Chapter 7

Market risk
7.1 Application, purpose, general provisions and non-standard transactions

Application

7.1.1 This chapter applies to a BIPRU firm.

Purpose

7.1.2 Pursuant to the third paragraph of article 95(2) of the EU CRR, the purpose of this chapter is to implement Annexes I, III, IV and V of the Capital Adequacy Directive.

General provisions: Obligation to calculate PRR

7.1.3 A firm must calculate a PRR in respect of:

1. all its trading book positions;
2. all positions falling within BIPRU 7.5.3 (Scope of the foreign exchange PRR calculation), whether or not in the trading book; and
3. all positions in commodities (including physical commodities) whether or not in the trading book;

even if no treatment is provided for that position in the other sections of this chapter.

7.1.4 A firm must calculate a PRR for any position falling into BIPRU 7.1.3 using:

1. the PRR calculations contained in BIPRU 7; or
2. another method provided the firm is able to demonstrate that in all circumstances the calculation being employed results in a higher PRR for the position than would be required under (1).

General provisions: Non-trading book items

7.1.5 Positions in instruments which are non-trading book items should be treated under BIPRU 3 (Standardised credit risk), BIPRU 4 (The IRB approach) or BIPRU 13 (Financial derivatives, SFTs and long settlement transactions) unless deducted as an illiquid asset. If they fall into BIPRU 7.1.3(2) or (3) they also give rise to a PRR charge.
General provisions: Frequency of calculation

7.1.6 A firm must be able to monitor its total PRR on an intra-day basis, and, before executing any trade, must be able to re-calculate PRR to the level of detail necessary to establish whether or not the firm’s capital resources exceed its capital resources requirement.

7.1.7 A firm may rely on intra-day limits for the purposes of BIPRU 7.1.6R.

Purpose of rules for non-standard transactions and instruments for which no PRR treatment has been specified

7.1.8 The methodologies which have been developed for calculating PRR charges have been based on existing instruments and assume instruments with standard characteristics. However, as a result of innovation and because there are instruments which, although based on a standard contract, contain structural features which would make the rules in the rest of this chapter inappropriate, flexible rules are required. The rules in this section about transactions for which no PRR treatment has been specified and non-standard transactions are designed to address this.

Instruments for which no PRR treatment has been specified

7.1.9 Where a firm has a position for which no PRR treatment has been specified, it must calculate the PRR for that position in accordance with BIPRU 7.1.12R-BIPRU 7.1.13R.

7.1.10 If BIPRU 7.1.9 R applies, a firm must document its policies and procedures for calculating the PRR for that position of that type in its trading book policy statement.

7.1.11 Under BIPRU 1.2.30 R (2) a firm should notify the appropriate regulator as soon as is reasonably practicable if its trading book policy statement is subject to significant changes. Therefore if a firm makes a change in accordance with BIPRU 7.1.10R it should consider whether it is necessary to report it to the appropriate regulator.

7.1.12 A firm may calculate the PRR for a position falling into BIPRU 7.1.9R by applying by analogy the rules relating to the calculation of the interest rate PRR, the equity PRR, the commodity PRR, the foreign currency PRR, the option PRR or the collective investment undertaking PRR if doing so is appropriate and if the position and PRR item are sufficiently similar to those that are covered by those rules.

7.1.13 Where a firm has a position for which no PRR treatment has been specified and it is not applying BIPRU 7.1.12R, it must calculate a PRR of an appropriate percentage of the current value of the position calculated under GENPRU 1.3 (Valuation).
**Instruments in non-standard form**

7.1.14 R  
(1) If a **firm** has a **position**:
   (a) in a **PRR item** in non-standard form; or
   (b) that is part of a non-standard arrangement; or
   (c) that, taken together with other **positions** (whether or not they are subject to **PRR charges** under **BIPRU 7**), gives rise to a non-standard **market risk**;
   
   the **firm** must notify the **appropriate regulator** of that fact and of details about the **position**, **PRR item**, arrangements and type of risk concerned.

(2) Except as (1) provides to the contrary, (1) applies to a **position** that is subject to a **PRR** under **BIPRU 7.1.3R**.

(3) The question of what is non-standard for the purposes of (1) must be judged by reference to the standards:
   (a) prevailing at the time the **rule** is being applied; and
   (b) of **firms** generally who carry on business which gives rise to **PRRs** under **BIPRU 7** rather than merely by reference to the **firm**’s own business.

7.1.15 R  
If a **firm** has a **position** or combination of **positions** falling into **BIPRU 7.1.14R** and the **PRR** relating to that **position** or **positions** materially underestimates the **market risk** incurred by the **firm** to which they give rise, the **firm** must calculate the **PRR** for that **position** or **positions** under **BIPRU 7.1.13R**.

