referred to in point (a) of Article 48(2);
- (c) that, based on an assessment by the new product committee referred to in Article 21(3), the management body, or the committee designated by it, authorizes the trading in a new product;
- (d) that the management body, or the committee designated by it, either carries out the authorisation task itself or delegates it to the new product committee referred to in Article 21(3) allowing individual trades in a new type of product up to a specific volume limit established for that particular product depending on the risk level of the product, as reflected in the categories referred to in Article 7; where the management body, or the committee designated by it, delegates the authorisation task to the new product committee, competent authorities shall verify all of the following:
- (i) that the volume allowed in the limit for the new product is restrictive enough to prevent any material losses stemming from such new products, including, where appropriate, shorter trial periods for products in the category referred to in point (c) of Article 7;
 - (ii) that the authority is delegated individually for each type of new product and always for a limited period of time, with a maximum of six months;
 - (iii) that this authorisation if renewed, is only renewed once by the management body, or the committee designated by it depending on the level of risk;
 - (iv) after the one year period referred to in point (iii), all relevant aspects referred to in point (b) are addressed or no additional trading in this new product is allowed;
- (e) that without the specific approval from the committee referred to in Article 21(3), the business areas have no authorization to trade a new product before the relevant aspects referred to in point (b) are addressed; that in the



specific cases where traders are allowed to trade new products which do not fulfil all the aspects listed in point (b) the transactions have to be approved on an individual basis by the committee referred to in Article 21(3) and within the limits referred to in point (d);

- (f) that the new product committee referred to in Article 21(3) meets frequently enough to evaluate and approve any new product transaction and to monitor all the potential issues listed in point (b) which these transactions may pose;
- (g) that transactions are monitored individually until all issues listed in point (b) have been fully addressed and, based on an assessment by the new product committee referred to in Article 21(3), the management body, or the committee designated by it, confirms that the transactions are fully incorporated to all relevant IT production systems and controlled via the regular risk management system;
- (h) that regardless of their degree of incorporation to the IT systems, all new products are computed both in the internal model as well as in the two daily P&L calculations used for back-testing purposes as referred to in Article 40.

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, competent authorities shall verify all of the following:
 - (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, including a review of the agendas, minutes and composition of those 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 and 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 and the use of that analysis in 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 the inventory referred to in point (e) 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 point (c).
2. Competent authorities shall verify that the governance structure and processes are proportionate to the complexity of the underlying business of the institution, taking into account the extent to which the internal risk model is reliant on that structure and those 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, they shall verify in particular all of the following:
- (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) either of the following:
 - (i) the history of back-testing overshootings of the VaR model, documented in accordance with Article 40 of this Regulation, observed, at a minimum, over the 250 business days before the VaR model is approved, as referred to in Article 366(2) of Regulation (EU) No 575/2013, calculated at the different levels established in point (b) of Article 25(1) of this Regulation, on condition that the internal model is stable and incurs no changes considered as a material change or extension according to Delegated Regulation (EU) 529/2014;
 - (ii) where a material change or extension is introduced during the 250 business days preceding the date where a model is approved, that the institution re-computes 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;
 - (d) where changes considered as a material change or extension, according to Delegated Regulation (EU) 529/2014, are introduced for models already approved by the competent authority, both of the following:
 - (i) that the history of back-testing overshootings, calculated at the different levels established in point (b) of Article 25(1) and documented in accordance with Article 40, covers a minimum period of 60 business days before the request for change in the VaR model is presented;
 - (ii) that until 250 days have been computed under the new methodology, the number of overshootings applied for the purpose of determining the VaR and S VaR multiplication factors in accordance with Article 366(2) of Regulation (EU) No 575/2013, is the highest between the



last number observed before the change was introduced to the VaR methodology and the result of linearly extrapolating to 250 days the overshootings observed after the introduction of the change in the methodology, rounded up to the next higher integer.

2. Competent authorities may 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, which incorporate risk factors included in the model's scope. Competent authorities shall compare the portfolio data provided by the institution with the results obtained in the report produced 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.

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 reviewed at least annually;
 - (b) the risk control unit runs the stress test scenarios determined in the stress testing programme at an appropriate frequency and at least on a monthly basis, and at a higher frequency where the institution has significant trading activities;
 - (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 referred to in point (c) of paragraph 1 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. 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 credit or event scenarios referred to in paragraph 2 shall be used to assess the internal model for correlation trading and where requested in accordance with Article 377(5) of Regulation (EU) No 575/2013, the institution shall develop a set of specific, predetermined stress 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 point (c) of 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.

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 verify, in particular, 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) the 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(1) 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, by verifying all of the following:
 - (a) that the risk control unit uses the results obtained from sensitivity analysis towards single risk factors, considered individually and jointly, to identify scenarios that include a stress of a combined set of plausible risk factors;
 - (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 which may be achieved by considering larger shocks to reflect the impossibility of unwinding positions, and especially for cash instruments, in a timely manner, either because positions are concentrated or due to a sharp increase in market illiquidity;
- (ii) simultaneously with sub point (i), a rise in correlation across instruments or risk factors a sharp foreign exchange shift scenario, stemming from any currencies which are subject to a peg, cap or floor at the time of the review, which are breaking its relationship;
- (iii) event risk for equities and jump-to-default risk for credit positions by considering four instantaneous defaults with zero recovery of the two specific interest rate risk long positions in the current portfolio with the largest exposure and the two largest equity long positions in the current portfolio, or the event risk stemming from a sharp rise in equity prices for the two largest short positions;
- (iv) non-linearity of products, deep out-of-the-money positions where the portfolio is revalued applying full revaluation of all positions to accurately reflect non-linearity effects and where the shocks applied are 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, including those derived from the use of proxies, such as the potential misalignment between a proxy and the underlying risk, which may be achieved in particular by assessing the potential risk incurred when hedging positions valued using a proxy and by applying the stressed scenario movements to the proxy while keeping illiquid positions constant.

Article 34

Robustness of IT infrastructure; integrity of positions and market data

1. Competent authorities shall verify that the institution's IT systems related to market risk management and the IT systems supporting the internal model are robust enough to cope with several errors during execution.
2. Competent authorities shall assess the robustness of the IT systems during the 250 days prior to the initial approval of the model, as referred to in point (c) of Article 31(1).
3. Competent authorities shall verify that appropriate remediation capabilities are in place in case of system breakdown, that the institution is able to re-compute any affected risk metrics and that back-testing overshootings produced by technical problems, as referred to in point (d) of Article 40(12), are exceptional
4. Competent authorities shall verify that the institution examines and confirms ('reconciles') all internal model positions and instruments between the risk management and front and back office systems on at least a weekly basis, and that

it fully documents and monitors any positions and instruments not fully reconciled. Competent authorities shall also verify that the reconciliation process ensures that differences between front office and market risk model systems are justifiable including in all of the following circumstances:

- (a) where risk categories are not included in the internal model;
 - (b) where there are different representation of positions;
 - (c) where there are simplified valuation models and P&L calculations for risk purposes.
5. Competent authorities shall verify that the institution documents the end-of-day valuation process for positions covered by the internal model, including all of the following:
- (a) the specification of the sources of market data;
 - (b) any automatic data filtering and data error detection, implemented to detect stale or obviously incorrect data.

SECTION 4

GENERAL ASSESSMENT METHODOLOGY FOR VaR AND STRESSED VaR CALCULATION

Article 35

Reliability of daily calculation of VaR

Competent authorities shall verify that 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(2) 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 within the scope of the permission in accordance with Article 325(1) of Regulation (EU) No 575/2013, 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 business units operate in different time-zones, the requirements of paragraph 3 also apply.
3. Where the business units operate in different time zones, competent authorities shall verify that both of the following conditions are met:
- (a) positions are captured daily and consistently at the ‘close of business’ for each of the different institutions or undertakings included in the scope of application of the internal model;
 - (b) the institution appropriately documents and justifies the different timing applied during the daily end-of-day valuation process for VaR purposes, as referred to in Article 34(5), and in the daily P&L calculations referred to in Article 40(3).

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 assess the appropriateness of the methodology used 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 point (b) of Article 23(1);
- (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 applied. 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.
2. 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 procedures in place 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 positions used as part of the end of day valuation process for VaR purposes referred to in Article 34(5) and, where relevant, sensitivities used for the VaR calculation, are updated daily.
2. For VaR calculation purposes, competent authorities shall verify at least the following:
 - (a) that the institution documents and has a proper justification for those cases where market data sets used for the computation of the VaR risk measure, including correlation structures and variance-covariance matrices, are being 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.

Article 40

Back-testing programme

1. In assessing the adequacy of the back-testing programme as referred to in point (1) of Article 18, 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) it is responsible for the back-testing programme;
 - (b) it assesses daily the performance of the internal model via back-testing;
 - (c) it carries out the assessment referred to in point (b), by at least comparing the two daily P&L calculations referred to in Article 366(3) of Regulation (EU) No 575/2013 and the daily VaR number referred to in point (a) of Article 365(1) of that Regulation, at least at the two levels referred to in point (b) of Article 25(1);
 - (d) it reconciles the two daily P&L calculations with the P&L used for accounting purposes on a regular basis 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 P&L elements that are not updated on a daily basis. The two P&L calculations only encompass the P&L from instruments whose value depend on risk factors covered by the permission according to section 1 of this Regulation.
4. Competent authorities shall verify that, when performing the hypothetical P&L calculation referred to in the second subparagraph of Article 366(3) of Regulation (EU) No 575/2013, all of the following requirements are met:
 - (a) that the risk control unit applies the end-of-day valuation process referred to in Article 34(5), and the requirements in Article 36 for consolidated VaR

- calculations, in order to calculate the daily changes in value of the positions included in the scope of the model in accordance with the second subparagraph of Article 366(3) of Regulation (EU) No 575/2013;
- (b) that in case of partial use of the model, 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;
 - (c) that only where the exclusion of the P&L stemming from those risk categories not included the scope of the internal model is operationally challenging or its effect on the total P&L is immaterial, that the institution computes it for all risk categories;
 - (d) that any other P&L elements, including CVA, DVA or other valuation adjustments, fees, commissions or net interest income, are not included in the hypothetical P&L calculation.
5. Competent authorities shall verify that, when performing the actual P&L 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(5) of this Regulation and the requirements for consolidated VaR calculations referred to in Article 36 of this Regulation;
 - (b) 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;
 - (c) that the P&L stemming from intraday activities is included in the actual P&L calculation;
 - (d) that losses due to counterparty defaults, CVA, or DVA or any other P&L components that are not in the scope of the market risk model are disregarded in the actual P&L calculation;
 - (e) that fees, commissions, and net interest income are excluded both from the P&L as well as the VaR calculations.
6. Competent authorities shall verify that the risk control unit uses the two daily P&L calculations referred to in the second and third subparagraphs of Article 366(3) of Regulation (EU) No 575/2013 to assess the relationship between calculated risk measures and trading outcomes at the different levels where the VaR calculation is performed, which shall be at least the levels referred to in point (b) of Article 25(1).
7. Competent authorities shall verify that the risk control unit analyses all overshootings of the two daily P&L calculations referred to in the second and third subparagraphs of Article 366(3) of Regulation (EU) No 575/2013 in detail, 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, which it also



- documents 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 P&L 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 P&L 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 point (b) of Article 23(1).
10. Where an overshooting is observed, competent authorities shall verify both of the following:
- (a) that the observed overshooting is communicated within three working days to senior management;
 - (b) that the analyses referred to in paragraph 8 are communicated within one month to the competent authority and to the senior management.
11. Where competent authorities have permitted the institution to limit the addend to that resulting from overshootings under hypothetical changes, 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.
12. Competent authorities may determine that the number of overshootings under actual changes does not result from deficiencies in the internal model, as referred to in Article 366(4) of Regulation (EU) No 575/2013, including 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, where such adjustments are calculated consistently and that the number of back-testing exceptions that would have been observed over the preceding 250 business days without computing this valuation adjustment would have been lower than computing it;

- (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 P&L calculation and that 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 the conditions of paragraph 12 are met every time the institution requests to limit the addend in accordance with that Article.

