

# Chapter 6

## Market risk

## 6.1 Market risk requirements

- 6.1.1 **R** ■ IFPRU 6 applies to an *IFPRU investment firm*, unless it is an *exempt IFPRU commodities firm*.

### Purpose

- 6.1.2 **G** This chapter:

- (1) implements article 101 of *CRD*;
- (2) contains the rule that exercises the discretion afforded to the *FCA* as *competent authority* under article 327(2) of the *EU CRR*; and
- (3) contains the *guidance* for market risk.

### Instruments for which no treatment specified

- 6.1.3 **R**
- (1) Where a *firm* has a position in a *financial instrument* for which no treatment has been specified in the *EU CRR*, it must calculate its *own funds requirement* by applying the most appropriate requirement relating to positions that are specified in the *EU CRR*, if doing so is prudent and appropriate, and if the position is sufficiently similar to those covered by the relevant requirement.
  - (2) A *firm* must document its policies and procedures for calculating *own funds* for such positions in its trading book policy statement.
  - (3) If there are no appropriate treatments, the *firm* must calculate an *own funds requirement* of an appropriate percentage of the current value of the position. An appropriate percentage is either 100%, or a percentage that takes into account the characteristics of the position.

### Use of internal models: risk capture

- 6.1.4 **R** A *firm* which has a permission to use internal models in accordance with Part Three, Title IV, Chapter 5 of the *EU CRR* (Own funds requirements for market risk):
- (1) must identify any material risk, or risks that when considered in aggregate are material, which are not captured by those models;
  - (2) must ensure that it holds *own funds* to cover those risk(s) in addition to those required to meet its *own funds requirement* calculated in accordance with Part Three, Title IV, Chapter 5 of the *EU CRR*; and

- (3) (where applicable) must ensure that it holds additional *own funds requirements* for VaR and stressed VaR models.

[Note: article 101 of CRD]

### 6.1.5

G

- (1) The methodology for the identification of the risks in ■ IFPRU 6.1.4 R and the calculation of those additional *own funds* for value-at-risk (VaR) and stressed value-at-risk (stressed VaR) models is called the "RNIV framework". A *firm* is responsible for identifying these additional risks and this should be an opportunity for risk managers and management to better understand the shortcomings of the *firm's* models. Following this initial assessment, the *FCA* will engage with the *firm* to provide challenge and ensure an appropriate outcome.
- (2) 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 stressed VaR 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.
- (3) A *firm* should 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 *FCA*. 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.
- (4) On a quarterly basis, the *firm* should identify and assess individual risk factors covered by the RNIV framework. The *FCA* will review the results of this exercise and may require that *firms* identify additional risk factors as being eligible for measurement.
- (5)
  - (a) Where sufficient data is available, and where it is appropriate to do so, the *FCA* expects a *firm* to calculate a VaR and stressed VaR metric for each risk factor within scope of the framework. The stressed period for the RNIV framework should be consistent with that used for stressed VaR. No offsetting or diversification may be recognised across risk factors included in the RNIV framework. The multipliers used for VaR and stressed VaR should be applied to generate an *own funds requirement*.
  - (b) If it is not appropriate to calculate a VaR and stressed VaR 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.

### Standardised approach for options

### 6.1.6

G

A *firm* that wishes to use own estimates for delta for the purposes of the standardised approach for options, should provide the *FCA* with

confirmation that it meets the minimum standards set out in ■ IFPRU 6.1.8 G to ■ IFPRU 6.1.15 R (Minimum standards for own estimates of delta) for each type of option for which it calculates delta. Where a *firm* meets the minimum standards, it can expect to be permitted to use own estimates of delta for the relevant option.

- 6.1.7 **G** 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 a *firm's Part 4A permission* so that it is no longer allowed to trade those particular types of options for which it does not meet the minimum standards.