**Meaning of appropriate percentage for non-standard transactions**

7.1.16 E  
(1) In **BIPRU 7.1.13R** and, to the extent that that **rule** applies
   **BIPRU 7.1.13R**, **BIPRU 7.1.15R**, an "**appropriate percentage**" is:
   (a) 100%; or
   (b) a percentage which takes account of the characteristics of the **position** concerned and of discussions with the **appropriate regulator** or a predecessor regulator under the **Banking Act 1987** or the **Financial Services Act 1986**.

(2) Compliance with (1) may be relied on as tending to establish compliance with **BIPRU 7.1.13R** or, insofar as it incorporates the requirements relating to an appropriate percentage, **BIPRU 7.1.15R**.

(3) Contravention of (1) may be relied on as tending to establish contravention with **BIPRU 7.1.13 R** or, insofar as it incorporates the requirements relating to an appropriate percentage, **BIPRU 7.1.15 R**.

**Stress testing and scenario analyses of trading book positions**

7.1.17 R  
**A firm** must conduct a regular programme of stress testing and scenario analysis of its **trading book positions**, both at the trading desk level and on a **firm-wide** basis. The results of these tests must be reviewed by senior management and reflected in the policies and limits the **firm** sets.
The firm’s stress testing programme should be comprehensive in terms of both risk and firm coverage, and appropriate to the size and complexity of trading book positions held.

In carrying out the stress tests and scenario analyses required by BIPRU 7.1.17 R, a firm must incorporate and take into account any other relevant stress tests and scenario analyses that it is required to carry out under any other provision of the Handbook, and in particular under BIPRU 7.10.72 R where the firm has a VaR model permission.

This paragraph gives guidance in relation to the stress testing programme that a firm must carry out in relation to its trading book positions.

1. The frequency of the stress testing of trading book positions should be determined by the nature of the positions.

2. The stress testing should include shocks which reflect the nature of the portfolio and the time it could take to hedge out or manage risks under severe market conditions.

3. The firm should have procedures in place to assess and respond to the results of the stress testing programme. In particular, stress testing should be used to evaluate the firm’s capacity to absorb losses or to identify steps to be taken by the firm to reduce risk.

4. As part of its stress testing programme, the firm should consider how prudent valuation principles (see GENPRU 1.3) will be met in a stressed scenario.

The stress testing and scenario analysis under BIPRU 7.1.17 R should be taken into account under the overall Pillar 2 rule.
7.2 Interest rate PRR

General rule

7.2.1 A firm must calculate its interest rate PRR under BIPRU 7.2 by:

(a) identifying which positions must be included within the interest rate PRR calculation;

(b) deriving the net position in each debt security in accordance with BIPRU 7.2.36R–BIPRU 7.2.41R;

(c) including these net positions in the interest rate PRR calculation for general market risk and the interest rate PRR calculation for specific risk; and

(d) summing all PRRs calculated for general market risk and specific risk.

7.2.2 The interest rate PRR calculation divides the interest rate risk into the risk of loss from a general move in market interest rates, and the risk of loss from an individual debt security’s price changing for reasons other than a general move in market interest rates. These are called general market risk and specific risk respectively.

Scope of the interest rate PRR calculation

7.2.3 A firm’s interest rate PRR calculation must:

(1) include all trading book positions in debt securities, preference shares and convertibles, except:

(a) positions in convertibles which have been included in the firm’s equity PRR calculation;
(b) positions fully deducted as a *material holding* under the calculations under the *capital resources table*, in which case the *firm* may exclude them; or

(c) positions hedging an option which is being treated under ▼ BIPRU 7.6.26R (Table: Appropriate treatment for equities, debt securities or currencies hedging options);

(2) include notional positions arising from *trading book positions* in the instruments listed in the table in ▼ BIPRU 7.2.4R; and

(3) (if the *firm* is the transferor of debt securities or guaranteed rights relating to title to debt securities in a repurchase agreement or the lender of debt securities in a debt securities lending agreement) include such *debt securities* if those debt securities meet the criteria for inclusion in the *trading book*.

