

Policy Statement | PS10/14

Responses to CP12/14

October 2014



BANK OF ENGLAND
PRUDENTIAL REGULATION
AUTHORITY



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This policy statement contains the final rules and supervisory statements to implement the proposals made in consultation paper CP12/14 in the areas of credit risk mitigation, credit risk (commercial real estate exposures only), governance, and market risk.

1 Introduction

1.1 This Prudential Regulation Authority (PRA) policy statement (PS) provides feedback to responses to the proposals in CP12/14 (the CP)⁽¹⁾ that were subject to a one-month consultation period, and sets out the final PRA rules and supervisory statements for those areas. The areas of the CP covered by this PS are:

- credit risk mitigation;
- credit risk (commercial real estate (CRE) exposures in non-European Economic Area (EEA) countries);
- governance; and
- market risk.

1.2 The proposals relating to internal ratings-based approaches in Chapter 3 of the CP were subject to a three-month consultation period. Feedback, and a final supervisory statement for these proposals will be provided in due course.

1.3 This PS is relevant to banks, building societies, and PRA-designated investment firms.

2 Feedback to responses

2.1 The PRA received two responses to the first part of CP12/14. Respondents were generally content with the proposed changes, but asked for clarification of a number of points. These are set out below.

Credit risk mitigation

2.2 The Capital Requirements Regulation (CRR)⁽²⁾ Article 225 requires that firms wishing to use own estimates of volatility adjustments under the Financial Collateral Comprehensive Method (FCCM) seek permission to do so from their competent authority. Prior to the introduction of the CRR, firms could use this methodology without permission from the PRA. In the CP, the PRA proposed changes to the supervisory statement on credit risk mitigation (SS17/13)⁽³⁾ setting out the PRA's expectations for granting this permission.

2.3 The PRA will update SS17/13 as proposed in the CP. The final supervisory statement is contained in Appendix 1.

2.4 One respondent asked if firms currently using the methodology needed to apply for the new CRR permission. The PRA confirms that all firms wishing to use own estimates of volatility adjustments under FCCM have to apply for a CRR permission and meet the requirements set out in SS17/13. The PRA expects firms to which this applies to do so as soon as possible.

Credit risk (CRE exposures in non-EEA countries)

2.5 CRR Article 124(2) allows competent authorities to set, for certain CRE exposures, a higher risk weight or stricter criteria than those set out in CRR Article 126(2), where appropriate, based on financial stability considerations. In the CP, the PRA proposed introducing stricter criteria for an institution to consider an exposure as fully and completely secured by mortgages on CRE exposures located outside the EEA for the purposes of CRR Article 126(1). The approach was proposed to provide a similar treatment to that applied to CRE exposures located in the United Kingdom. Applying this approach is consistent with the published views of the European Commission⁽⁴⁾ that stricter criteria or higher risk weights may be applied by competent authorities to exposures secured by real estate in third countries.

2.6 The PRA received one response to the proposal. The respondent referred to CRR Article 101 and asked whether the loss threshold introduced in the proposed rule should be measured against exposure value, rather than risk-weighted exposure amounts, to avoid unintended consequences and year-on-year volatility in the loss percentages. In the interests of simplicity, the PRA will apply exposure value rather than risk-weighted exposure amounts in the rule Credit Risk 4.1A. The rule has been amended accordingly.

2.7 The proposed rule refers to losses in a jurisdiction over a representative period. The respondent asked whether the PRA intends to consult the industry on: (i) how to determine this representative period; and (ii) whether to apply the proposed rule on a regional (as opposed to jurisdictional) basis. The PRA confirms that having now consulted on separate rules in respect of CRE exposures located within the United Kingdom itself and outside the EEA, it intends to obtain industry's views on what might constitute a representative period for both UK and non-EEA exposures. The PRA confirms that it will apply the rule on a jurisdictional basis because the PRA considers it would be disproportionately complex to define losses on a regional basis, and because the relevant markets often have jurisdiction-specific characteristics. In addition, risk-weights are typically applied by relevant supervisory authorities on a jurisdictional basis.

2.8 The proposed rule requires the data used to determine the loss level to be of a specified quality. The respondent asked whether the PRA intends to publish acceptable sources of data provided to it. The PRA confirms that, as and when acceptable

(1) *PRA Consultation Paper CP12/14, 'CRD IV: updates for credit risk mitigation, credit risk, governance and market risk'*, June 2014; www.bankofengland.co.uk/pr/Pages/publications/cp/2014/cp1214.aspx.

(2) Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:321:0006:0342:EN:PDF>.

(3) www.bankofengland.co.uk/pr/Pages/publications/creditrisk.aspx.

(4) www.eba.europa.eu/single-rule-book-qa/-/qna/view/publicId/2013_66.

sources of data are established for the purpose of this rule, it will publish them.

2.9 The final rules for CRE exposures located in non-EEA countries are contained in Appendix 2.

2.10 In accordance with CRR Article 124(3), as the rule consulted on introduces additional criteria to those set out in CRR Article 126(2), institutions shall have a six-month transitional period from the date of this publication to apply any new resultant risk-weight.

Governance

2.11 In the CP, the PRA proposed changes to SYSC 4⁽¹⁾ setting out how it expects the Capital Requirements Directive (CRD)⁽²⁾ Article 91(3) limits on directorships to apply to directors in holding companies.

2.12 The PRA has made a small amendment to the guidance as a result of the consultation responses. The guidance clarifies that, although its main focus is on which individuals in the holding company could be subject to the limits, it is possible that there may be other individuals in the wider group who form part of the management body of the consolidated group who are also subject to the limits. The final changes to SYSC 4 are set out in Appendix 3.

2.13 The PRA received two responses to the proposals, both welcoming the attempt to give clarity on how the limits apply. One respondent asked for further details of whether the limits could apply to other entities beyond the ultimate financial holding company, including those in other Member States, or whether the PRA's view was that the limits could only ever apply (beyond the credit institution itself) to those individuals within a financial holding company who are approved persons.

2.14 In response to the first part of the question, the PRA notes that the CRD applies throughout the European Union, so directors of holding companies based in another Member State may be subject to the limits in CRD Article 91 by virtue of that other Member State's implementation of the CRD.