### Minimum standards for own estimates of delta

- 6.1.8 **G** The level of sophistication of the pricing models 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.
- 6.1.9 **G** Delta should be re-calculated at least daily. A *firm* should also recalculate delta promptly following significant movements in the market parameters used as inputs to calculate delta.
- 6.1.10 **G** The pricing model used to calculate delta should be:
- (1) based on appropriate assumptions which have been assessed and challenged by suitably qualified parties independent of the development process;
  - (2) independently tested, including validation of the mathematics, assumptions, and software implementation; and
  - (3) developed or approved independently of the trading desk.
- 6.1.11 **G** 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.
- 6.1.12 **G** The IT systems used to calculate delta should be sufficient to ensure that delta can be reliably calculated accurately and reliably.
- 6.1.13 **G** A *firm* should have adequate systems and controls in place when using pricing models to calculate deltas. This should include the following documented policies and procedures:

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

**6.1.14** **G** 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 *own funds requirements* being held. The outcome should be prudent across the whole portfolio of options and underlying positions at a given time.

### Netting: convertible

**6.1.15** **R** Under article 327(2) of the *EU CRR* (Netting), the netting of a *convertible* and an offsetting position in the underlying instrument is permitted.

**6.1.16** **G** For the purpose of **IFPRU 6.1.15 R**, the *convertible* should be:

- (1) treated as a position in the *equity* into which it converts; and
- (2) the firm's *own funds requirement* for the general and specific risk in its *equity* instruments should be adjusted by making:
  - (a) an addition equal to the current value of any loss which the firm would make if it did convert to *equity*; or
  - (b) 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).

### Use of internal approaches

**6.1.17** **G** A significant IFPRU firm should consider developing internal specific risk assessment capacity and to increase use of internal models for calculating *own funds requirements* for specific risk of debt instruments in the *trading book*, together with internal models to calculate *own funds requirements* for default and migration risk where its exposures to specific risk are material in absolute terms and where it holds a large number of material positions in debt instruments of different issuers. This provision is without prejudice to the fulfilment of the criteria laid down in Part Three, Title IV, Chapter 5, Sections 1 to 5, of the *EU CRR* (Market risk).

[Note: article 77(3) of *CRD*]

## 6.2 Guidance on market risk

### Offsetting derivative instruments

- 6.2.1 **G** Article 331(2) of the *EU CRR* (Interest rate risk in derivative instruments) states conditions that must be met before a *firm* 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 *FCA* will 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 requirement.

### Exclusion of overshootings when determining multiplication factor addends

- 6.2.2 **G**
- (1) The *FCA*'s starting assumption is 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 under article 363 of the *EU CRR* (Permission to use internal models) in order to exclude that particular overshooting. The *FCA* would then decide whether to agree to such a variation.
  - (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 *own funds* are already held.

### Derivation of notional positions for standardised approaches

- 6.2.3 **G** The rest of this section sets out the *guidance* for the derivation of notional positions for standardised approaches.

### Futures and forwards on a basket or index of debt securities

- 6.2.4 **G** Futures or forwards on a basket or index of debt securities 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 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.

**6.2.5** **G** 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.

**6.2.6** **G** 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 coupons and principal are paid in different currencies**

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

(1) a debt security denominated in the coupon's currency; and

(2) 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**

**6.2.8** **G** Other futures, forwards, and swaps where a treatment is not specified in article 328 of the *EU CRR* ((Interest rate futures and forwards) should be treated as positions in zero specific risk securities, each of which:

(1) has a zero coupon;

(2) has a maturity equal to that of the relevant contract; and

(3) is long or short according to the table in ■ IFPRU 6.2.9 G.

6.2.9 **G** This table belongs to ■ IFPRU 6.2.8 G.

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 or future	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 or future	A long position if the contract involves an actual (or notional) sale of the underlying equity	or A short position if the contract involves an actual (or notional) purchase of the underlying equity

### Deferred start interest rate swaps or foreign currency swaps

6.2.10 **G** 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.