### 7.2.4 Table: Instruments which result in notional positions

This table belongs to ▼ BIPRU 7.2.3R(2)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Futures, forwards or synthetic futures on debt securities</em></td>
<td>BIPRU 7.2.13 R</td>
</tr>
<tr>
<td><em>Futures, forwards or synthetic futures on debt indices or baskets</em></td>
<td>BIPRU 7.2.14R</td>
</tr>
<tr>
<td><em>Interest rate futures or forward rate agreements (FRAs)</em></td>
<td>BIPRU 7.2.18 R</td>
</tr>
<tr>
<td><em>Interest rate swaps or foreign currency swaps</em></td>
<td>BIPRU 7.2.21R</td>
</tr>
<tr>
<td>Deferred start interest rate swaps or foreign currency swaps</td>
<td>BIPRU 7.2.24R</td>
</tr>
<tr>
<td>The interest rate leg of an <em>equity</em> swap (unless the <em>firm</em> calculates the interest rate PRR on the instrument using the basic interest rate PRR calculation in BIPRU 7.3 (Equity PRR and basic interest rate PRR for equity derivatives))</td>
<td>BIPRU 7.2.27R</td>
</tr>
<tr>
<td>The cash leg of a <em>repurchase agreement</em> or a reverse repurchase agreement</td>
<td>BIPRU 7.2.30R</td>
</tr>
<tr>
<td>Cash borrowings or deposits</td>
<td>BIPRU 7.2.31 R</td>
</tr>
<tr>
<td><em>Options</em> on a debt security, a basket of debt securities, a debt security index, an interest rate or an interest rate future or swap (including an option on a future on a debt security) (unless the <em>firm</em> calculates a PRR on the option under BIPRU 7.6 (Option PRR))</td>
<td>BIPRU 7.2.32R</td>
</tr>
<tr>
<td>Dual currency bonds</td>
<td>BIPRU 7.2.33R</td>
</tr>
<tr>
<td><em>Foreign currency futures or forwards</em></td>
<td>BIPRU 7.2.34R</td>
</tr>
<tr>
<td><em>Gold futures or forwards</em></td>
<td>BIPRU 7.2.34R</td>
</tr>
<tr>
<td><em>Forwards, futures or options (except cliquets) on an equity, basket of</em></td>
<td>BIPRU 7.2.34R</td>
</tr>
</tbody>
</table>
G7.2.5

- **BIPRU 7.2.3R(1)** includes a trading book position in debt security, preference share or convertible that is subsequently repo'd under a repurchase agreement or lent under a stock lending agreement. Clearly, if the security had initially been obtained via a reverse repurchase agreement or stock borrowing agreement, the security would not have been included in the PRR calculation in the first place.

G7.2.6

- **BIPRU 7.2.3R(1)** includes net underwriting positions or reduced net underwriting position in debt securities.

G7.2.7

- **Firms** are reminded that the table in **BIPRU 7.6.5R** (Table: Appropriate PRR calculation for an option or warrant) divides options and warrants on interest rates, debt securities and interest rate futures and swaps into:
  
  1. those which must be treated under **BIPRU 7.6** (Option PRR); and
  2. those which must be treated under either **BIPRU 7.2** or **BIPRU 7.6**, the firm being able to choose whether **BIPRU 7.2** or **BIPRU 7.6** is used.

G7.2.8

- Cliquets on equities, baskets of equities or equity indices do not attract an interest rate PRR. The table in **BIPRU 7.2.4R** excludes them from the scope of the interest rate PRR calculation in **BIPRU 7.2** and **BIPRU 7.3.45R** excludes them from the basic interest rate PRR calculation in **BIPRU 7.3** (Equity PRR and basic interest rate PRR for equity derivatives).

G7.2.9

- The table in **BIPRU 7.2.4R** shows that equity derivatives are excluded from **BIPRU 7.2**'s PRR calculation if they have been included in the basic interest rate PRR calculation in **BIPRU 7.3** (see **BIPRU 7.3.45R**).

**Derivation of notional positions: General approach**

G7.2.10

- **BIPRU 7.2.11 R** - **BIPRU 7.2.35R** convert the instruments listed in the table in **BIPRU 7.2.4R** into notional positions in:
  
  1. the underlying debt security, where the instrument depends on the price (or yield) of a specific debt security; or
  2. notional debt securities to capture the pure interest rate risk arising from future payments and receipts of cash (including notional payments and receipts) which, because they are designed to represent
pure general market risk (and not specific risk), are called zero-specific-risk securities; or

(3) both (1) and (2).

7.2.11 A firm must derive the value of notional positions as follows:

(a) notional positions in actual debt securities must be valued as the nominal amount underlying the contract at the current market price of the debt security; and

(b) positions in zero-specific-risk securities must be valued using one of the two methods in (2).

7.2.12 A firm must use BIPRU 7.2.11R(2)(a) in respect of any positions that it includes in the interest rate duration method.