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 Monte Carlo 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 risk control unit ensures that randomness properties of the number sequences used are appropriate by performing statistical tests which assess at least the autocorrelation, the repeating patterns and the probability distribution of those number sequences;
 - (c) that the use of variance reduction methods does not introduce inaccuracies in the VaR calculation.

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 and 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 such exclusion 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 from the risk-measurement model, in particular for institutions holding material positions in instruments included in the categories referred to in points (b) and (c) of Article 7, competent authorities shall ensure both of the following:
 - (a) that the institution assesses, as part of the 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(1) 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, both of the following conditions are met:
 - (a) institutions 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) institutions assess the materiality of the time effect.
2. Competent authorities shall verify that institutions capture all material risk drivers with respect to implied volatility, by applying both of the following:
 - (a) they differentiate risk by underlying where appropriate;
 - (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 both of the following:
- (a) that for the instruments in the categories referred to in points (b) and (c) of Article 7, the terms in the Taylor series approximation which are not taken into account for the P&L referred to in the second and third subparagraphs of Article 366(3) of Regulation (EU) No 575/2013 used for the VaR computation, are not material;
 - (b) that they capture the risk of material joint-moves in risk factors ('cross gammas').
4. Where institutions include the passage of time ('theta') in the P&L and not in their VaR, or vice versa, competent authorities shall verify that the effect of this inconsistency is not material.

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 proxy market data in the calibration of the model is used only for those risk factors where direct market data is deemed insufficient or, alternatively, due to computational reasons, including all of the following:
- (a) that the data contains missing data points;
 - (b) that there is no data due to IT issues or a 'quiet' market;
 - (c) that there are data points which contain stale data;
 - (d) that there is insufficient data history;
 - (e) that the introduction of the relevant risk factor, instead of a proxy, in the time series, poses a disproportionate burden, taking into account the materiality of that risk factor for the institution's portfolio or model.
2. In order to ensure the appropriateness of any proxy 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 approximates 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 approximated using proxies 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 met.

Article 46

Risk factor and empirical correlations

1. Where 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, in particular where the institution holds material positions in instruments included in the category referred to in point (c) 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 on at least a monthly basis;
 - (b) that, as part of the validation process referred to in point (c) of Article 23(2), the institution assesses the potential effect that alternative, historically observed, high and low correlations could produce in the VaR calculation.

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 of paragraph 1 are not met, competent authorities shall ensure that the institution uses the standardised approach for the component foreign exchange risk of 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 reflect conservatively at least the following flaws and shortcomings of the VaR and Stressed VaR models related to the risk categories covered by the model's scope of application:
 - (a) any flaws related to the introduction of new products, where the institution's trading has been authorised before all the elements referred to in point (b) of Article 29 are addressed;
 - (b) where, in accordance with Article 366(4) of Regulation (EU) No 575/2013, competent authorities limit the addend to that resulting from overshootings under hypothetical changes, and back-testing exceptions under actual changes include overshootings caused primarily by intraday trading and new trades, in accordance with Article 40(11);
 - (c) the appropriateness of the distributional assumptions, in accordance with Article 41;
 - (d) any pricing model risk factors omitted from VaR, in accordance with Article 42;
 - (e) any inappropriate capture of nonlinearities in VaR, in accordance with Article 43;
 - (f) the inappropriate or extensive use of proxies, in accordance with Article 44;
 - (g) partial compliance with the requirements on risks arising from less liquid positions in accordance with Article 45;
 - (h) partial compliance with the requirements on model correlations, in accordance with Article 46;

- (i) partial compliance with the requirements on general risk of debt instruments, in accordance with Article 55;
 - (j) partial compliance with the requirements on specific risk of debt instruments, in accordance with Article 56;
 - (k) partial compliance with the requirement to have individual risk factors corresponding to gold and all individual foreign currencies included in the scope of the internal model, in accordance with Article 57(4);
 - (l) partial compliance with the requirements on general risk of equity instruments, in accordance with Article 58;
 - (m) partial compliance with the requirements on specific risk of equity instruments in accordance with Article 59;
 - (n) partial compliance with the requirements on commodity risk, in accordance with Article 60.
3. Competent authorities shall assess the appropriateness of the Stressed VaR multiplication factor (m_s), taking into account all the elements listed in paragraph 2 as well as all of the following elements:
- (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 of the Stressed VaR 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.
4. 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 any of the flaws and shortcomings referred to in paragraphs 2 and 3;
 - (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.

SECTION 5

ADDITIONAL ASSESSMENT METHODOLOGY 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-month period referred to in point (a) always includes a scenario of stress, which is significant and relevant for the institution's portfolio and which may be shorter than 12 months,.
2. Competent authorities shall verify that the risk control unit has developed an appropriate methodology for identifying a stressed period relevant to the risk factors material for the institution's portfolio; in particular, that all of the following applies:
- (a) the methodology captures stressed correlation measures;
 - (b) the methodology considers all relevant risk factors jointly;
 - (c) the methodology considers the results obtained from the sensitivity analysis to single risk factors required to determine the *ad hoc* stress scenarios referred to in point (a) of Article 33(2);
 - (d) where institutions apply a judgement-based approach, that they always include quantitative elements of analysis, in addition to expert judgement, justifying the choice made;
 - (e) where institutions apply a formulaic-based approach, that they always include some judgemental elements and that the formulaic elements of the methodology are risk-factor or VaR based;
 - (f) the methodology provides a conservative capital outcome;
 - (g) the 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;
 - (h) the methodology does not apply any weighting of historical data 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 control unit, at least 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 established documented procedures to ensure that the specified stressed period remains representative on an on-going basis, including where market conditions or portfolio compositions are subject to significant change.
2. For the purposes of paragraph 1, competent authorities shall verify the soundness of those procedures and in particular whether the institution monitors all of the following:
 - (a) factors that could have a significant effect in the final capital outcome, including changes in market conditions, trading strategies or portfolio composition;
 - (b) the ratio between Stressed VaR and VaR calculated for the days in which the SVaR is computed;
 - (c) whether the ratio referred to in point (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, in accordance with Article 365(2) of Regulation (EU) No 575/2013, 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 Taylor series approximations as part of the VaR is also acceptable for larger market movements in 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, in accordance with Article 365(2) of Regulation (EU) No 575/2013, an institution calculates the Stressed VaR less frequently than on a daily basis, 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 same week.
2. Competent authorities shall verify that the selection of the day in which the Stressed VaR is calculated does not lead to a systematic underestimation of the Stressed VaR numbers where computed weekly, by considering the evolution of the daily VaR metric during the same week.

Article 54

Estimation of proxies for Stressed VaR

1. Competent authorities shall verify that the institution assesses whether any additional proxies are specifically required for the Stressed VaR, including proxies for risk factors not present in the historical stress period, in accordance with Article 44(1).
2. Where different proxies are used in the VaR and Stressed VaR methodologies for the same risk factor, competent authorities shall verify that the use of different proxies is justified. Competent authorities shall also 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.

SECTION 6

ASSESSMENT METHODOLOGY FOR RISK MEASUREMENT BY RISK CATEGORY

Article 55

General risk of debt instruments

1. In order for competent authorities to 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 in accordance with point (a) of Article 367(2) of Regulation (EU) No 575/2013, they shall verify all of the following:
 - (a) that all the yield curves per currency which are relevant to the instruments included in the scope of the model, are modelled;
 - (b) that the institution models all the yield curves consistently, following a well-established methodology that is validated and assessed against alternative methodologies, as referred to in point (a) of Article 23(2);
 - (c) that any interpolation appropriately represents the missing data points, irrespective of whether it is purely linear or applies some smoothing formula;



- (d) where the VaR methodology implies the mapping of positions to specific tenors, that the formula applied in that mapping is appropriate.
- 2. In order to verify that a minimum of six maturity segments are captured in accordance with point (a) of Article 367(2) of Regulation (EU) No 575/2013, competent authorities shall verify both of the following:
 - (a) that institutions capture more segments than the minimum of six maturity in relation to 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.
- 3. In order to verify the adequacy of any extrapolation methodology, competent authorities shall verify both of the following:
 - (a) that the 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.
- 4. In order to assess the extent to which basis risk between different yield curves is appropriately reflected in VaR, as referred to in point (b) of Article 367(1) of Regulation (EU) No 575/2013, competent authorities shall review the results obtained for the hypothetical portfolios required under sub point (i) of point (f) of Article 23(2) as part of the validation process.

Article 56

Specific risk of debt instruments

- 1. In order to assess compliance with the requirements on basis risk and idiosyncratic differences established in Article 370(e) of Regulation (EU) No 575/2013, competent authorities shall verify both of the following:
 - (a) that the model captures appropriately the basis risk between bonds and credit default swaps referencing the same issuer;
 - (b) that the different seniority of the debt instrument positions included in the scope of the model is captured.
- 2. In assessing the compliance with the requirements referred to in paragraph 1, 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 as referred to in point (b) of Article 23(2);
 - (b) the results obtained for the hypothetical portfolios required according to sub point (iii) of point (f) of Article 23(2) 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 sub point (iv) of point (f) of Article 23(2) as part of the validation process to assess concentration risk for credit positions.

3. Where an institution applies an IRC model which complies with the requirements established in Section 7 of this Regulation, competent authorities shall determine that such internal model fulfils the requirements to capture event risk for debt instruments referred to in point (f) of Article 370 of Regulation (EU) No 575/2013.

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 assume compliance by 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.
4. Competent authorities shall verify that the internal model referred to in Chapter 5 of Title IV of Part Three of Regulation (EU) No 575/2013 incorporates risk factors, corresponding to gold and to all the individual foreign currencies in which the institution's positions are denominated in the scope of the model, which produce foreign exchange sensitivity in accordance with point (b) of Article 367(2) of Regulation (EU) No 575/2013.

Article 58

General risk of equity instruments

Competent authorities shall assess the appropriateness of the criteria applied to identify each 'equity market' in which the relevant institution holds positions in accordance with point (c) of Article 367(2) of Regulation (EU) No 575/2013, and shall ensure in particular that the criteria applied to identify each 'equity market' are appropriate for distinguishing those markets that are subject to different economic conditions from others.

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. Where an institution applies an IRC model in accordance with Section 7 of this Regulation and, subject to permission by the competent authority, has chosen to consistently include all equity positions in the scope of the IRC in accordance with the second subparagraph of Article 373 of Regulation (EU) No 575/2013, competent authorities shall consider that the model captures event risk for equities and that it is compliant with the requirement of point (f) of Article 370 of Regulation (EU) No 575/2013.
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 sub point (iii) of point (f) of Article 23(2) as part of the validation process to assess name-related basis risk and basis risk stemming from similar, but not identical, equity positions;
 - (c) the results obtained for the hypothetical portfolios required according to sub point (iv) of point (f) of Article 23(2) as part of the validation process to assess concentration risk for equity positions.