2.15 Secondly, as the PRA explained in the CP, CRD Article 91 should apply to the individuals who manage the consolidated or sub-consolidated group. The SYSC guidance focuses on the identification of individuals within holding companies, both because that was the focus of the queries the PRA had received, and because the PRA believes that in practice it is the individuals within any holding companies, in addition to the members of the management body of the credit institution(s), that will make up the management body of the consolidated group. However, it is possible that an individual in another unregulated part of a group, such as a service company, might be part of the management body of the group if they have a strong influence on its affairs, and this will be determined on a

case-by-case basis. The PRA recommends that any firms who require further guidance, which is likely to be limited to those firms which are part of large and complex groups, should discuss the issue with their PRA supervisor.

Market risk

2.16 In the CP, the PRA proposed changes to the supervisory statement on market risk (SS13/13)⁽³⁾ to clarify the reporting of risks not in VaR (Value-at-Risk) (RNIV) within FSA005.⁽⁴⁾

2.17 SS13/13 has been updated to set out where each component of RNIV (VaR, stressed VaR (sVaR), and stress scenarios) should be reported in the European Banking Authority's common regulatory reporting framework (COREP) and FSA005. The final supervisory statement is contained in Appendix 4.

2.18 One respondent asked for further clarity on how RNIV should be reported between COREP and FSA005. The PRA expects that firms with a market risk VaR model permission should report RNIV in both FSA005 and COREP. When reporting on COREP, firms should include their own funds requirements generated from RNIV to ensure that the total own funds requirement in COREP validates correctly. In addition, RNIV information that is not captured in COREP should be submitted via FSA005.

3 Commencement

3.1 The final PRA rules and supervisory statements in this PS will come into force on 27 October 2014.

(1) PRA Handbook — Senior Management Arrangements, Systems and Controls, Chapter 4.

(2) 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, June 2013; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:EN:PDF>.

(3) www.bankofengland.co.uk/pr/Pages/publications/marketrisk.aspx.

(4) PRA data item FSA005; http://media.fshandbook.info/Forms/sup/sup_chapter16_annex24r_20140722.pdf.

Appendices

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- 1 Supervisory Statement SS17/13 Credit risk mitigation

 - 2 PRA Rulebook Credit Risk (Amendment) Instrument 2014

 - 3 Capital Requirements Directive (Governance) Amendment Instrument 2014

 - 4 Supervisory Statement SS13/13 Market risk

Supervisory Statement | SS17/13

Credit risk mitigation

December 2013

(Last updated on 27 October 2014)



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Supervisory Statement | SS17/13

Credit risk mitigation

December 2013

(Last updated on 27 October 2014)

1 Introduction

1.1 This supervisory statement is aimed at firms to which CRD IV applies.

1.2 The purpose of this statement is to provide clarification to firms of the Prudential Regulation Authority's (PRA's) expectations in respect of the recognition of credit risk mitigation in the calculation of certain risk-weighted exposure amounts.

2 Eligibility of protection providers under all approaches

2.1 The PRA does not consider there to be any financial institution of the type identified in the Capital Requirements Regulation (CRR)⁽²⁾ Article 119(5). Accordingly, the PRA has no list of such providers to publish.

(CRR Articles 119(5) and 202)

3 Recognised exchanges

3.1 To qualify as a recognised exchange under the CRR, an exchange must be a MIFID regulated market.

3.2 Prior to the end of 2013, the PRA will set out the approach to be taken prior to the adoption of the ESMA implementing technical standard specifying the list of recognised exchanges.

(CRR Articles 4(1)(72), 197(4) and (8), 198(1) and 224(1))

4 Conditions for applying a 0% volatility adjustment under the Financial Collateral Comprehensive Method (FCCM)

4.1 For the purposes of repurchase transactions and securities lending or borrowing transactions, the PRA does not consider there to be any core market participants other than those entities listed in Article 227(3) of the CRR.

(CRR Article 227)

5 Permission to use 'own estimates of volatility adjustments' under the FCCM

5.1 This section sets out the PRA's expectations for granting a firm permission to use its own estimates of volatility adjustments under the FCCM, as set out in CRR Article 225.

5.2 Own estimates of volatility adjustments allow firms to model adverse changes in the market value of financial collateral received and posted against exposures arising from

debt instruments, securities financing transactions (SFTs) and derivative transactions. Under the FCCM, firms that do not have permission to use own estimates of volatility adjustments shall apply the supervisory volatility adjustments as set out in CRR Article 224.

5.3 A firm that wishes to use own estimates of volatility adjustments is expected to provide the PRA with confirmation that it meets and continues to meet the requirements set out in CRR Articles 225(2) and 225(3). It is expected that the evidence supporting this confirmation should include the following:

- for all types of financial collateral used under the FCCM, a comparison, both at point of application and at least annually thereafter, between its own estimates of volatility adjustments as calculated under CRR Article 225(2) and the supervisory volatility adjustments set out under CRR Article 224; and
- at point of application, the impact on the own funds requirements of applying its permission to use the own estimates of volatility adjustments approach as calculated under CRR Article 225(2) instead of the supervisory volatility adjustments set out under CRR Article 224.

5.4 Under CRR Article 225, the firm's own estimates of volatility adjustments are based on 99th percentile, one-tailed Value-at-Risk number calculated over a short liquidation period, defined per type of exposures. The internal models set out in CRR Article 363(1) are based on the same measure of risk. Therefore, if the financial collateral a firm holds is included in the scope of an internal model set out under CRR Article 363(1) that the firm has been permitted to use for market risk purposes, it may re-use the same internal model for the calculation of the firm's own estimates of volatility adjustment of this financial collateral provided that the firm complies with paragraph 5.3 above.

5.5 In any other circumstances, a firm that wishes to use the firm's own estimates of volatility adjustments is expected to provide the PRA with confirmation of its compliance with the following as evidence that the conditions of CRR Article 225 are met:

- full documentation of the methodology used to calculate its own estimates of volatility adjustments;
- a demonstration that the unit in charge of the design and the implementation of the own estimates of volatility adjustments approach is independent from business trading units;
- an annual programme of back-testing to assess the accuracy of its own estimates of volatility adjustments. The PRA

expects back-testing to be based on a comparison of the volatility adjustments generated by the firm's internal model for all the types of financial collateral used under the FCCM with their realised values over the most recent 250 business days. If the back-testing indicates that the own estimates of volatility adjustments are underestimated, a firm is expected to take the action necessary to address the inaccuracy of its model in a reasonable timeframe, otherwise the PRA will require the firm to revert to the supervisory volatility adjustments as set out under CRR Article 224.