Derivation of notional positions: Futures, forwards or synthetic futures on a debt security

Futures, forwards or synthetic futures on a single debt security must be treated as follows:

(1) a purchased future, synthetic future or forward is treated as:

(a) a notional long position in the underlying debt security (or the cheapest to deliver (taking into account the conversion factor) where the contract can be satisfied by delivery of one from a range of securities); and

(b) a notional short position in a zero coupon zero-specific-risk security with a maturity equal to the expiry date of the future or forward; and

(2) a sold future, synthetic future or forward is treated as:

(a) a notional short position in the underlying security (or the cheapest to deliver (taking into account the conversion factor)
where the contract can be satisfied by delivery of one from a range of securities; and

(b) a notional long position in a zero coupon zero-specific-risk security with a maturity equal to the expiry date of the future, synthetic future or forward.

**Derivation of notional positions: Futures, forwards or synthetic futures on a basket or index of debt securities**

7.2.14 R

*Futures, forwards or synthetic futures* on a basket or index of debt securities must be converted into *forwards* on single debt securities as follows (and then the resulting *positions* must be treated under ■ BIPRU 7.2.13R):

(1) *futures, synthetic futures or forwards* on a single currency basket or index of debt securities must 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, synthetic futures or forwards* on multiple currency baskets or indices of debt securities must 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.

7.2.15 G

Under ■ BIPRU 7.2.14R(2)(b), a *forward* on basket of three Euro denominated debt securities and two Dollar denominated debt securities would be treated as a *forward* on a single notional Euro denominated debt security and a *forward* on a single notional Dollar denominated debt security.

7.2.16 R

The notional debt *securities* in ■ BIPRU 7.2.14R are 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.

7.2.17 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*. ■ BIPRU 7.2.16R requires a *firm* to 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.
Derivation of notional positions: Interest rate futures and forward rate agreements (FRAs)

7.2.18 Interest rate futures or FRAs must be treated as the two notional positions (one long, one short) shown in the table in BIPRU 7.2.19R.

7.2.19 Table: Interest rate futures and FRAs
This table belongs to BIPRU 7.2.18R

<table>
<thead>
<tr>
<th>Where the firm buys an interest rate future or sells an FRA</th>
<th>A short position in a zero coupon zero-specific-risk security</th>
<th>A long position in a zero coupon zero-specific-risk security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity equals the expiry date of the future (or settlement date of the FRA)</td>
<td>Maturity equals the expiry date of the future (or settlement date of the FRA) plus the maturity of the notional borrowing/deposit</td>
<td></td>
</tr>
</tbody>
</table>

7.2.20 (1) The following example illustrates BIPRU 7.2.18R and BIPRU 7.2.19R in conjunction with BIPRU 7.2.11R (the last rule determines the value of notional positions). A firm sells £1mn notional of a 3v6 FRA at 6%. This results in:

(a) a short position in a zero-specific-risk security with a zero coupon, three month maturity, and a nominal amount of £1million; and

(b) a long position in a zero-specific-risk security with a zero coupon, six month maturity, and nominal amount of £1,015,000 (i.e. notional plus interest at 6% over 90 days).

(2) If a firm were to apply the approach in BIPRU 7.2.11R(2)(a) the two nominal amounts would have to be present valued.

Derivation of notional positions: Interest rate swaps or foreign currency swaps

7.2.21 Interest rate swaps or foreign currency swaps without deferred starts must be treated as the two notional positions (one long, one short) shown in the table in BIPRU 7.2.22R.

7.2.22 Table: Interest rate and foreign currency swaps
This table belongs to BIPRU 7.2.21R
For a foreign currency swap, the two notional zero-specific-risk securities would be denominated in different currencies. A foreign currency swap is also included in the foreign currency PRR calculation.

**Derivation of notional positions: Deferred start interest rate swaps or foreign currency swaps**

**7.2.24 R** Interest rate swaps or foreign currency swaps with a deferred start must be treated as the two notional positions (one long, one short) shown in the table in ■ BIPRU 7.2.25R.