Article 60
Commodity risk

1. Where a VaR model uses a single risk factor for groups of positions in similar, but not identical, 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.
2. 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 sub point (ii) of point (f) of Article 23(2) as part of the validation process.

SECTION 7

ASSESSMENT METHODOLOGY 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, 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) that 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 model.
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 model, in accordance with the second subparagraph of Article 373 of Regulation (EU) No 575/2013, the requirements referred to in paragraph 1 shall not apply.

Article 62

Calculation of IRC at consolidated level

1. Where calculating the capital requirements at consolidated or sub-consolidated level, competent authorities shall permit 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, where the requirements of Article 36(2) are met.
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 and position assumptions

1. Competent authorities shall verify that the methodology used applies, consistently for all IRC instruments, either a constant level of risk over the one-year time horizon or 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 all of the following:
- (a) that institutions determine, for all IRC instruments, liquidity horizons in accordance with Article 67;
 - (b) that institutions determine transition matrices over the one-year time horizon and the relevant liquidity horizons in accordance with Articles 65 and 66;
 - (c) that institutions rebalance positions at the end of each liquidity horizon in order to attain the initial level of risk;
 - (d) that, when modelling the impact of correlations between default and migration events, institutions meet the requirements laid down in Article 69;
 - (e) that where 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 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, assuming that positions are constant over the liquidity horizon and keep their original residual maturities ('instantaneous shock'), but that they do not model the ageing of positions.
 - (f) By way of derogation from point (e), competent authorities may permit institutions to model the ageing of positions over the liquidity horizon, where all of the following additional conditions are met:
 - (i) 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) the model captures non-linearity and the characteristics of path dependent instruments, referred to in point (c) of Article 7, over the liquidity horizon;
 - (iii) all cash flows attached to IRC instruments are modelled, 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;
 - (iv) 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 are all modelled.
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 and that they apply to all IRC positions an instantaneous shock over the one-year capital horizon;

- (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 in accordance with paragraph 1, competent authorities shall ensure that:
- (a) in order to capture basis risk appropriately, institutions only offset long and short positions where those positions refer to the same 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 unless they are not material for their portfolio.

Article 64
Source of ratings

1. In order to verify the appropriateness of the sources of ratings referred to in Article 374 of Regulation (EU) No 575/2013, competent authorities shall verify in particular 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).
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 of individual positions with inferred ratings permitted, set at issuer level;
 - (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 estimated 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 verify both of the following:
 - (a) that the transition matrices used for modelling the rating migration process are based on historical migration data series, obtained from internal or external sources, that are sufficiently long to derive robust, accurate and statistically consistent estimates;
 - (b) that the risk control unit assesses the robustness of transition matrices also for higher rating categories, where a few severe downgrades or defaults can affect the migration frequency significantly.
2. 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 empirical data. In particular, competent authorities shall also 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 that the IRC model provides at least one transition matrix specific to sovereign positions.
3. Competent authorities shall verify that one-year probability of defaults ('PDs') are higher than zero.

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 into the one year capital horizon, is consistent with the 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 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 the risk control unit considers the relevance of other criteria, including the investment quality of the instrument, the geographical location of the issuer or the instrument's maturity.
 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

For the purpose of monitoring and reviewing the liquidity horizons referred to in Article 374(5) of Regulation (EU) No 575/2013, 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 the triggers that may lead to a review of the relevant liquidity horizon, and that it ensures that those triggers remain appropriate; such triggers may include significant indicators that liquidity conditions have changed in a market, or that there is 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), on at least an annual basis.

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 and conservative 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 types of 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 types of systemic factors is appropriate for 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 losses or gains as a result of rating migrations, competent authorities shall assess how rating migrations are converted into variations of spreads by verifying both 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 review by the risk control unit.
3. In the case of losses or gains as a result of defaults, competent authorities shall verify all of the following:
 - (a) that the losses are computed using relevant recovery rates or loss given defaults ('LGDs');
 - (b) that LGDs used are differentiated according to the seniority of the underlying positions and that they are not less than zero;
 - (c) that recovery rates or LGDs used for this purpose are reviewed at least quarterly;
 - (d) where internal ratings are used, that LGDs used in IRC are consistent;
 - (e) where external ratings are used, that a historical, market implied or market convention LGD is used;
 - (f) that, where determining the losses due to default, institutions consider any valuation losses reflected in the current market valuation.
4. 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) that they comply with the additional requirements of point (e) of Article 63(2) where they are able to model the ageing of positions over the liquidity horizon.
5. Competent authorities shall verify that the institution can justify an appropriate number of Monte Carlo simulations based on relevant tests of convergence. When assessing whether the number of simulations is appropriate and convergence is achieved within a conservative simulation error, compared with a higher number of simulations, the risk control unit shall verify both of the following:
- (a) the randomness properties of the number sequences used by performing statistical tests that assess at least the autocorrelation, the repeating patterns and the probability distribution of those number sequences;
 - (b) that 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 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 on a daily basis, competent authorities shall verify that the institution calculates the IRC at least weekly and that it has established procedures that ensure that, on the day of the week chosen for IRC calculation, its portfolio is representative of the portfolio held during the week.

SECTION 8

ASSESSMENT METHODOLOGY 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 permit institutions to compute a single capital charge for all correlation trading positions held in all institutions or undertakings that are included in the scope of application of the internal model that meet the requirements of 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 aimed at ensuring that positions included in the scope of the correlation trading model fulfil 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 aimed at ensuring 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, taking into account 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;
 - (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) 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. Where institutions do not apply full revaluation in order to revalue all positions included in the correlation trading portfolio, competent authorities shall verify both of the following:
 - (a) that the methods used by those institutions capture all material non-linear dependencies;
 - (b) that the methods used do not incorporate excessive simplifications and are an approximation of the front-office models.
 4. Where 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 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 of 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 PD and LGD estimates derived from an IRC approach as inputs to the Supervisory Formula Method referred to in Article 337(2) of that Regulation.

Article 78

Selection of the day or days of the week applied for the calculation

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

- (c) that the institution computes the requirements for the correlation trading portfolio on at least a weekly basis;
- (d) that the institution has procedures in place to ensure that on the day of the week chosen for the calculation, its portfolio is representative of the portfolio held during the week.

SECTION 9

FINAL PROVISIONS

Article 79

Entry into force

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

On behalf of the President

4. Accompanying documents

4.1 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 (CAs) 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 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, which were adopted by the Commission on 4 March 2015. These RTS cover the other two mandates included in 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 CAs permit institutions to use internal models.

Article 10(1) of the EBA Regulation provides that when any regulatory technical standards developed by the EBA are submitted to the Commission for adoption, they should be accompanied by an analysis of 'the potential related costs and benefits'. This analysis should provide an overview of the findings regarding the problem to be dealt with, the solutions proposed and the potential impact of these options..

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

EBA questionnaire and additional survey

The draft RTS covers all 'internal models' for market risk, which, in addition to VaR, include SVaR, IRC and correlation trading portfolio (CTP) models. In this context, it is worth recalling that the EBA has already issued guidelines (GL), under the 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 (MSs), 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 either 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), and 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 CAs’ assessment methodology in the RTS and, subsequently, to enable the EBA 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.
- Emphasis on 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 / 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 preferred approach in the RTS.

Another element considered when drafting the CP has been the overall policy direction that has been followed by the Basel Committee on Banking Supervision (BCBS) in the Fundamental Review of the Trading Book (FRTB). The EBA's 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 CAs. 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 MS in relation to the draft RTS. Specifically, 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 an MS is very similar to the standards to be introduced under the draft RTS, the corresponding costs for credit institutions and CAs in that MS are expected to be negligible and the benefits may be negligible or greater due to positive externalities¹². 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 MSs¹³ responded to the survey. According to the EBA's aggregate banking sector statistics, these MSs account for more than 70% of the credit institutions resident in the EU¹⁴. The coverage in terms of their share of the European banking sector's total assets is more than 86%.

¹² 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 MSs.

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

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

Problem definition

Under the current regulatory framework there are no common standards to assess the compliance of institutions with the requirement 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 significant 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: there may be 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.

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 the EBA's aggregate banking sector statistics, own funds requirements for market risk represent less than 5% of total own funds requirements in the large majority of MSs. Only for individual MSs is this share 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 apply 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. Finally, commodities (36) and, in particular, correlation trading models (just 12) 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 the 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 MSs.

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

The table below shows that the majority of MSs currently do 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 MSs 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 MSs lack relevant provisions in their national legal frameworks.

Very few MSs reported having implemented legal requirements at national level for the assessment of CTP models, and between two and four MSs reported having implemented some

kind of requirements for the assessment of VaR, SVaR and IRC models. Only for the assessment of common governance did more than half of the responding MSs indicate that requirements were in place at national level. Most of those requirements are public and binding; four MSs 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 MSs.

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			
	no	public and binding	public and non binding	non public	fully complied	mostly complied	partially complied	not complied	
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 from both 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

The 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 the 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, 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. A 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 on 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 so that they 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 the own credit worthiness.

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.

Option 3b is also in line with the EBA’s 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, for back-testing purposes, to also clean any effect in P&L 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 ‘indirect’ positions should also 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.

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 on the RTS.

Analysis of the overall costs and benefits

The qualitative survey asked the CAs about potential costs and benefits that could occur in their jurisdictions if these draft RTS were applied. The CAs have been requested to indicate¹⁵ 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 CAs 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 CAs expect benefits of at least medium size from the issuance of these RTS.

¹⁵ Indicate costs and benefits as negligible, small, medium or large.

Part B: Costs and benefits for the Institutions

Requirements	B.i. Costs				B.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>
1. Assessment of significance (Article 363(4)(a) of the CRR)	3	6	2	0	3	4	3	1
2. Assessment of the internal model, common governance requirements	3	5	3	1	3	3	3	2
3. Assessment of the internal model, VaR	3	4	3	0	3	2	5	1
4. Assessment of the internal model, Stressed VaR	4	5	2	0	3	3	6	0
5. Assessment of the internal model, IRC	3	5	2	1	3	3	5	0
6. Assessment of the internal model, Correlation Trading	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 CAs 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.