PRA RULEBOOK CREDIT RISK (AMENDMENT) INSTRUMENT 2014

Powers exercised

- A. The Prudential Regulation Authority ("PRA") makes this instrument in the exercise of the following powers and related provisions in the Financial Services and Markets Act 2000 ("the Act"):
- (1) section 137G (the PRA's general rules); and
 - (2) section 137T (general supplementary powers).
- B. The rule-making powers referred to above are specified for the purpose of section 138G(2) (Rule-making instruments) of the Act.

Pre-conditions to making

- C. In accordance with section 138J of the Act (consultation by the PRA), the PRA consulted the Financial Conduct Authority. After consulting, the PRA published a draft of proposed rules and had regard to representations made.

PRA Rulebook Credit Risk (Amendment) Instrument 2014

- D. The Credit Risk Part of the PRA Rulebook is amended in accordance with the Annex to this instrument.

Commencement

- E. This instrument comes into force on 27 October 2014.

Citation

- F. This instrument may be cited as the PRA Rulebook Credit Risk (Amendment) Instrument 2014.

By order of the Board of the Prudential Regulation Authority

22 October 2014

Annex

Amendments to the Credit Risk Part of the Rulebook

In this Annex, new text is shown underlined and deleted text is shown strikethrough.

4 CRITERIA FOR CERTAIN EXPOSURES SECURED BY MORTGAGES ON COMMERCIAL IMMOVABLE PROPERTY

4.1 For the purposes of Articles 124(2) and 126(2) of the *CRR* and in addition to the conditions set out therein, a *firm* may ~~only~~ treat *exposures* as fully and completely secured by mortgages on commercial immovable property located in the *UK* in accordance with Article 126 of the *CRR* only where annual average *losses* stemming from lending secured by mortgages on commercial property located in the *UK* did not exceed 0.5% of risk-weighted exposure amounts over a representative period. A *firm* shall calculate the *loss* level referred to in this rule on the basis of the aggregate market data for commercial property lending published by the *PRA* in accordance with Article 101(3) of the *CRR*.

4.1A For the purposes of Articles 124(2) and 126(2) of the *CRR* and in addition to the conditions set out therein, a *firm* may treat an *exposure* or any part of an *exposure* that is located in a jurisdiction that is not an *EEA State* as fully and completely secured for the purposes of Article 126 (1) of the *CRR* only if all of the following conditions are met:

- (1) annual average *losses* stemming from lending secured by mortgages on commercial property located in that jurisdiction did not exceed 0.5% of the exposure value over a representative period where:
 - (a) there is sufficient evidence that the data used to determine the *loss* level referred to in this rule are of the same or better quality as the data required to be published under Article 101(3) of the *CRR*; and
 - (b) it is reasonable to rely on such data;
- (2) the risk-weight that would be applied to that *exposure* or part of an *exposure* by the relevant supervisory authority in that jurisdiction is 50% or less.

4.2 For the purposes of ~~this rule~~ 4.1 and 4.1A, a representative period shall be a time horizon of sufficient length and which includes a mix of good and bad years.

[Note: Arts. 124(2) and 126(2) of the *CRR*]

**CAPITAL REQUIREMENTS DIRECTIVE (GOVERNANCE) AMENDMENT
INSTRUMENT 2014**

Powers exercised

- A. The Prudential Regulation Authority makes this instrument in the exercise of the following powers and related provisions in the Financial Services and Markets Act 2000 (“the Act”):
- (1) section 137G (The PRA’s general rules);
 - (2) section 137T (General supplementary powers);
- B. The rule-making powers referred to above are specified for the purpose of section 138G(2) (Rule-making instruments) of the Act.

Pre-conditions to making

- C. In accordance with section 138J of the Act (Consultation by the PRA), the PRA consulted the Financial Conduct Authority. After consulting, the PRA published a draft of proposed rules and had regard to representations made.

Commencement

- D. This instrument comes into force on 27 October 2014.

Amendments to the Handbook

- E. The Senior Management Arrangements, Systems and Controls sourcebook (SYSC) is amended in accordance with Annex A to this instrument.
- F. The Glossary is amended in accordance with Annex B to this instrument.

Notes and Guidance

- G. In the Annex to this instrument, the “notes” (indicated by “**Note:**”) are included for the convenience of readers but do not form part of the legislative text.
- H. The Prudential Regulation Authority gives as guidance each provision in the Annex marked with a G.

Citation

- I. This instrument may be cited as the Capital Requirements Directive (Governance) Amendment Instrument 2014.

By order of the Board of the Prudential Regulation Authority
22 October 2014

Annex A

Amendments to the Senior Management Arrangements, Systems and Control manual (SYSC)

In this Annex, underlining indicates new text and striking through indicates deleted text, unless otherwise stated.

4 General organisational requirements

...

4.3A CRR firms

Management body

...

4.3A.6B G The limits on directorships set out in SYSC 4.3A.6R also apply to members of the management body of the UK consolidation group or non-EEA sub group in accordance with SYSC 12.1.13R. Individuals in any of the entities belonging to the UK consolidation group or non-EEA sub group are capable of forming part of this management body. For example, members of the management body of a non-CRR firm that is a parent financial holding company in a Member State and is a member of a UK consolidation group could be caught by the limits in SYSC 4.3A.6R (SYSC 12.1.14R). In particular, a person who requires approval under SUP 10B.6.2R or SUP 10B.6.4R because of the influence they exercise over the CRR firm is a member of the management body of the UK consolidation group or non-EEA sub group and therefore subject to the limit on directorships in SYSC 4.3A.6R.

[Note: article 91(3) and article 109(2) of the CRD]

Annex B

Amendments to the Glossary of definitions

In this Annex, underlining indicates new text and striking through indicates deleted text, unless otherwise stated.