6.2.11 **G** The maturities of the notional positions are shown in the table in ■ IFPRU 6.2.12 G.

6.2.12 **G** This table belongs to ■ IFPRU 6.2.11 G.

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

### Swaps where only one leg is an interest-rate leg

6.2.13 **G** For 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:

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



### Foreign exchange forwards, futures and CFDs

- 6.2.14 **G**
- (1) A *firm* should treat a foreign currency forward, future or CFD 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.
  - (2) In (1), the notional positions should have a value equal to either:
    - (a) the contracted amount of each currency to be exchanged in 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 a forward, future or CFD held in the *trading book*.

### Foreign currency swaps

- 6.2.15 **G**
- (1) 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.
  - (2) In (1), 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

- 6.2.16 **G**
- 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
  - (2) 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

6.2.17

G

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.

### Cash legs of repurchase agreements and reverse repurchase agreements

6.2.18

G

The forward cash leg of a repurchase agreement or reverse repurchase agreement should be treated as a notional position in a zero specific risk security which:

- (1) is a short notional position in the case of a repurchase agreement and a long notional position in the case of a reverse repurchase agreement;
- (2) has a value equal to the market value of the borrowing or deposit;
- (3) has a maturity equal to that of the borrowing or deposit, or the next date the interest rate is reset (if earlier); and
- (4) has a coupon equal to:
  - (a) zero, if the next interest payment date coincides with the maturity date; or
  - (b) the interest rate on the borrowing or deposit, if any interest is due to be paid before the maturity date.

## 6.3 Expectations relating to internal models

**6.3.1** **G** Article 363 of the *EU CRR* (Permission to use internal models) states that permission for an *institution* to use internal models to calculate *own funds requirements* is subject to *competent authorities* verifying compliance with:

- (1) the general requirements;
- (2) requirements particular to specific risk modelling; and
- (3) requirements for an internal model for incremental default and migration risk.

**6.3.2** **G** This section describes some of the standards that the *FCA* expects to be met for it to consider that a *firm* is compliant with the requirements in **IFPRU 6.3.1 G**.

### High-level standards

**6.3.3** **G** A *firm* should be able to demonstrate that it meets the risk management standards in article 368 of the *EU CRR* (Qualitative requirements) on a legal entity and business-line basis where appropriate. This is particularly important for a *subsidiary* in a *group* subject to matrix management where the business lines cut across legal entity boundaries.

### Categories of position

**6.3.4** **G** A VaR model permission will generally set out the broad classes of position within each risk category in 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; and

- (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

**6.3.5** **G** A *firm* should 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* demonstrates that the requirements of article 367(2)(e) of the *EU CRR* (Requirements for risk measurement) are met. A *firm* should demonstrate that the technique is appropriate and does not materially understate the modelled risks

**6.3.6** **G** 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 *FCA* expects the *firm* to 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.

**6.3.7** **G** 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

**6.3.8** **G** (1) In determining whether it is appropriate for a *firm* to use empirical correlations within risk categories and across risk categories within a model, the *FCA* expects certain features to be observed in assessing whether such an approach is sound and implemented with integrity. In general, the *FCA* 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.

- (2) The *FCA* does not expect a *firm* to use the square root of the sum of the squares approach when aggregating measures across 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 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:
- (a) that method applies instead; and
  - (b) if the correlations between risk categories used for that purpose cease to be empirically justified then the *firm* is expected to notify the *FCA* at once.

**Testing prior to model validation**

- 6.3.9** **G** 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 back-testing programme in place and should provide three months of back-testing history.
- 6.3.10** **G** 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.
- 6.3.11** **G** 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.