4.2 Feedback on the public consultation

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
General comments			
Responses to questions in Consultation Paper EBA/CP/2015/27			
General/preliminary remarks by banks	<p>Participants in general welcomed the EBA's initiative, which aims at introducing consistency in the assessment methodology; however, some raised the following points:</p> <ul style="list-style-type: none"> i) several respondents either called for general consistency between the RTS and the new BCBS market risk framework or pointed out specific areas where consistency is needed (e.g. threshold levels to assess the 'significance of positions' within the scope of the model; minimum time period of stable model work; VaR aggregation; other requirements on SVaR and CRM). Further issues were raised with regard to specific questions; ii) one respondent pointed to the need to consider the fact that banks are already devoting relevant resources to comply with the new BCBS market risk framework. Requiring banks to devote resources also to comply with the RTS requirements – which in some cases will be redundant or obsolete once the new BCBS market risk framework will be 	<p>The EBA has been mindful of the implications that the introduction of the FRTB would have for banks. Following the consultation, it has assessed possible ways to accommodate – where possible and within the mandate and constraints of the CRR – respondents' additional requests to align the RTS with the new BCBS market risk framework.</p>	<p>The text was amended, where possible and appropriate, within the mandate and legal constraints of the CRR. Some examples are the introduction of further flexibility for the 250 back-testing data points or on the VaR aggregation across units, elimination of the general-specific hierarchy, flexibility on the committee internal structure, etc.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>implemented in the CRR – is not cost effective;</p> <p>iii) several respondents drew attention to the fact that the EBA RTS seem to be on occasions too prescriptive or impractical, do not properly take into account proportionality, lack flexibility and, with regard to specific aspects, define an overly rigid discipline that goes above and beyond the CRR mandate;</p> <p>iv) with regard to the authorisation process, two respondents highlighted that some requirements envisaged by the RTS (e.g. the ‘sequenced approach’, which makes the application for approval authorisation for specific model risk approval conditional to the general risk approval) is not required by the CRR or envisaged in the new BCBS market risk framework. Two other respondents underlined that the authorisation procedure established by the RTS seems to be quite lengthy;</p> <p>v) one respondent pointed out that most of the RTS requirements address organisational and governance-related issues that have little or nothing to do with the goal of ensuring a consistent model output .</p>		
<p>Question 1. What are stakeholders’ views regarding the two proposed interpretations for the capture or exclusion of an institution’s</p>	<p>While two respondents supported the exclusion of general own creditworthiness as a risk factor in internal models, others favoured the inclusion of own debt creditworthiness as a risk factor in</p>	<p>From feedback received, a unanimous conclusion was not reachable; however, among the respondents that expressed a view, there is a majority of views favouring inclusion rather than</p>	<p>The RTS were amended such that, where material, own creditworthiness has to be included in the</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
own creditworthiness as a risk factor in internal models (non-default only), and consistent treatment for back-testing purposes?	<p>internal models.</p> <p>One respondent raised the problem of inconsistency with IFRS 9, claiming that it does not allow for inclusion and requested that banks should have the opportunity not to include own creditworthiness. However, the same respondent claimed that the issue is not so relevant as to require full harmonisation.</p> <p>One respondent claimed that the current exclusion of DVA is appropriate.</p>	exclusion.	<p>calculation of the specific risk VaR, SVaR and correlation trading internal model if the institution is trading its own debt or is holding material positions in derivatives that include the institution's name.</p>
Question 2. What is industry current practice in this regard for VaR, SVaR and IRC?	<p>Two respondents highlighted that the current practice is to include institution's own creditworthiness in the scope of VaR/SVaR and IRC only with respect to migration risk.</p> <p>One respondent reported practices in line with current EBA Guidelines on IRC.</p> <p>Two respondents highlighted that practices vary across banks: some banks include institution's own creditworthiness in the scope of VaR/SVaR internal models, others exclude it.</p>	<p>Feedback highlighted the existence of different practices, though inclusion, where the own creditworthiness is material, seems the most common approach.</p>	<p>See previous question.</p>
Question 3. What are the main operational challenges?	<p>Two participants reported that no major challenges are expected.</p> <p>Many other respondents either called for general consistency with the new BCBS market risk framework or pointed out that the major challenges would come from the identification of</p>	<p>There is a clear majority of respondents that called for consistency with the new BCBS market risk framework and pointed out that the major challenges would come from the identification of positions to be included/excluded. This process could prove to be operationally burdensome.</p>	<p>As the CRR requires that all material price risk must be captured by the internal model, which applies to the</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>positions to be included in or excluded or from the P&L attribution for back-testing purposes. More specifically one respondent pointed out that for banks turning from 'inclusion-to-exclusion' practice it could be challenging to identify positions and exclude them, especially where positions to be excluded include the bank's name in indices or multiname products. For banks turning to an 'exclusion-to-inclusion' practice the challenge would be represented by the need to require new risks to feed into models, to create new time series and to assess the potential impact on the model itself.</p>	<p>Only two respondents did not raise concerns.</p>	<p>own creditworthiness of an institution trading its own debt or holding material positions in derivatives that include the institution's name, the RTS were amended correspondingly.</p>
<p>Question 4. Do stakeholders agree with the general-specific model application hierarchy introduced by the RTS?</p>	<p>Several respondents found merit in or agreed with the proposed hierarchy, although in some cases respondents requested clarification of specific aspects.</p> <p>By contrast, several other respondents expressed disagreement with the proposed hierarchy, claiming that such requirement is not envisaged in the CRR, or is not consistent with the new BCBS market risk framework, or there may be cases where it could be reasonable to have specific risk modelling approval without having general risk modelling approval.</p>	<p>On this specific issue views are clearly split between those seeing/not seeing merit in the proposed hierarchy.</p>	<p>To avoid any undue burden, and considering also that the general/specific distinction will disappear once the FRTB has been implemented, the hierarchy has been dropped from the RTS.</p>
<p>Question 5. Do stakeholders consider that the categories of instruments listed above</p>	<p>One respondent underlined that the complexity of a model cannot be assessed through the</p>	<p>Respondents generally agreed that the complexity of instruments is a good indicator of the complexity of</p>	<p>The categories were kept but the</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<p>provide an appropriate guide to assess the complexity of an internal model?</p>	<p>complexity of instruments falling within the scope of the model itself. Rather the features of the risk factors should also be taken into account. Moreover, careful consideration should be given to defining the concepts of ‘simplicity’ and ‘complexity’, as they could be regarded as a precedent for other legislative initiatives.</p> <p>Another respondent pointed out that, although the presence of some instruments can be regarded as an indicator of complexity, the principle of proportionality should also be taken into account by referring to the size of the model.</p> <p>Another participant in the consultation pointed out that the proposed classification is a broad basis for guidance but suggested taking into account the materiality level of complex options and the fact that the presence of certain financial instruments (digital and barrier options) does not necessarily imply that the portfolio should be considered of the highest complexity.</p> <p>Several respondents would favour a closer alignment with other approaches adopted by other supervisors.</p>	<p>the internal model used, but some also pointed out that the proposed approach – for different reasons – does not seem to be the most appropriate to assess the complexity of an internal model.</p> <p>Six respondents would favour a closer alignment with the approach adopted by their own supervisor.</p> <p>Others called for a closer alignment with the new BCBS market risk framework.</p>	<p>language has been changed.</p>
<p>Question 6. 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</p>	<p>Two respondents either supported both approaches or while supporting the proposed approached requested clarifications of certain specific aspects.</p> <p>Two other respondents expressed disagreement</p>	<p>Some respondents did not provide feedback while others expressed agreement with the proposed approach. Others expressed disagreement or proposed alternative approaches based on the FRTB. However, it is not possible to apply the FRTB procedure under the CRR rules, which are of course</p>	<p>No change.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
of the model?	<p>with the proposed approach and would favour a closer alignment with the new BCBS market risk framework.</p> <p>Two respondents disagreed with the proposed approach and would rather favour an approach based on RWAs as a measure for calculating and assessing significance of positions.</p>	still applicable.	
Question 7. 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.	<p>Several respondents raised concerns on the proposed approach or did not support it, favouring closer alignment with the new BCBS market risk framework in terms of both threshold level and calculation level.</p> <p>One respondent provided more positive feedback with regard to the proposed thresholds.</p>	The majority of respondents would favour a closer alignment with the new BCBS market risk framework. However, it is not possible to apply the FRTB procedure under the CRR rules that are still applicable.	Following the feedback received, the thresholds were set to the less stringent levels (i.e. 10% and 40% if authorities have excluded positions).
Question 8. Do stakeholders agree with the two metrics required to assess regularly the relevance of positions excluded from the scope of the internal model?	<p>One participant to the consultation provided positive feedback on the proposed approach.</p> <p>Many respondents expressed disagreement with the proposed approach, which they deemed to be too prescriptive, called for a closer alignment with the approach envisaged under the new BCBS market risk framework or for a more flexible approach.</p>	The majority of respondents would favour a closer alignment with the new BCBS market risk framework. However, it is not possible to apply the FRTB procedure under the CRR rules that are still applicable. No specific alternative procedure was provided. Considering the two metrics proposed should be straightforward to calculate, the EBA has decided to keep them.	No change.
Question 9. What are stakeholders' views regarding the proposed requirements on	The majority of respondents raised concerns over the prescriptive nature of Articles 17, 18 and 21, which they view as impractical to implement. It is	The EBA acknowledges the concerns raised by the industry regarding excessive prescriptiveness in the governance section of the CP, in particular as regards	The RTS were amended; in particular the



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
<p>the internal committee structure?</p>	<p>agreed that committees are an important part of the governance structure to ensure decisions take into account various stakeholder views; however, Senior Management Committees are not well suited for day-to-day decision making of the institution (do not meet on a daily basis) and could therefore not address daily limit breaches, smaller model changes etc. These firms believe that this prescriptive language in the RTS will prevent the committee/MB from delegating authority to functions/individuals, which could decrease the responsibilities of roles such as CRO and Head of Market Risk and therefore diminish their ability to acknowledge and prioritise change effectively.</p> <p>Additionally firms considered that sufficient flexibility within the rules is needed in order to allow variable structures within different institutions to provide effective and appropriate governance.</p> <p>Most respondents suggested amending requirements to allow delegation of responsibility to an individual, function or committee.</p> <p>One firm requested further clarification on the role of the internal committee structure in order to understand the scope of the requirements in relation to the mandate.</p> <p>Two firms suggested that the requirements be revised so that CAs have the flexibility to review the firm’s committee structure in the light of the</p>	<p>the committee structure. Institutions agreed with the overall objectives of the RTS in this point, though they were against forcing banks to change their internal structures.</p> <p>As a consequence, the requirements on the internal committee structure are now more flexible and no specific structure of committees is established in the RTS. The RTS legal text is now flexible enough to allow different organisational arrangements, provided the institution’s structure facilitates the fulfilment of the objectives, in particular an efficient control of internal limits.</p>	<p>requirements on the internal committee structure are now more flexible and no specific structure of committees is established, provided the institution’s structure facilitates the fulfilment of the objectives.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>EWRM framework and business model.</p> <p>Finally, one respondent does not think proportionate language is necessary in Article 20(1)(c) but thinks such language (i.e. 'if appropriate') should be added to Article 20(1)(a).</p>		
<p>Question 10. Do stakeholders agree that the internal validation requirements are relevant and capture all material risks?</p>	<p>Respondents generally agree with some of the proposed validation requirements; however, some of them are concerned about the high proportion of portfolio requirements, including those that, in their view, might go beyond the CRR, and the inconsistencies between the RTS and the new BCBS market risk framework, specifically:</p> <ul style="list-style-type: none"> a) Article 23(1)(a): a complete internal validation according to current standards (for older models) should not be incorporated; RTS cannot be applied retrospectively. Suggest: rewording or omit. b) Article 23(2)(b): it sets a minimum level of portfolio granularity for the actual and hypothetical back-testing. Some firms believe this is more granular than the CRR requires and is not in line with the new BCBS market risk framework. c) Article 23(2)(b): respondents agree intraday activity is important, but the new BCBS market risk framework final rules make reference to capturing this and 	<p>The RTS state that the initial validation process only needs to be conducted for new models and for models that require material changes. This validation process would not be required for already approved models though some complementary assessments might have to be conducted once the RTS are in force.</p> <p>Regarding the granularity of back-testing requirements, some respondents suggested omitting this requirement and working towards new BCBS market risk framework requirements which link to the trading desk concept. However, it is not possible to apply the FRTB procedure under the CRR rules that are still applicable.</p> <p>The EBA understands the concerns and the burden firms would be placed under if full intraday activity needed to be captured as part of the requirement outlined in these RTS. However this is not the case; the requirement is linked to an assessment of the importance of intraday activity for back-testing exceptions.</p>	<p>The RTS were amended such that it is now required in Article 23(2)(b) to perform the back-testing only at the maximum level of portfolio aggregation for which the internal model is applied and at least one level below (the country level has been dropped).</p> <p>Furthermore, the back-testing requirement with respect to the 1% quantile has been dropped.</p> <p>In addition to that the requirement that IT changes</p>