CRD

~~the *Capital Adequacy Directive* and the *Banking Consolidation Directive*.~~ Directive 2013/36/EU of the European Parliament and 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.

Supervisory Statement | SS13/13

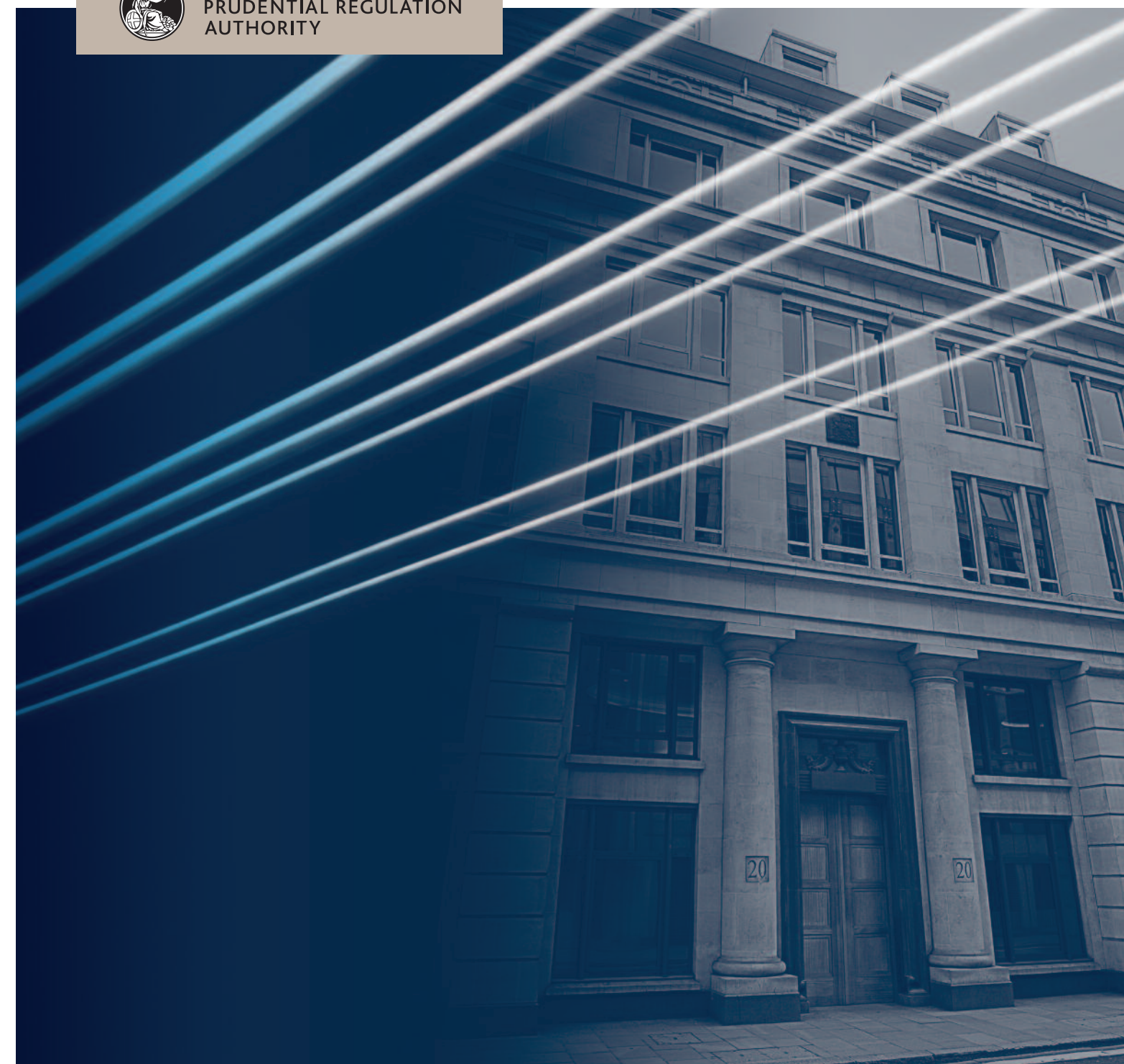
Market risk

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Supervisory Statement | SS13/13

Market risk

December 2013

(Last updated on 27 October 2014)

1 Introduction

1.1 This Supervisory Statement is aimed at firms to which CRD IV applies.

1.2 It sets out the Prudential Regulation Authority's (PRA's) expectations of firms in relation to market risk and should be considered in addition to requirements set out in CRD IV Articles 325–377, the market risk rules of the PRA Rulebook and the high-level expectations outlined in *The PRA's approach to banking supervision*.⁽¹⁾

1.3 This statement details the PRA's expectations with regard to the following:

- Material deficiencies in risk capture by an institution's internal approach.
- Standardised approach for options.
- Netting a convertible with its underlying instrument.
- Offsetting derivative instruments.
- Exclusion of backtesting exceptions when determining multiplication factor addends.
- Derivation of notional positions for standardised approaches.
- Qualifying debt instruments.
- Expectations relating to internal models.
- Value-at-Risk (VaR) and stressed VaR (sVaR) calculation.
- Requirement to have an internal incremental risk charge (IRC) model.
- Annual SIF attestation of market risk internal models.

2 Material deficiencies in risk capture by an institution's internal approach

2.1 This section sets out the PRA's requirements for the calculation of additional own funds for the purposes of implementing CRD Article 101, which applies where a firm has permission to calculate own funds requirements for one or more categories of market risk under CRR Part 3 Title IV Chapter 5. It requires firms to identify any risks which are not adequately captured by those models and to hold additional own funds against those risks. The methodology for the identification of those risks and the calculation of those additional own funds for VaR and sVaR models is referred to as the 'RNIV framework'.

2.2 Firms are responsible for identifying these additional risks, and this should be seen as an opportunity for risk managers and management to better understand the shortcomings of the firm's models. Following this initial assessment, the PRA will engage with the firm to provide challenge and so ensure an appropriate outcome.