**Back-testing**

- 6.3.12** **G** For clarity, the back-testing requirements of article 366 of the *EU CRR* (Regulatory back testing and multiplication factors) should be implemented in the manner of **IFPRU 6.3.13 G** and **IFPRU 6.3.14 G**.
- 6.3.13** **G** 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 back-testing 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*.
- 6.3.14** **G** Any overshooting initially counts for the purpose of the calculation of the plus factor, even if subsequently the *FCA* 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*.
- 6.3.15** **G** A longer time period generally improves the power of back-testing. 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.
- 6.3.16** **G** The *FCA*, 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 back-testing. 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**

- 6.3.17** **G** In accordance with article 363(3) of the *EU CRR* (Permission to use internal models), the *FCA* expects a *firm* to provide and discuss with us 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 10-day VaR and stressed VaR

- 6.3.18 **G** The use of overlapping intervals of 10-day holding periods for article 365 of the *EU CRR* (VaR and stressed VaR calculation) introduces an autocorrelation into the data that would not exist should truly independent 10-day periods be used. This may give rise to an under-estimation 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 10-day VaR and stressed VaR when compared to using independent intervals. A report on the analysis, including a proposal for a multiplier on VaR and stressed VaR to adjust for the bias, should be submitted to the *FCA* for review and approval.

### Stressed VaR calculation

- 6.3.19 **G** Article 365 of the *EU CRR* requires a *firm* that uses an internal model for calculating its *own funds requirement* to calculate, at least weekly, a stressed VaR (sVaR) of their current portfolio. When the *FCA* considers a *firm's* application to use a sVaR internal model it would expect the features in ■ IFPRU 6.3.20 G to ■ IFPRU 6.3.24 G to be present prior to permission being granted, as indicative that the conditions for granting permission have been met.

### Quantile estimator

- 6.3.20 **G** The *firm* should calculate the sVaR measure to be greater than or equal to the average of the 2nd and 3rd worst loss in a 12-month time series comprising of 250 observations. The *FCA* expects, as a minimum, that a corresponding linear weighting scheme should be applied if the *firm* uses a larger number of observations.

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

- 6.3.21 **G** 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

- 6.3.22 **G** The *firm* should 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 *FCA*.

**Absolute and relative shifts**

**6.3.23** **G** The *firm* should 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.

**6.3.24** **G** The following information is expected to be submitted quarterly:

- (1) analysis to support the equivalence of the *firm's* current approach to a VaR-maximising approach on an ongoing basis;
- (2) the rationale behind the selection of key major risk factors used to find the period of significant financial stress;
- (3) summary of ongoing internal monitoring of stressed period selection with respect to current portfolio;
- (4) analysis to support capital equivalence of upscaled 1-day VaR and sVaR measures to corresponding full 10-day VaR and sVaR measures;
- (5) graphed history of sVaR/VaR ratio;
- (6) analysis to demonstrate accuracy of partial revaluation approaches specifically for sVaR purposes (for *firms* using revaluation ladders or spot/vol-matrices), which 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
- (7) minutes of risk committee meeting or other form of evidence to reflect governance and senior management oversight of stressed VaR methodology.

**Requirement to have an internal IRC model**

**6.3.25** **G** Article 372 of the *EU CRR* (Requirement to have an internal IRC model) requires a *firm* 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 to capture the default and migration risk of its *trading book* positions that are incremental to the risks captured by its VaR model. When the *FCA* considers a *firm's* application to use an IRC internal model, it expects that the matters in ■ IFPRU 6.3.26 G to ■ IFPRU 6.3.28 G will be included as demonstrating compliance with the standards in article 372.

**Basis risks for migration**

**6.3.26** **G** The *FCA* 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. The *firm* should disclose to the *FCA* its 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**

- 6.3.27 **G** 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**

- 6.3.28 **G** To achieve a soundness standard comparable to those under the IRB approach, LGD estimates should reflect the economic cycle. Therefore, the FCA expects a *firm* 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 should be submitted in quarterly reporting to the FCA, bearing in mind that for trading portfolios, which contain long and short positions, downturn estimates would not in all cases be a conservative choice.