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	<p>firms will have until 2019 to implement them. The requirement to implement capabilities in the timeline of these RTS is disproportionate when it will be required on a global scale in 2019. Meeting a shorter term solution (2017) would have large cost implications and would be excessively burdensome.</p> <p>d) Article 23(2)(b): this article required statistical tests that account for timing of excesses; while acknowledging that these tests are interesting, these respondents consider that they are not commonly accepted and therefore should not be a common requirement.</p> <p>e) Article 23(2)(b): the CRR only requires the back-testing of negative excesses (99% of distribution); this article requires the back-testing of gains as well, which is already required for actual and hypothetical P&L. Firms believe this goes beyond the mandate and should be challenged from a theoretical point of view. Instead it is relevant to back-test using hypothetical portfolios (Article 23(2)(f)) since this back-testing process is intended to identify structural features of the portfolio which could equally be highlighted by gain that breaches the positive VaR level.</p>		<p>trigger a validation has been eliminated.</p> <p>Finally, it was added that, where simplifications have been introduced, internal validation assesses whether those simplifications lead under stressed conditions to a conservative capital outcome.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>f) Article 23(3)(d,g,h): one firm believes these components (d,g,h) should not trigger validation activities, nor is an annual review of submodels necessary.</p> <p>g) Article 23(5): this assumes and requires that any methodology changes produce a better capture of risk relevant to the portfolio affected by change. Firms believe the RTS should not assume that methodology changes can only improve risk representation.</p>		
<p>Question 11. Are there any missing elements that should be incorporated or current elements that may be too burdensome?</p>	<p>A number of respondents view the requirement to segregate the independent validation unit and the Risk Control Unit (RCU) as not being consistent with the CRR (Article 369(1)(b)), which requires the RCU to conduct the initial and on-going validation. Additionally, firms generally believe that some of the requirement in the RTS will be overly burdensome to firms; numerous elements of the requirements can be conducted by the RCU with appropriate independent unit reviews.</p> <p>One firm believes the bifurcation of these responsibilities would decrease the CRO's ability to identify and prioritise effectively. They see validation as the core element for model risk management which should report to the CRO .</p> <p>Another firm views the compulsory annual full validation process for all models as burdensome, especially for entities where market risk activities</p>	<p>The wording on the independence of the internal validation has been revisited to avoid making it compulsory to have a fully segregated validation unit. However, the independence of the validation process should be retained, as it is not possible to challenge effectively the work of the model developers without independence between the two functions.</p> <p>The annual validation is not a 'full assessment'; only the changes introduced or issues observed/flagged by IA or previous validations have to be assessed.</p>	<p>The legal language with respect to the segregation of the validation unit from the risk control unit has been reviewed and the explicit segregation from the risk control unit has been dropped.</p>



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	<p>are not relevant (models have not been modified and market conditions are consistent). They also note that full model validations are not always possible before methodology updates (sudden changes in market).</p>		
<p>Question 12. Do stakeholders agree that the proposed requirements on limit structure, regular limit update and limit breach approval processes are appropriate?</p>	<p>The majority of firms agree with the principles that limits should be set and monitored, and breaches resolved in a formal, documented manner. However, these firms do not agree with the requirement for committees to meet on a daily basis to approve risk limit breaches or to review and approve a full suite (can be thousands) of limits/authorisations across different measures of risk; this would be inefficient, restrictive, burdensome and impractical. It is more reasonable to give the Management Board/Committee the ability to delegate this action to independent risk functions and post-notify the Committee of breaches and corrective actions.</p> <p>Firms asked for further clarification on the definition of internal limits in Article 25; do the RTS mean VaR limits or institutional Market Risk limits?</p> <p>Two firms do not believe that jurisdictional level limits should be mandated. Only when material market risk exists and local regulations require it should limits and controls be in place in line with the ones for the Group.</p> <p>These firms also raised concern about incorporating intraday requirements into the RTS,</p>	<p>The EBA agrees that the limits below the level established by the board can be approved by other committees within the organisation, but a formal process should be required in any case.</p> <p>As noted above, the EBA understands the concerns and the burden firms would be placed under if full intraday activity needed to be captured as part of the requirement outlined in these RTS. However, the requirements laid out in this section do not imply full intraday monitoring and are mainly linked to the analysis of back-testing exceptions only (Article 40).</p>	<p>The RTS were amended such that it is just required that the committee structure allows effective and timely control of all internal limits. The jurisdiction limit level approved by the board has been dropped.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>as this topic is currently being discussed at the new BCBS market risk framework level. The requirement to implement capabilities in the timeline of this RTS (6 months) is disproportionate when it will be required on a global scale in 2019. Meeting a shorter term solution (2017) would have large cost implications and would be excessively burdensome. Firms therefore believe it is unnecessary for these RTS to anticipate new BCBS market risk framework requirements, which will be clarified in Level 1 text.</p> <p>Finally, one firm believes banks should adopt a governance framework that is commensurate with their business model, organisational structure and approach to Enterprise Wide Risk Management (EWRM). It believes CAs should review the governance framework and delegated authorities that the firm has adopted for limit monitoring and assess whether these are appropriate in the light of the firm's structure and business.</p>		
<p>Question 13. Do stakeholders agree with the rationale to provide some flexibility for the introduction of new products?</p>	<p>Most firms agree with the rationale and the possibility of allowing flexibility for the introduction of new products. One firm notes that this flexibility should only be allowed if clearly stated in policy (restrictions on size, tenor etc.).</p>	<p>The EBA decided to keep the flexibility for the introduction of new products.</p>	<p>No change.</p>
<p>Question 14. What are stakeholders' views regarding the specific limitations introduced in the RTS regarding</p>	<p>Three firms believe the RTS requirements are appropriate.</p> <p>A few other firms do not agree with requiring</p>	<p>The EBA considers that the need to ensure there is sufficient control around the introduction of new products implies that the process is centralised in a committee where all relevant stakeholders are</p>	<p>Article 29(1)(b)(ix) was added, which says that the NPA committee should</p>



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<p>the delegation of authority to the new product committee?</p>	<p>committees to ensure effective functioning of the NP process, but do not provide any proposals regarding other alternative settings to control the implementation of new products.</p>	<p>represented. The mandate of the committee has been expanded to cover the assessment of the adequacy of the methodology applied to calculate reserves to address any flaws introduced by new products.</p>	<p>assess the adequacy of the methodology to calculate reserves to address any flaws introduced by new products.</p>
<p>Question 15. 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?</p>	<p>All firms that responded agree that the stability of the model is an important factor in model suitability for risk management and capital calculations. However, they believe that requiring 250 days' worth of back-testing at application would be unnecessarily long, when considering the overall application process. The lag time to implement a model which required 250 days of back-testing at application (18 months/400 days etc.) is viewed as unrealistic.</p> <p>The timeline in which firms would be required to meet new FRTB requirements was also considered operationally burdensome. Requirements set out by the new BCBS market risk framework will be required by 2019; however, firms would find challenges from both a cost and a resourcing perspective in meeting the requirements by 2017. There is concern that this would discourage firms from making appropriate changes to their model methodologies.</p> <p>There is also concern that this requirement might create a barrier to entry and will force new entrants to operate on different standards from</p>	<p>The EBA has introduced flexibility by allowing the 250-day observations to be available only when the model is approved. This is always necessary, since the determination of the VaR and SVaR multipliers requires this number of observations.</p> <p>For model changes, only 60 observations are required, though the rule establishes that a conservative extrapolation of the exceptions observed, to complete the 250 data points, should be applied.</p>	<p>Article 31 was amended such that, for initial application before the permission is granted a 250-day back-testing history is needed and, for material model changes, a 60-day back-testing history is needed when applying for the model change. In the case of a material model change the overshootings are extrapolated based on the results before the material change.</p>



EBA analysis

Comments	Summary of responses received	EBA analysis	Amendments to the proposals
Question 16. Do stakeholders agree that the results obtained for the portfolios published by the EBA during this period are useful for validation purposes?	<p>already approved banks for long periods, skewing incentives.</p> <p>There is also concern that these requirements are not fully in line with the new BCBS market risk framework (allows regulators discretion to observe the model post-approval until such time as 1 year's back-testing record can confirm quality).</p>	<p>The text in Article 31 has been amended so that CAs can still require these results if they consider it relevant. The request is nevertheless only relevant if a benchmarking exercise is conducted, and would be based on the last set of portfolios published by the EBA, which are available to any firm; accordingly it should not be seen as a barrier to entry.</p>	<p>Article 31(2) was amended such that competent authorities may also request that the institution provides the results obtained for the most recent market risk portfolios contained in the implementing technical standards.</p>
Question 17. Do stakeholders agree with the requirements related to the model accuracy track record and Stress Testing programme?	<p>Two firms do not see the relevance as models are built firm/business/portfolio specific. According to these two respondents there would be very little added value for IMA validation purposes unless it is tailored for these variables.</p> <p>One firm believes this could be a useful indicator for variability against industry results; however, it notes that the EBA has not yet completed an annual exercise mandated under Article 78 of the CRD, nor have previous benchmarking exercises provided definitive conclusions (only areas needing further clarification). There is also concern that, in order for a new model to provide these results, a hypothetical portfolio exercise would need to be conducted and since this is only done on an annual basis this could delay the consideration of the application.</p>	<p>The EBA has reviewed the language from the Supervisory Stress Testing Guidelines, which were under consultation, to ensure that the RTS wording</p>	<p>Article 33(2)(b)(iii) (i.e. 'any other event risks') was dropped. Requirements on</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>this is not a requirement under the CRR). Some firms consider that these requirements should either be done through the industry-wide annual stress testing process, or be captured in the EBA GL on stress testing and supervisory stress test in an effort to align across policies.</p> <p>Two firms do not agree with the RTS definition of Event Risk as a simple sum of the largest four names JTD with zero recovery for each category. If this were to be read across to the requirement under VaR (Article 370(f)) the implication for specific risk Pillar I Capital would be far beyond a capitalisation requirement (i.e. IRC – the four largest names with zero recovery could easily sum to a larger number than the IRC given large high-grade sovereign holdings held by banks that either do not default or show significant expected recovery). One firm requested clarification of whether sovereigns should be included in these stress testing scenarios. Another firm wants to better understand the implications of Ring Fencing.</p> <p>Finally, another respondent is concerned about the requirement to stress ‘any other events’; it notes that it is impossible to consider every possible event and therefore it makes little sense.</p>	<p>was not contradictory to them.</p> <p>It should nevertheless be noted that the scope of the GL is different from the ST requirements. The GL are applicable for the Pillar 2 SREP (as well as for supervisory ST), whilst the RTS requirements are linked with Article 368(1)(g), applicable only to banks using an internal model for market capital purposes, so the specification of the stress testing requirements is clearly in the scope of the RTS.</p> <p>Following the feedback from consultation, the requirement to capture any ‘other events’ has been dropped, due to its lack of specification. In addition, the JTD scenarios should now consider the two largest equity and debt positions (including sovereign positions) instead of the four largest.</p>	<p>the jump to default and equity events have been amended.</p>
<p>Question 18. Do stakeholders have any additional comments or concerns regarding the requirements outlined in the governance section?</p>	<p>In general, firms are concerned about the level of prescription and number of requirements in the governance section. There is a general view that some of these requirements go beyond the CRR</p>	<p>The EBA has amended this language to allow for IT infrastructure breakdowns as long as risk metrics can be calculated/recovered.</p>	<p>No changes with respect to IT infrastructure breakdowns.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>and might be outside the EBA’s mandate.</p> <p>Some firms believe the requirement to have ‘no major IT infrastructure breakdown’ during the 250 days prior to the initial approval of the model is not appropriate. Instead the RTS should acknowledge that if there is a major system breakdown appropriate governance and remediation is in place.</p> <p>Additionally these firms do not agree with the integrity of position requirements; they view them as too prescriptive (i.e. all positions and instruments in the model should be reconciled daily between risk management, front office and back office). They believe the RTS should recognise this is not the only way to ensure completeness/accuracy (i.e. controls in scope of trading book, risk feeds, system performance, daily variances etc.). Not all variables relating to positions/instruments feed across all three lines (RM, FO, BO) and it would therefore be costly and burdensome to do so. They suggest amending the text to state that the CAs should verify that the institution has adequate controls in place over the integrity of internal model positions and, if applicable, daily reconciliations.</p> <p>Some firms do not find it practical to capture the precise time of capture of each data point for documentation purposes. This would be significantly burdensome to implement.</p>	<p>The EBA understands the challenges and burden associated with providing precise time captures of each data point, given the number of third party feeds used by firms.</p>	<p>The requirement was changed from daily reconciliation to weekly reconciliation.</p> <p>The requirement to record the time when each data point was captured has been dropped. Instead it is required that the institution documents the specification of the sources of market data.</p>