Scope of the Risks not in VaR (RNIV) framework

2.3 The RNIV framework is intended to ensure that own funds are held to meet all risks which are not captured, or not captured adequately, by the firm's VaR and sVaR models. These include, but are not limited to missing and/or illiquid risk factors such as cross-risks, basis risks, higher-order risks, and calibration parameters. The RNIV framework is also intended to cover event risks that could adversely affect the relevant business.

Identification and measurement framework

2.4 The PRA expects firms to systematically identify and measure all non-captured or poorly captured risks. This analysis should be updated at least quarterly, or more frequently at the request of the PRA. The measurement of these risks should capture the losses that could arise due to the risk factor(s) of all products that are within the scope of the relevant internal model permission, but are not adequately captured by the relevant internal models.

Identification of risk factors

2.5 The PRA expects firms to, on a quarterly basis, identify and assess individual risk factors covered by the RNIV framework. The PRA will review the results of this exercise and may require that firms identify additional risk factors as being eligible for measurement.

Measurement of risk factors

2.6 Where sufficient data is available, and where it is appropriate to do so, the PRA expects firms to calculate a VaR and sVaR metric for each risk factor within scope of the framework. The stressed period for the RNIV sVaR should be consistent with that used for sVaR. No offsetting or diversification may be recognised across risk factors included in the RNIV framework. The multipliers used for VaR and sVaR should be applied to generate an own funds requirement.

2.7 If it is not appropriate to calculate a VaR and sVaR metric for a risk factor, a firm should instead measure the size of the risk based on a stress test. The confidence level and capital horizon of the stress test should be commensurate with the liquidity of the risk, and should be at least as conservative as comparable risk factors under the internal model approach. The capital charge should be at least equal to the losses arising from the stress test.

Reporting of RNIV

2.8 Firms that are required to compute RNIV should complete FSA005 — in addition to the MRK IM COREP reporting template — for the relevant rows. When submitting FSA005, firms are advised to complete the fields as follows:

(1) www.bankofengland.co.uk/pr/Pages/supervision/approach/default.aspx.

- populate the table under element 63, filling in both fields in each row;
- element 64 should be the total of all values entered in 63 column B; and
- in order for the form to validate, the value entered in 64 should also be entered in 61 and 62.

2.9 Firms that are required to compute RNIV should complete the MKR IM COREP reporting template in addition to FSA005, and include the own funds required in their COREP reporting. The components of RNIV should be included within C24.00 as follows:

- RNIV from VaR should be added to [C24.00, {c030}, r010] and [C24.00, {c040}, r010];
- RNIV from sVaR should be added to [C24.00, {c050}, r010] and [C24.00, {c060}, r010]; and
- RNIV from stress tests should be added to [C24.00, {c050}, r010] and [C24.00, {c060}, r010].

3 Standardised approach for options

3.1 Firms that need to use own estimates of delta for the purposes of the standardised approach for options, should provide the PRA with confirmation that they meet the minimum standards set out below for each type of option for which they calculate delta. Firms should only provide this confirmation if they meet the minimum standards. Where a firm meets the minimum standards, they will be permitted to use own estimates of delta for the relevant option.

3.2 If a firm is unable to provide assurance with regard to a particular option type which is currently within its permissions, a capital add-on may be applied and a rectification plan agreed. If a firm is unable to comply with the rectification plan within the mandated time-frame, further supervisory measures may be taken. This may include variation of permissions so that they are no longer allowed to trade those particular types of option for which they do not meet the minimum standards.

Minimum standards

3.3 The level of sophistication of the pricing models, which are used to calculate own estimates of delta for use in the standardised approach for options, should be proportionate to the complexity and risk of each option and the overall risk of the firm's options trading business. In general, it is considered that the risk of sold options will be higher than the risk of the same options when bought.

3.4 Delta should be recalculated at least daily. Firms should also recalculate delta promptly following significant movements in the market parameters used as inputs to calculate delta.

3.5 The pricing model used to calculate delta should be:

- based on appropriate assumptions which have been assessed and challenged by suitably qualified parties independent of the development process;
- independently tested, including validation of the mathematics, assumptions, and software implementation; and
- developed or approved independently of the trading desk.

3.6 A firm should use generally accepted industry standard pricing models for the calculation of own deltas where these are available, such as for relatively simple options.

3.7 The IT systems used to calculate delta should be sufficient to ensure that delta can be calculated accurately and reliably.

3.8 Firms should have adequate systems and controls in place when using pricing models to calculate deltas. This should include the following documented policies and procedures:

- clearly defined responsibilities of the various areas involved in the calculation;
- frequency of independent testing of the accuracy of the model used to calculate delta; and
- guidelines for the use of unobservable inputs, where relevant.

3.9 A firm should ensure its risk management functions are aware of weaknesses of the model used to calculate deltas. Where weaknesses are identified, the firm should ensure that estimates of delta result in prudent capital requirements being held. The outcome should be prudent across the whole portfolio of options and underlying positions at a given time.

4 Netting a convertible with its underlying instrument

4.1 For the purposes of CRR Article 327(2), the netting of a convertible bond and an offsetting position in the instrument underlying it is permitted. The convertible bond should be:

- treated as a position in the equity into which it converts; and
- the firm's equity own funds requirement should be adjusted by making:
 - (i) an addition equal to the current value of any loss which the firm would make if it did convert to equity; or
 - (ii) a deduction equal to the current value of any profit which the firm would make if it did convert to equity (subject to a maximum deduction equal to the own funds requirements on the notional position underlying the convertible).

5 Offsetting derivative instruments

5.1 CRR Article 331(2) states conditions that should be met before firms not using interest rate pre-processing models can fully offset interest rate risk on derivative instruments. One of the conditions is that the reference rate (for floating rate positions) or coupon (for fixed rate positions) should be 'closely matched'. The PRA would normally consider a difference of less than 15 basis points as indicative of the reference rate or coupon being 'closely matched' for the purposes of this rule.

6 Exclusion of overshootings when determining multiplication factor addends

6.1 The PRA's starting assumption will be that all overshootings should be taken into account for the purpose of the calculation of addends. If a firm believes that an overshooting should not count for that purpose, then it should seek a variation of its VaR model permission in order to exclude that particular overshooting. The PRA will then decide whether to agree to such a variation.

6.2 One example of when a firm's overshooting might properly be disregarded is when it has arisen as a result of a risk that is not captured in its VaR model, but against which capital resources are already held.