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<p>Question 19. What are stakeholders' views on the proposed requirements for the computation of VaR and P&L at consolidated level?</p>	<p>Three respondents proposed not including prescriptive requirements in the RTS. One respondent proposed only including a requirement for institutions to document the procedure used.</p> <p>One respondent highlighted that – whatever alternative is chosen by an institution – the difference would be immaterial. One respondent reiterated that the back-testing process is a good monitoring tool.</p> <p>Five respondents stated that Alternative 1 (mandating a single closing time) creates many problems. Four of them stated that this procedure is generally impractical, with two of them highlighting that this would create additional operational burden. One respondent indicated problems with risk management, because traders would feel less responsible for their P&L.</p> <p>Five respondents support Alternative 2. One respondent stated that this is current industry practice. Another respondent states that Alternative 2 increases governance. One firm noted that the same problems exist as with 1 (duplication of operational procedures, increasing the number of risk factor time series).</p> <p>Four respondents consider Alternative 3 to be a punitive and disproportionate treatment, which is delinked from management practice.</p> <p>Two respondents state that there is an inconsistency when calculating VaR and P&L. One</p>	<p>The analysis showed that there might be a misunderstanding of the final outcome of this article. The EBA does not intend to reduce the alternatives from three down to one. The three alternatives are an illustration of the different general approaches which might be applied by institutions. Additionally, as stated in the draft RTS, a combination of alternatives (as described by one respondent) might be applicable, too. Although Alternative 2 seems to be applied by the majority of institutions, answers revealed that Alternatives 1 and 2 contain problems/inconsistencies.</p> <p>It should be noted that Alternative 3 (considered by respondents as 'punitive and disproportionate treatment, which is delinked from management practice') is not a requirement which is introduced by these RTS, but is a consequence of a decision of CAs not to grant an approval according to Article 325 of the CRR.</p> <p>Several respondents explicitly commented that a consistent calculation of VaR and P&L (as required by Article 36(3)(d) of the CRR) is not necessary/feasible, providing different explanations (operationally not feasible/difference immaterial). However, one respondent stated that VaR and P&L should be calculated consistently.</p> <p>Finally, the RTS only include a general requirement that all the approaches and especially the</p>	<p>Article 36(3) has been amended such that it is just required that the institution captures the positions consistently at the close of business and that that different timing applied during the daily end-of-day valuation process has to be justified.</p>



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	<p>respondent states that a consistent calculation of VaR and P&L is not operationally feasible, because those calculations are done in different systems. Another respondent states the inconsistency is considered to be negligible on a 10-day horizon. However, theoretically this inconsistency might result in (technical) overshooting. One respondent stated that VaR and P&L should be calculated consistently.</p>	<p>differences – both within the calculation of VaR and P&L – shall be assessed and properly documented.</p>	
<p>Question 20. Do stakeholders agree with the distinction between ‘global’ and ‘local’ price risk factors?</p>	<p>Several respondents do not agree that a distinction between global and local price risk factors is necessary. One respondent highlighted that there is often no clear distinction between global and local price risk factors. Another respondent highlighted that the distinction would violate requirement 3(a), as this would be inconsistent with the definition of the position and the market data used to define exposures.</p> <p>Two respondents agree that a distinction between global and local price risk factors is necessary.</p>	<p>Several respondents do not agree that a distinction between global and local risk factors is necessary; two respondents agree that a distinction is necessary.</p>	<p>The explicit requirement for a distinction between global and local risk factors (i.e. paragraph 4 of Article 36) was deleted.</p>
<p>Question 21. 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?</p>	<p>Two respondents note that the decision to update market data is not connected to the model used, but to the time window. The longer the time window, the less important it is to update frequently.</p> <p>Three respondents note that daily updates do not create additional burden. One respondent highlights that daily updates are current practice</p>	<p>Several respondents consider it burdensome and – additionally – not reasonable from a risk management perspective. The main reason provided is that daily amendments might lead to data which would be automatically included in the systems without testing the quality (e.g. to prevent stale data, errors, outliers from being automatically included in the risk management systems), which would definitely increase the potential for</p>	<p>Paragraph 3 of Article 39 (which required banks using other methods than historical simulation to have the capability to update the data sets more frequently than</p>



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	<p>within its jurisdiction.</p> <p>Two respondents state that daily updates are not desirable. They indicate that daily adjustments reduce the quality of time series and increase the risk of downstream adjustments of the market data (in case of stale, false or absent data).</p> <p>One respondent states that ad-hoc requirements connected to specific developments (e.g. stress or sudden market movements, volatility events) are sufficient.</p>	<p>downstream adjustments. However, several respondents do not consider a daily update burdensome without providing any further arguments w.r.t. data quality.</p> <p>Update requirements solely linked to specific developments (e.g. stress or sudden market movements, volatility events) do not seem to be in line with Article 365(1)(e) of the CRR, which requires at least monthly (regular) updates of the VaR data set.</p>	<p>monthly) was deleted. The RTS still require proper justification for market data sets updated less frequently than daily and request banks to have the capability of computing them more frequently if necessary.</p>
<p>Question 22. 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?</p>	<p>Five respondents do not agree with the use of a hypothetical P&L calculated from mark to market P&L including all pricing factors of the portfolio's position. Those respondents state that the back-testing should be restricted to the risk factors which are within the scope of the permission of the market risk model. One respondent proposed eliminating the prescriptive requirements and only including a general requirement for CAs to check that the scopes of hypothetical P&L and VaR are identical.</p> <p>One respondent highlighted that the requirement to include all material risk factors has to be seen in connection with the scope of the model permission. Material risks outside the scope should not result in outliers and hence have an impact on</p>	<p>Analysis displays a clear majority in favour of comparing the hypothetical P&L with the P&L restricted to the scope of the internal model; however, other firms request that they can carry on performing the calculation they are currently doing to avoid the burden of re-computing everything.</p>	<p>With respect to the partial use it is required in Article 40(4) that the hypothetical P&L is calculated just with respect to pricing factors which are covered by the internal model. In case the exclusion of pricing factors not in the model is too burdensome and they are not material, the full hypothetical P&L</p>

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

the addend.

Two respondents state that requirements to include all risks in theoretical P&L (not only those in scope of IMA) seem to be an anticipation of the new BCBS market risk framework P&L-attribution test, which is one of the most challenging areas.

Two respondents agree with the use of a hypothetical P&L calculated from mark to market P&L including all pricing factors of the portfolio's position. One of those respondents highlights that breakdown of P&L to risk factors outside the model is considered impractical.

Two respondents propose granting an option to calculate the P&L taking into account all risk categories if there are operational difficulties in separating P&L effects and if the institution justifies the prudence of the chosen method. For instance, an institution may have approval to use IMA for general risk measurement only but may not be able to strip out the specific risk component from the hypothetical P&L. In another example, an institution may not be able to exclude from the hypothetical P&L the effect due to an issuer default, which is capitalised otherwise by IRC/CRM.

One respondent states that defining the elements to be included or excluded from either hypothetical or actual P&L (e.g. valuation adjustments – see Article 40(4)) would be beyond the mandate of these RTS. However, in clear

can be used.



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	<p>contradiction to the comment w.r.t. the potential exceeding of the mandate, the same respondent proposed excluding capital add-ons which are connected to specific risk factors from hypothetical P&L.</p> <p>One firm proposed additional changes (see Q35):</p> <ul style="list-style-type: none"> - Article 40(1): The reference should probably be point (l), not (g) of Article 18(1). - Article 40(2): The back-testing requirement here refers to portfolios not relevant for the capital multiplier. Thus, this is a validation issue that is already covered in Article 23(2)(b) and should be deleted here. 		
<p>Question 23. 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?</p>	<p>One respondent states that risk factors outside the model are subject to the standardised approach. For those risk factors P&L is analysed to test the materiality.</p> <p>Two respondents state that reports are in place to senior management providing the results of the analysis of full P&L (even for institutions with partial use).</p> <p>One respondent states that the scope of hypothetical P&L and VaR should be aligned as far as possible. Hence, this respondent recommended to revisit the RTS to allow CAs to review the adequacy of the back-testing methodology. If overshootings are a result of risk factors outside the scope of the model, a requirement should be</p>	<p>Only one respondent provided an additional proposal about how to ensure the appropriateness of the model (possibility to require capital add-ons if overshooting result from risk factors outside the model – RNIV treatment). Article 48(5) already includes such a requirement.</p>	<p>No change.</p>



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	included to require additional mitigants (e.g. capital add-ons).		
<p>Question 24. What are stakeholders' views regarding the relative merits of the inclusion of all risk factors for the actual P&L computation?</p>	<p>Five respondents state that hypothetical and actual P&L should only be back-tested using risk factors which are within the scope of the market risk model. Three of them state that considering risk factors which are outside the scope of the model would lead to a double counting of risk (via the addend and own funds requirements calculated using the standardised approach). Additionally, one respondent highlighted that back-testing of all risk factors for institutions applying the partial use would not be CRR-compliant.</p> <p>Two respondents state that the VaR should be benchmarked against the full actual P&L. One respondent highlighted operational problems with generating a P&L excluding risk factors which are outside the scope of the market risk model.</p> <p>Two respondents commented on discretion under Article 366(4) of the CRR. While one respondent recommended including in the RTS the possibility to use this discretion where risk factors outside the model result in overshooting, the other respondent preferred to have a consistent scope to avoid such situations.</p>	<p>Analysis displays a majority in favour of computing the actual P&L considering only the scope of the internal model (nine respondents in favour, three respondents against). Respondents argue that a back-testing w.r.t. all risk factors for partial use would be double counting of risks and legally not in line with CRR requirements.</p> <p>The EBA considers that, once the P&L used for hypothetical back-testing is restricted to the scope of the model, the benefits of a 'full P&L' for actual back-testing outweigh the problems. It should be noted that one of the reasons why a back-testing exception might be justified is, precisely, that the P&L movement might come from a risk factor outside the scope of the model, so no double counting (at least automatic) should be produced.</p>	<p>No change.</p>
<p>Question 25. What are stakeholders' views regarding the proposed definition of 'Net interest income'?</p>	<p>In general four respondents propose not including a definition of net interest income in the RTS. Two respondents – which in general agree with the</p>	<p>Nine respondents state that the definition of net interest income should be deleted from the RTS.</p>	<p>The definition and requirement with respect to net</p>