7 Derivation of notional positions for standardised approaches

Futures and forwards on a basket or index of debt securities

7.1 These should be converted into forwards on single debt securities as follows:

- (1) futures or forwards on a single currency basket or index of debt securities should be treated as either:
 - (a) a series of forwards, one for each of the constituent debt securities in the basket or index, of an amount which is a proportionate part of the total underlying the contract according to the weighting of the relevant debt security in the basket; or
 - (b) a single forward on a notional debt security; and
- (2) futures or forwards on multiple currency baskets or indices of debt securities should be treated as either:
 - (a) a series of forwards (using the method described in 1(a)); or
 - (b) a series of forwards, each one on a notional debt security to represent one of the currencies in the basket or index, of an amount which is a proportionate part of the total underlying the contract according to the weighting of the relevant currency in the basket.

7.2 Notional debt securities derived through this treatment should be assigned a specific risk position risk adjustment and a general market risk position risk adjustment equal to the highest that would apply to the debt securities in the basket or index.

7.3 The debt security with the highest specific risk position risk adjustment within the basket might not be the same as the one with the highest general market risk position risk adjustment. A firm should select the highest percentages even where they relate to different debt securities in the basket or index, and regardless of the proportion of those debt securities in the basket or index.

Bonds where the coupons and principal are paid in different currencies

7.4 Where a debt security pays coupons in one currency, but will be redeemed in a different currency, it should be treated as:

- (i) a debt security denominated in the coupon's currency; and
- (ii) a foreign currency forward to capture the fact that the debt security's principal will be repaid in a different currency from that in which it pays coupons, specifically:
 - (a) a notional forward sale of the coupon currency and purchase of the redemption currency, in the case of a long position in the debt security; or
 - (b) a notional forward purchase of the coupon currency and sale of the redemption currency, in the case of a short position in the debt security.

Interest rate risk on other futures, forwards and swaps

7.5 Other futures, forwards, and swaps where a treatment is not specified in Article 328 should be treated as positions in zero specific risk securities, each of which:

- (i) has a zero coupon;
- (ii) has a maturity equal to that of the relevant contract; and
- (iii) is long or short according to the following table:

Instrument	Notional positions	
Foreign currency forward or future	A long position denominated in the currency purchased	and A short position denominated in the currency sold.
Gold forward	A long position if the forward or future involves an actual (or notional) sale of gold	or A short position if the forward or future involves an actual (or notional) purchase of gold.
Equity forward	A long position if the contract involves an actual (or notional) sale of the underlying equity	or A short position if the contract or future involves an actual (or notional) purchase of the underlying equity.

Deferred start interest rate swaps or foreign currency swaps

7.6 Interest rate swaps or foreign currency swaps with a deferred start should be treated as the two notional positions (one long, one short). The paying leg should be treated as a short position in a zero specific risk security with a coupon equal to the fixed rate of the swap. The receiving leg should be treated as a long position in a zero specific risk security, which also has a coupon equal to the fixed rate of the swap.

7.7 The maturities of the notional positions are shown in the following table:

	Paying leg	Receiving leg
Receiving fixed and paying floating	The maturity equals the start date of the swap.	The maturity equals the maturity of the swap.
Paying fixed and receiving floating	The maturity equals the maturity of the swap.	The maturity equals the start date of the swap.

Swaps where only one leg is an interest rate leg

7.8 For the purposes of interest rate risk, a firm should treat a swap (such as an equity swap) with only one interest rate leg as a notional position in a zero specific risk security:

- (a) with a coupon equal to that on the interest rate leg;
- (b) with a maturity equal to the date that the interest rate will be reset; and
- (c) which is a long position if the firm is receiving interest payments and short if making interest payments.

Foreign exchange forwards, futures and CFDs

7.9 A firm should treat a foreign currency forward, future, or Contracts for Difference (CFDs) as two notional currency positions as follows:

- (a) a long notional position in the currency which the firm has contracted to buy; and
- (b) a short notional position in the currency which the firm has contracted to sell.

7.10 The notional positions should have a value equal to either:

- (a) the contracted amount of each currency to be exchanged in the case of a forward, future, or CFD held in the non-trading book; or
- (b) the present value of the amount of each currency to be exchanged in the case of a forward, future, or CFD held in the trading book.

Foreign currency swaps

7.11 A firm should treat a foreign currency swap as:

- (a) a long notional position in the currency in which the firm has contracted to receive interest and principal; and

- (b) a short notional position in the currency in which the firm has contracted to pay interest and principal.

7.12 The notional positions should have a value equal to either:

- (a) the nominal amount of each currency underlying the swap if it is held in the non-trading book; or
- (b) the present value amount of all cash flows in the relevant currency in the case of a swap held in the trading book.

Futures, forwards, and CFDs on a single commodity

7.13 Where a forward, future or CFD settles according to:

- (1) the difference between the price set on trade date and that prevailing at contract expiry, then the notional position should:
 - (a) equal the total quantity underlying the contract; and
 - (b) have a maturity equal to the expiry date of the contract; and
 - (i) the difference between the price set on trade date and the average of prices prevailing over a certain period up to contract expiry, then a notional position should be derived for each of the reference dates used in the averaging period to calculate the average price, which:
 - (a) equals a fractional share of the total quantity underlying the contract; and
 - (b) has a maturity equal to the relevant reference date.

Buying or selling a single commodity at an average of spot prices prevailing in the future

7.14 Commitments to buy or sell at the average spot price of the commodity prevailing over some period between trade date and maturity should be treated as a combination of:

- (1) a position equal to the full amount underlying the contract with a maturity equal to the maturity date of the contract, which should be:
 - (a) long, where the firm will buy at the average price; or
 - (b) short, where the firm will sell at the average price; and
- (2) a series of notional positions, one for each of the reference dates where the contract price remains unfixed, each of which should:
 - (a) be long if the position under (1) is short, or short if the position under (1) is long;
 - (b) equal to a fractional share of the total quantity underlying the contract; and
 - (c) have a maturity date of the relevant reference date.

8 Qualifying debt instruments

8.1 CRR Article 336(4)(a) states that positions listed on a stock exchange in a third country, where the exchange is recognised by the competent authorities, qualify for the specific risk own funds requirements in the second row of the table in CRR Article 336.

8.2 For the purposes of this rule, the PRA recognise the following stock exchanges in third countries:

- Australian Securities Exchange Limited.
- Bermuda Stock Exchange.
- Bolsa Mexicana de Valores.
- Bourse de Montreal Inc.
- Channel Islands Stock Exchange.
- Chicago Board of Trade.
- Chicago Board Options Exchange.
- Chicago Board of Trade (CBOT).
- Chicago Stock Exchange.
- Dubai Financial Market.
- EUREX (Zurich).
- Euronext Amsterdam Commodities Market.
- Hong Kong Exchanges and Clearing Limited.
- ICE Futures US, Inc.
- Indonesia Stock Exchange.
- Johannesburg Stock Exchange.
- Kansas City Board of Trade.
- Korea Exchange.
- Kuala Lumpur Stock Exchange.
- Minneapolis Grain Exchange.
- NASDAQ OMX PHLX
- National Association of Securities Dealers Automated Quotations (NASDAQ).
- National Stock Exchange India.
- New York Stock Exchange.
- New York Mercantile Exchange Inc (NYMEX Inc.).
- New Zealand Exchange.
- NYSE Liffe US.
- NYSE MKT.
- Osaka Securities Exchange.
- Shanghai Stock Exchange.
- Singapore Exchange.
- SIX Swiss Exchange AG.
- South African Futures Exchange.
- Stock Exchange of Mumbai.
- Stock Exchange of Thailand.
- Taiwan Stock Exchange.
- The Chicago Mercantile Exchange (CME).
- Tokyo Financial Exchange.
- Tokyo Stock Exchange.
- Toronto Stock Exchange.

9 Expectations relating to internal models

9.1 CRR Article 363 states that permission for an institution to use internal models to calculate capital is subject to competent authorities verifying compliance with:

- the general requirements;
- requirements particular to specific risk modelling; and
- requirements for an internal model for incremental default and migration risk.

9.2 The standards that the PRA expects to be met to consider that an institution is compliant with these requirements are set out below.

High-level standards

9.3 A firm should be able to demonstrate that it meets the risk management standards set out in CRR Article 368 on a legal entity and business line basis where appropriate. This is particularly important for a subsidiary undertaking in a group subject to matrix management, where the business lines cut across legal entity boundaries.

Categories of position

9.4 A VaR model permission will generally set out the broad classes of position within each risk category within its scope. It may also specify how individual products within one of those broad classes may be brought into or taken out of scope of the VaR model permission. These broad classes of permission are as follows:

- (1) Linear products, which comprise securities with linear pay-offs (such as bonds and equities), and derivative products which have linear pay-offs in the underlying risk factor (such as interest rate swaps, FRAs, and total return swaps).
- (2) European, American and Bermudan put and call options (including caps, floors, and swaptions) and investments with these features.
- (3) Asian options, digital options, single barrier options, double barrier options, look back options, forward starting options, compound options and investments with these features.
- (4) All other option based products (such as basket options, quantos, outperformance options, timing options, and correlation-based products) and investments with these features.

Data standards

9.5 The PRA expects a firm to ensure that the data series used by its VaR model is reliable. Where a reliable data series is not available, proxies or any other reasonable value-at-risk

measurement may be used when the firm can demonstrate that the requirements of CRR Article 367(2)(e) are met. A firm should be able to demonstrate that the technique is appropriate and does not materially understate the modelled risks.

9.6 Data may be deemed insufficient if, for example, it contains missing data points, or data points which contain stale data. With regard to less-liquid risk factors or positions, the PRA expects the firm make a conservative assessment of those risks, using a combination of prudent valuation techniques and alternative VaR estimation techniques to ensure there is a sufficient cushion against risk over the close out period, which takes account of the illiquidity of the risk factor or position.

9.7 A firm is expected to update data sets to ensure standards of reliability are maintained in accordance with the frequency set out in its VaR model permission, or more frequently if volatility in market prices or rates necessitates more frequent updating. This is in order to ensure a prudent calculation of the VaR measure.

Aggregating VaR measures

9.8 In determining whether it is appropriate for an institution to use empirical correlations within risk categories and across risk categories within a model, the PRA expects certain features to be observed in assessing whether such an approach is sound and implemented with integrity. In general, the PRA expects a firm to determine the aggregate VaR measure by adding the relevant VaR measure for each category, unless the firm's permission provides for a different method of aggregating VaR measures which is empirically sound.

9.9 The PRA does not expect a firm to use the square root of the sum of the squares approach when aggregating measures across risk categories or within risk categories unless the assumption of zero correlation between these categories is empirically justified. If correlations between risk categories are not empirically justified, the VaR measures for each category should simply be added in order to determine its aggregate VaR measure. However, to the extent that a firm's VaR model permission provides for a different way of aggregating VaR measures:

- (1) that method applies instead; and
- (2) if the correlations between risk categories used for that purpose cease to be empirically justified then the firm must notify the appropriate regulator at once.

Testing prior to model validation

9.10 A firm is expected to provide evidence of its ability to comply with the requirements for a VaR model permission. In general, it will be required to demonstrate this by having a

backtesting programme in place and should provide three months of backtesting history.

9.11 A period of initial monitoring or live testing is required before a VaR model can be recognised. This will be agreed on a firm by firm basis.

9.12 In assessing the firm's VaR model and risk management, the results of internal model validation procedures used by the firm to assess the VaR model will be taken into account.

Backtesting

9.13 For clarity, the backtesting requirements of CRR Article 366 should be implemented as follows:

- If the day on which a loss is made is day n , the value-at-risk measure for that day will be calculated on day $n-1$, or overnight between day $n-1$ and day n . Profit and loss figures are produced on day $n+1$, and backtesting also takes place on day $n+1$. The firm's supervisor should be notified of any overshootings by close of business on day $n+2$.
- Any overshooting initially counts for the purpose of the calculation of the plus factor even if subsequently the PRA agrees to exclude it. Thus, where the firm experiences an overshooting and already has four or more overshootings for the previous 250 business days, changes to the multiplication factor arising from changes to the plus factor become effective at day $n+3$.