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	<p>definition of the EBA – instead propose including a requirement that net interest income is included in the hypothetical P&L and VaR consistently.</p> <p>One respondent states that defining net interest income is not part of the mandate of these RTS – consequently Article 40(5)(e) should be deleted.</p> <p>One respondent states that a definition of net interest income within the RTS would require some banks to substantially change the definition of P&L. This should not happen, taking into consideration the fundamental changes caused by the new BCBS market risk framework.</p> <p>One respondent does not consider a definition of net interest income to be an issue, as the trading book P&L should be valuation based and not accrual based.</p>		<p>interest income in Article 40(5)(e) have been deleted.</p>
<p>Question 26. What are stakeholders’ views regarding the requirement to assess the importance of intraday and new trades to determine the VaR and SVaR multipliers?</p>	<p>Five respondents generally state that the current treatment takes into account intraday risk and new trades and capitalises those risks if material via the addend.</p> <p>Five respondents state that those risks are reflected in the actual P&L.</p> <p>One respondent states that intraday risk may be overstated in the back-testing based on the actual P&L, because the holding period for intraday risk is much shorter than for VaR.</p> <p>Three respondents propose clarifying the procedure of Article 366(4) of the CRR in</p>	<p>The RTS proposed considering intraday risk and risk of new trades solely when calculating the actual P&L. As a consequence, if the discretion under Article 366(4) of the CRR is applied, it has to be ensured that those risks still have to be recognised if deemed material.</p> <p>A majority of respondents state that intraday risk – if considered to be material – is dealt with in the current framework via the addend. Differences are observable in whether those risks are reflected in the hypothetical (two respondents) and/or actual P&L (four respondents). However, four out of those</p>	<p>Article 40(5)(c) was amended so that intraday activities are included only in the actual P&L calculation. If the addend is limited to the overshootings observed for hypothetical P&L, then the number of exceptions produced by intraday activities</p>



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	<p>connection with intraday risk, with one respondent proposing the explicit inclusion of this clarification in the RTS.</p> <p>One respondent states that, although intraday risk is considered to the extent possible in the VaR, the VaR methodology is generally not suitable for addressing all the peculiarities of intraday trading.</p> <p>One respondent points to operational burden of including intraday risk in the IT.</p> <p>Three respondents point out the general immateriality of intraday risk. Another respondent states that intraday risk might be material for algorithmic trading.</p> <p>One respondent provided further comments (in Q35):</p> <ul style="list-style-type: none"> - Article 40(6): The comparison of the two back-testing calculations is a validation issue and should be moved to the corresponding validation section. - Article 40(10): It is possible to report overshootings within three working days, but not together with an analysis and any conclusions drawn from this analysis in regard to, for example, model improvements. For this, a longer period of at least one month is essential. 	<p>eight respondents state that the reflection of intraday risk via the addend might not be risk adequate (overstated).</p> <p>Generally, it is mentioned that intraday risk is considered to be immaterial, but may be a relevant risk within specific business areas (client trades or algorithmic trading).</p>	<p>has to be considered when assessing the appropriateness of the multiplier for VaR and SVaR.</p>
<p>Question 27. What alternative methodology, if any, might be appropriate to capture this intraday risk?</p>	<p>One respondent states that intraday risk should be assessed via the risk not in VaR framework (RNIV – e.g. assigning capital add-ons, reserves) if deemed material. However, one respondent clarifies that</p>	<p>Only two respondents propose alternative methodologies to address intraday risk and new trades (ad-hoc reporting or capitalisation via capital add-ons, reserves (RNIV) if material). Article 40(11)</p>	<p>No change.</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>alternative approaches should be possible, but not specified in detail within these RTS.</p> <p>One respondent considers ad-hoc reporting as an alternative methodology.</p> <p>One respondent states that alternatives are not necessary, because – in line with current practice – this issue is already addressed within the validation.</p> <p>Another respondent urges not establishing an additional back-testing requirement based on an intraday P&L.</p>	<p>already includes a reference to Article 48, which mentions capital reserves.</p>	
<p>Question 28. What are stakeholders' practices regarding adjustments computed less regularly than daily?</p>	<p>Several respondents either described their own practice, or considered the proposed approach reasonable. Others called for a more flexible approach based on supervisory discretion.</p> <p>One respondent reported including in the P&L the additional adjustments related to valuation.</p> <p>One participant in the consultation pointed out that, where valuation adjustments are computed less often than daily, they should be included in P&L but should also be eligible for discounting from the addend multiplier.</p>	<p>Feedback was mainly aimed at describing banks' own practices, which vary across banks.</p>	<p>No change.</p>
<p>Question 29. What are stakeholders' views regarding the treatment of Theta in VaR and as a component of P&L?</p>	<p>Several respondents supported exclusion of Theta in both VaR and P&L or called for the adoption of an approach closely aligned with the one envisaged under the new BCBS market risk framework.</p>	<p>Feedback highlighted a slight majority of views supporting the exclusion of Theta in both VaR and P&L.</p> <p>Some respondents called for consistency with the new BCBS market risk framework (i.e. exclusion) or</p>	<p>The RTS were amended such that, if the Theta is included either in VaR or P&L but not</p>



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	<p>One participant to the consultation called for exclusion of Theta; where it is decided to include it, its inclusion should be limited to options only.</p> <p>Some respondents called for consistency of treatment (inclusion/exclusion in both) or general consistency with the new BCBS market risk framework.</p> <p>One respondent considered Theta should be included as a component of the P&L.</p>	<p>consistency of treatment (inclusion/exclusion in both).</p>	<p>in both, the competent authority must verify that the effect of this discrepancy is not material.</p>
<p>Question 30. Taking into account the CRR requirement to capture ‘correlation risk’ do you consider that the use of stochastic correlations should be required?</p>	<p>Many respondents either did not support the use of stochastic correlations or claimed that this requirement would be burdensome, complex and a source of implementation issues.</p>	<p>The majority of respondents are not supportive of introducing a requirement with regard to the use of stochastic correlations to take into account the correlation risk as per CRR requirement.</p>	<p>No change, i.e. no requirement with regard to the use of stochastic correlations was included.</p>
<p>Question 31. Do stakeholders agree with the additional requirements introduced for banks using empirical correlations?</p>	<p>Two participants to the consultation either agreed with the proposed approach or agreed with the monthly review, but failed to see the merit of using specific correlations for validation purposes.</p> <p>Two respondents pointed out that the proposed approach is either difficult to implement or too prescriptive, and would favour a more flexible approach whereby banks can demonstrate the soundness of their practices to CAs.</p> <p>Some other respondents requested clarification on the exact scope of this article and provided drafting suggestions.</p>	<p>Some respondents did not provide feedback; two considered this requirement not applicable to them due to their current practices (use of Historical Simulation Approach).</p> <p>Two banks do not agree with the proposed approach because it is too difficult, too burdensome or excessively prescriptive. However, they did not provide any alternative treatment.</p> <p>Two bank agreed with the proposal or part of it.</p> <p>Feedback pointed out mixed views and in some cases banks possibly misunderstood the question.</p>	<p>No change.</p>



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<p>Question 33. Do you agree with the elements that should be considered when assessing any internal reserves and/or the VaR and SVaR multiplication factors?</p>	<p>One participant in the consultation expressed disagreement, considering the list too prescriptive.</p> <p>Some respondents did not explicitly state agreement or disagreement but suggested allowing competent authorities flexibility.</p> <p>One respondent agreed with the proposed approach.</p> <p>Another respondent deemed the proposed approach redundant.</p>	<p>Feedback is split. Some banks did not support the proposed approach, called for a different approach with ‘more flexibility’ (without specifying anything) or deemed it redundant. One is explicitly in favour and several did not provide feedback.</p> <p>The EBA considers that, due to the lack of any alternative approach (other than saying it has to be ‘flexible’) and the need to include a comprehensive list of elements to assess, the current text should be maintained.</p>	<p>No change.</p>
<p>Question 34. Do you agree that the SVaR multiplier should always be the same or higher than the one used for VaR purposes?</p>	<p>Disagreement with the proposed approach or with an explicit requirement was expressed by many respondents.</p> <p>Other respondents agreed in principle but pointed out that it will be redundant once the new BCBS market risk framework is implemented in the CRR, or pointed out that supervisors may want to apply a higher multiplier to VaR not reflected in SVaR.</p>	<p>A large majority of respondents disagree with the proposal that the SVaR multiplier should always be the same or higher than the one used for VaR purposes.</p> <p>A few respondents agreed with it or called for equal values.</p>	<p>The requirement that the SVaR multiplier must be higher than the VaR multiplier has been dropped.</p>
<p>Question 35. Do stakeholders have any additional comments or concerns regarding the requirements outlined in the VaR section?</p>	<p>Two respondents underlined the need to define a consistent framework across EU regulators on VaR multipliers. Some respondents expressed doubts on the proposed approach to capture non-linearities in VaR.</p> <p>On the need for additional multiplication factors two respondents claimed that Competent Authorities should also take into account the conservativeness of the model.</p>	<p>Some of the concerns have been reflected in the legal text, as noted in previous questions. In addition the use of Taylor approximation is allowed in the RTS, though if it is deemed inappropriate (because of the type of options traded) it may be dealt via reserves or the VaR/SVaR multipliers.</p>	<p>No additional changes.</p>



EBA analysis

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	<p>Two respondents supported the approach under Article 48(5) that allows Competent Authorities to take into account any reserves held by the institution to mitigate any shortcoming of the IMA.</p> <p>Two respondents called for a revision of the approach defined in Articles 42, 43 and 46 of the CP RTS, which were deemed to be redundant or could have been redrafted to define the standard that firms should meet rather than prescribing the methodology and the scope of positions that should fall within the internal model.</p> <p>One respondent called for the deletion of Article 45 and a specific paragraph of Article 46 deemed to be redundant, out of the EBA's scope or inappropriate given the CRR requirements.</p>		
Question 36. Do stakeholders consider that any proxy validated for VaR should be acceptable for SVaR purposes?	There is a general understanding that proxies that are validated for VaR are deemed to be acceptable for SVaR purposes. However, one respondent pointed out that some proxies acceptable for SVaR might not be acceptable for VaR. One respondent also suggested that the fact that a proxy is validated for VaR should not be a mandatory condition for it to be validated for SVaR.	According to the RTS text, those proxies that are validated for VaR should be acceptable for SVaR; however, this does not imply that, in order to be acceptable for SVaR purposes, a proxy has to be validated for VaR necessarily.	Article 54 was amended such that, if different proxies are used in the VaR / SVaR for the same risk factor, CAs are required to verify that this is justified.
Question 37. Do stakeholders have any additional comments or concerns regarding the rest of requirements outlined in the Stressed VaR sub-section?	One respondent raised the point that the link made in Article 49(2) between the SVaR and the reverse stress testing could be harmful for risk management, since those are two different risk measurement approaches.	There is no direct link made between the reverse stress testing and the period for SVaR. It is only required that the stress period is 'relevant to the material risk factors included in the institution's current portfolios'. The materiality of risk factors	Language in Article 49(2) has been amended.