9.14 A longer time period generally improves the power of backtesting. However a longer time period may not be desirable if the VaR model or market conditions have changed to the extent that historical data is no longer relevant.

9.15 The PRA will review, as part of a firm's VaR model permission application, the processes and documentation relating to the derivation of profit and loss used for backtesting. A firm's documentation should clearly set out the basis for cleaning profit and loss. To the extent that certain profit and loss elements are not updated every day (for example certain reserve calculations) the documentation should clearly set out how such elements are included in the profit and loss series.

Planned changes to the VaR model

9.16 In accordance with CRR Article 363(3), the PRA expects a firm to provide and discuss with the PRA details of any significant planned changes to the VaR model before those changes are implemented. These details must include detailed information about the nature of the change, including an estimate of the impact on VaR numbers and the incremental risk charge.

Bias from overlapping intervals for ten-day VaR and sVaR

9.17 The use of overlapping intervals of ten-day holding periods for the purposes of CRR Article 365 introduces an autocorrelation into the data that would not exist should truly independent ten-day periods be used. This may give rise to an underestimation of the volatility and the VaR at the 99% confidence level. To obtain clarity on the materiality of the bias, a firm should measure the bias arising from the use of overlapping intervals for ten-day VaR and sVaR when compared to using independent intervals. A report on the analysis, including a proposal for a multiplier on VaR and sVaR to adjust for the bias, should be submitted to the PRA for review and approval.

10 Stressed VaR calculation

10.1 CRR Article 365 requires firms that use an internal model for calculating their own funds requirement to calculate at least weekly a 'stressed value-at-risk' (sVaR) of their current portfolio. When the PRA considers a firm's application to use a sVaR internal model, the PRA would expect the following features to be present prior to permission being granted as indicative that the conditions for granting permission have been met.

Quantile estimator

10.2 The firm should calculate the sVaR measure to be greater than or equal to the average of the second and third worst loss in a twelve-month time series comprising of 250 observations. The PRA expects as a minimum that a corresponding linear weighting scheme should be applied if the firm use a larger number of observations.

Meaning of 'period of significant financial stress relevant to the institution's portfolio'

10.3 The firm should ensure that the sVaR period chosen is equivalent to the period that would maximise VaR given the firm's portfolio. There is an expectation that a stressed period should be identified at each legal entity level at which capital is reported. Therefore, group-level sVaR measures should be based on a period that maximises the group-level VaR, whereas entity-level sVaR should be based on a period that maximises VaR for that entity.

Antithetic data

10.4 The PRA expects firms to consider whether the use of antithetic data in the calculation of the sVaR measure is appropriate to the firm's portfolio. A justification for using or not using antithetic data should be provided to the PRA.

Absolute and relative shifts

10.5 The PRA expects firms to explain the rationale for the choice of absolute or relative shifts for both VaR and sVaR

methodologies. In particular, statistical processes driving the risk factor changes need to be evidenced for both VaR and sVaR.

10.6 The following information is expected to be submitted quarterly:

- analysis to support the equivalence of the firm's current approach to a VaR-maximising approach on an ongoing basis;
- the rationale behind the selection of key major risk factors used to find the period of significant financial stress;
- summary of ongoing internal monitoring of stressed period selection with respect to current portfolio;
- analysis to support capital equivalence of upscaled one-day VaR and sVaR measures to corresponding full ten-day VaR and sVaR measures;
- graphed history of sVaR/VaR ratio;
- analysis to demonstrate accuracy of partial revaluation approaches specifically for sVaR purposes (for firms using revaluation ladders or spot/vol-matrices). This should include a review of the ladders/matrices or spot/vol-matrices, ensuring that they are extended to include wider shocks to risk factors that incur in stress scenarios; and
- minutes of Risk Committee meeting or other form of evidence to reflect governance and senior management oversight of stressed VaR methodology.

11 Requirement to have an internal IRC model

11.1 CRR Article 372 requires firms that use an internal model for calculating own funds requirements for specific risk of traded debt instruments to also have an internal incremental default and migration risk (IRC) model in place. This model should capture the default and migration risk of its trading book positions that are incremental to the risks captured by its VaR model.

11.2 When the PRA considers a firm's application to use an IRC internal model, the PRA expects that the following matters would be included as demonstrating compliance with the standards set in CRR Article 372.

Basis risks for migration

11.3 The PRA expects the IRC model to capitalise pre-default basis risk. In this respect, the model should reflect that in periods of stress the basis could widen substantially. Firms should disclose to the PRA their material basis risks that are incremental to those already captured in existing market risk capital measures (VaR-based and others). This must take actual close-out periods during periods of illiquidity into account.

Price/spread change model

11.4 The price/spread change model used to capture the profit and loss impact of migration should calibrate spread changes to long-term averages of differences between spreads for relevant ratings. These should either be conditioned on actual rating events, or using the entire history of spreads regardless of migration. Point-in-time estimates are not considered acceptable, unless they can be shown to be as conservative as using long-term averages.

Dependence of the recovery rate on the economic cycle

11.5 To achieve a soundness standard comparable to those under the IRB approach, LGD estimates should reflect the economic cycle. The PRA therefore expects firms to incorporate dependence of the recovery rate on the economic cycle into the IRC model. Should the firm use a conservative parameterisation to comply with the IRB standard of the use of downturn estimates, evidence of this will be required to be submitted in quarterly reporting to the PRA, bearing in mind that for trading portfolios, which contain long and short positions, downturn estimates would not in all cases be a conservative choice.

12 Annual SIF attestation of market risk internal models

12.1 The PRA expects an appropriate individual in a Significant Influence Function (SIF) role to provide to the PRA on an annual basis written attestation that:

- (i) the firm's internal approaches for which it has received a permission comply with the requirements in Part 3 Title IV of the CRR, and any applicable PRA market risk supervisory statements; and
- (ii) where a model has been found not to be compliant, a credible plan for a return to compliance is in place and being completed.

12.2 Firms should agree the appropriate SIF for providing this attestation with the PRA, noting that the PRA would not expect to agree more than 2 SIFs to cover all the firm's market risk internal models as described in Part 3 Title IV of the CRR.