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	<p>One respondent suggested that VaR overshooting that does not cause SVaR overshooting should not be taken into account for SVaR addend purposes. Clarification is requested for the 'proxy materiality' referred to in Article 54(3).</p> <p>One respondent pointed out that the part of Article 49(2)(c) concerning the highest volatility ('rather than merely corresponds to the period of highest volatility') should be deleted since it cannot always be defined, for example in the case of a non-linear portfolio with several risk factors.</p>	<p>'shall be determined applying the results obtained from the sensitivity analysis towards single risk factors'; this has nothing to do with the reverse ST.</p> <p>There is no such thing as SVaR overshooting since there is no SVaR back-testing.</p> <p>The language concerning the highest volatility in Article 49(2)(c) has been dropped.</p>	
<p>Question 38. Do stakeholders agree with the EBA interpretation regarding the treatment of event risk for credit positions after the implementation of IRC?</p>	<p>The majority of respondents agree with the treatment of event risk. There are, however, several comments:</p> <p>One respondent, although acknowledging that including a position in the IRC sufficiently meets the requirements of Article 370(f) of the CRR, suggested that equity instruments should be included as well in Article 56(4) of the RTS since the IRC model is deemed to capture event risk for debt instruments.</p> <p>One respondent suggested a rewording in Article 55(1): '...produce material interest rate volatility...'. One respondent raised two possible contradictions between the proposed RTS and the CRR. It considers that the requirement of Article 55(3) to validate and assess yield curve modelling against alternative methods is in contradiction to</p>	<p>For equity positions, if in the IRC scope, the IRC model is deemed to be capturing event risk. If not in the IRC scope, the VaR and SVaR model should include it. Both points (3) and (5) of Article 55 suggests a better monitoring of yield curve modelling and tenor capturing, which, in the EBA's view, does not constitute a contradiction with the CRR text.</p>	<p>No change.</p>



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	<p>Article 367(2) of the CRR, which allows ‘using one of the generally accepted methodologies’. It also considers that Article 55(5) should be deleted since its requirements (a) and (b) would contradict Article 367(1), and 367(2)(a) of the CRR.</p> <p>Two respondents pointed out that back-testing exceptions driven by event risk must not be viewed as VaR model deficiencies.</p>		
<p>Question 39. What are stakeholders’ views regarding the capture of the FX position stemming from Banking Book activities and the treatment proposed in the RTS?</p>	<p>The majority of interested respondents consider that the approach that is currently proposed in the RTS is overly conservative.</p> <p>One respondent suggested using more updated single observations or average figures instead of looking at the FX position for the whole previous year.</p> <p>One respondent raised the point that, if positions that meet the requirements of Article 352(2) of the CRR are excluded, this should be stated clearly. They suggested as well that it should be explained whether banking book FX positions can be netted with offsetting positions in the trading book.</p>	<p>The approach proposed if the integrity of positions cannot be fully guaranteed is meant to be conservative, considering the fact that this situation is to be avoided.</p>	<p>No change.</p>
<p>Question 40. Do stakeholders consider appropriate the requirements established in this article regarding the constant level of risk and constant position assumptions?</p>	<p>Three respondents agree with the proposal.</p> <p>One respondent considered there was an inconsistency in Article 63 since it reads ‘irrespective of the methodology’ but refers to ‘liquidity mismatches’ in point (b), which only exist in the constant level of risk assumption.</p>	<p>Indeed, maturity mismatches referred to in Article 63 only refer to the constant level of risk assumption. Accordingly, the wording ‘<u>in particular</u> that maturity mismatches...’ specifies that this part of the article does not refer to both assumptions.</p> <p>The fact that the model should be able to determine</p>	<p>The wording in Article 63(4)(a) was changed to ‘the same financial instrument’ and the wording in (b) was changed to ‘unless</p>



Comments	Summary of responses received	EBA analysis	Amendments to the proposals
	<p>One respondent considers that the requirement in Article 63(2)(e)(i) that the IRC model should specify changes ‘which are attributable to changes in credit spreads other than changes resulting from rating migrations and defaults’ is in contradiction with Article 374(3) of the CRR: ‘The impact of diversification between, on the one hand, default and migration events and, on the other hand, other risk factors shall not be reflected.’ It suggests as well that, in order to be in line with Article 375(1) of the CRR, Article 63(4)(a) should read: ‘positions refer to the same strictly identical financial instrument.’</p> <p>One respondent requests clarification of the reason why maturity mismatches should not be material for the portfolio as long as the model treats them appropriately.</p>	<p>changes in credit spreads other than those resulting from rating migrations and default events does not mean that it should reflect the impact of diversification between those risk factors and others. Therefore, the EBA does not consider that Article 63 is in contradiction with the CRR.</p> <p>The wording ‘strictly identical financial instruments’ has been changed into ‘the same financial instrument’ in accordance with Article 375(1) of the CRR.</p> <p>In Article 63(4)(b), the wording has also been changed: ‘maturity mismatches between long and short positions occurring within the liquidity horizon are reflected in the models and <u>unless they</u> are not material for their portfolio’.</p>	<p>they are not material for their portfolio’.</p>
<p>Question 41. Do stakeholders agree that internally-derived ratings shall be prioritised for IRC?</p>	<p>Two respondents consider that there is no need for prioritisation, and that such a prioritisation cannot be relevant in general. One respondent raised the issue that this could be inconsistent with compliance restrictions since the public side cannot have access to all private side information, like internal ratings.</p> <p>Two respondents consider that internally derived ratings are indeed better for IRC.</p> <p>Two respondents consider that externally derived ratings are better, with one respondent pointing out the fact that internally derived ratings lead to</p>	<p>Since it appears that there is no common view among the industry concerning the sources of ratings for IRC, no preference between sources will be included in the final text (however, banks have to define an internal hierarchy to avoid cherry-picking). To be further discussed at SGMR.</p>	<p>No change, i.e. no preference between the sources was introduced.</p>



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	<p>greater variability.</p> <p>One respondent considers that prescribing the modelling choices exceeds the EBA’s mandate for model assessment.</p>		
<p>Question 42. Do you consider that PDs derived from spreads or external ratings are more appropriate for IRC modelling than those internally-derived?</p>	<p>Two respondents consider that such a prioritisation cannot be relevant in general, and must therefore not be written down.</p> <p>One respondent considers that internally derived PDs are better.</p> <p>Two respondents agree that externally derived ratings are better. One of those, however, points out that, if using master scales, there cannot be only one because of the different methodologies that are used (through the cycle or point in time). One respondent points out the fact that, for better consistency, it would be important that all respondents use externally based PDs.</p> <p>One respondent suggests not writing down anything on this matter before the entry into force of the FRTB.</p> <p>One respondent considers that prescribing the modelling choices exceeds the EBA’s mandate for model assessment.</p>	<p>As for ratings, since there is no common view among the industry concerning the sources of PDs, no preference between sources will be included in the final text (however, banks have to define an internal hierarchy to avoid cherry-picking).</p>	<p>No change, i.e. no preference between sources was introduced.</p>
<p>Question 43. Do stakeholders agree with the exclusion of zero PDs for IRC?</p>	<p>The majority of respondents agree with the exclusion of zero PDs, but are not in favour of the introduction of a floor.</p> <p>Two respondents consider that the use of separate</p>	<p>Even though it is true that the IRC model can generate non-zero capital charges for zero PDs, due to migration risks, the EBA considers that a capital charge is inevitable to capitalise against the risk of</p>	<p>No change. The requirement that the PDs have to be greater than zero</p>



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	<p>transition matrices for specific groups of issuers and specific geographical areas is not appropriate since burdensome and not really important for PDs.</p> <p>One respondent agreed with no restriction, but would need further guidance.</p> <p>Two respondents do not agree with the exclusion of zero PDs, one of those considering that ensuring non-zero entries for all PDs is in practice too burdensome.</p> <p>One respondent pointed out the fact that zero PDs can still generate non-zero charges for migration in IRC models.</p>	<p>default even for the less risky counterparties. The majority of respondents agree that zero PDs should be excluded, though they are against any other kind of floor.</p>	<p>was kept.</p>
<p>Question 44. Do stakeholders consider that losses due to default should be based on the market value or the instrument's principal?</p>	<p>One respondent considers that the most consistent way would be to base losses due to default on the market value.</p> <p>One respondent is in favour of the use of the principal.</p> <p>Two respondents consider that the use of both could be allowed, since the relevance depends on the instrument.</p> <p>Two respondents suggest applying the recovery rate to the principal and then subtracting it from the current market value.</p> <p>One respondent considers that prescribing modelling standards choices exceeds the EBA's mandate for methodology assessment.</p>	<p>Though no unanimous view was received a majority of respondents support the use of market value when determining the losses due to default. In addition, in order to be in line with the new Basel approach (which is one of the main requests of the respondents), the market value might be used. See FRTB paragraph 186(t) point 2): 'LGDs must be determined from a market perspective, based on a position's current market value less the position's expected market value subsequent to default'.</p>	<p>The final RTS state in Article 70(3)(f) that, where determining the losses due to default, institutions consider any valuation losses reflected in the current market valuation.</p>



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Question 45. Do stakeholders have any additional comments or concerns regarding the requirements outlined in the IRC section?	<p>Two respondents expressed concerns on the limits referred to in Article 64(2) ('a maximum size permitted for the individual positions with inferred ratings'). It is not clear enough whether the limits are to be set on the issuer level (which respondents would prefer) or on the security/portfolio level.</p> <p>Two respondents ask for clarification of how transition matrices are tested for conservatism.</p> <p>One respondent considers that Article 66(1)(a) and (b) should take into account that migration matrices (including PDs) for liquidity horizons of less than 1 year are not necessarily based on 1-year matrices, but can instead be extracted directly. It considers as well that Article 69(2)(b) should take into account that the assessment of relevance/impact of different copulae is not always possible and/or reasonable. Concerning Article 70(3), it considers that, like PDs, the LGDs/recovery rates do not change quickly enough to justify an at least weekly update. It also notes that, to be in line with Article 367(2)(c) of the CRR, Article 58(1) should read 'for each of the equity markets in which the respondent holds significant positions.' Finally, it considers that Articles 65(2) and 70(6)(a) are too detailed.</p> <p>One respondent would like more explanations to understand why points (2) and (3) of Article 64 on the source of ratings are being proposed.</p>	<p>For positions with inferred ratings, limits are to be set on the issuer level, since the absence of internal or external ratings concerns the issuer.</p> <p>Concerning the wording of Article 65(3), the principle of proportionality – 'depending on the size and complexity of the portfolio of positions' – should also apply for the reflection of the portfolio of IRC instruments of the institution.</p>	<p>Article 64(2) was amended to make it clear that the limit should be set on the issuer level and 'other' was removed from Article 65(3). Finally, in Article 65(3) 'specific geographical areas' was deleted.</p>



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Question 46. Do stakeholders have comments or concerns regarding the requirements outlined in the correlation trading section?	One respondent considers that the requirement of Article 74(3)(a) to evaluate the existence of a liquid two-way market for single-name credit derivatives at least quarterly is too prescriptive.		No change.