**7.2.25 R** Table: Deferred start interest rate and foreign currency swaps

This table belongs to ■ BIPRU 7.2.24R

<table>
<thead>
<tr>
<th>Receiving fixed and paying floating</th>
<th>Receiving leg (which must be treated as a short position in a zero-specific-risk security)</th>
<th>Receiving leg (which must be treated as a long position in a zero-specific-risk security)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupon equals the floating rate and maturity equals the reset date</td>
<td>Coupon equals the fixed rate of the swap and maturity equals the maturity of the swap</td>
<td></td>
</tr>
<tr>
<td>Coupon equals the floating rate and maturity equals the maturity of the swap</td>
<td>Coupon equals the floating rate and maturity equals the reset date</td>
<td></td>
</tr>
<tr>
<td>Coupon equals the floating rate and maturity equals the reset date</td>
<td>Coupon equals the floating rate and maturity equals the reset date</td>
<td></td>
</tr>
</tbody>
</table>

An example of ■ BIPRU 7.2.24R is as follows. A firm enters into a five year swap which starts in two year’s time. The firm has contracted to receive 6% and pay six month Libor on a principal amount of £1 million. This results in a long position in a 7 year debt security and a short position in a 2 year debt security. Both have a coupon of 6%. ■ BIPRU 7.2.24R deals with the capital treatment of the delayed start date; once the swap has started, ■ BIPRU 7.2.21R applies.
Derivation of notional positions: Swaps where only one leg is an interest rate leg (e.g. equity swaps)

7.2.27 R A firm must treat a 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.

7.2.28 G BIPRU 7.2.27R includes equity swaps, commodity swaps and any other swap where only one leg is an interest rate leg.

Derivation of notional positions: Cash legs of repurchase agreements and reverse repurchase agreements

7.2.29 G Firms are reminded that for the purposes of BIPRU 7.2.30R, a repurchase agreement includes a sell/buy back or stock lending; and a reverse repurchase agreement includes a buy/sell back or a stock borrowing.

7.2.30 R The forward cash leg of a repurchase agreement or reverse repurchase agreement must 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 cash leg;
3. has a maturity equal to that of the repurchase agreement or reverse repurchase agreement; 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 contract, if any interest is due to be paid before the maturity date.

Derivation of notional positions: Cash borrowings and deposits

7.2.31 R A cash borrowing or deposit must be treated as a notional position in a zero coupon zero-specific-risk security which:

1. is a short position in the case of a borrowing and a long position in the case of a deposit;
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.

**Derivation of notional positions: Options and warrants**

7.2.32

1. Where included in the PRR calculation in BIPRU 7.2 (see the table in BIPRU 7.2.4R), options and warrants must be treated in accordance with this rule.

2. An option or warrant on a debt security, a basket of debt securities or a debt security index must be treated as a position in that debt security, basket or index.

3. An option on an interest rate must be treated as a position in a zero coupon zero-specific-risk security with a maturity equal to the sum of the time to expiry of the option and the length of the period for which the interest rate is fixed.

4. An option on a future - where the future is based on an interest rate or debt security - must be treated as:

   (a) a long position in that future for purchased call options and written put options; and

   (b) a short position in that future for purchased put options and written call options.

5. An option on a swap must be treated as a deferred starting swap.

**Derivation of notional positions: Bonds where the coupons and principal are paid in different currencies**

7.2.33

Where a debt security pays coupons in one currency, but will be redeemed in a different currency, it must 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.
Derivation of notional positions: Interest rate risk on other futures, forwards and options

R7.2.34

Other futures, forwards, options and swaps treated under ■ BIPRU 7.2 must 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 ■ BIPRU 7.2.35R.

R7.2.35

Table: Interest rate risk on other futures, forwards, options and swaps

This table belongs to ■ BIPRU 7.2.34R.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Notional positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>foreign currency forward or future</td>
<td>a long position denominated in the currency purchased and a short position denominated in the currency sold</td>
</tr>
<tr>
<td>Gold forward or future</td>
<td>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</td>
</tr>
<tr>
<td>Equity forward or future, or option (unless the interest rate PRR is calculated under the basic interest rate PRR calculation in BIPRU 7.3)</td>
<td>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</td>
</tr>
</tbody>
</table>

Deriving the net position in each debt security: General

R7.2.36

The net position in a debt security is the difference between the value of the firm’s long positions (including notional positions) and the value of its short positions (including notional positions) in the same debt security.

Deriving the net position in each debt security: Netting positions in the same debt security

R7.2.37

1. A firm must not net positions (including notional positions) unless those positions are in the same debt security. This rule sets out the circumstances in which debt securities may be treated as the same for these purposes.

2. Subject to (3) long and short positions are in the same debt security, and a debt security is the same as another if and only if:
   a. they enjoy the same rights in all respects; and
   b. are fungible with each other.
(3) Long and short positions in different tranches of the same debt security may be treated as being in the same debt security for the purpose of (1) where:

(a) the tranches enjoy the same rights in all respects; and

(b) the tranches become fungible within 180 days and thereafter the debt security of one tranche can be delivered in settlement of the other tranche.

**Deriving the net position in each debt security: Netting the cheapest to deliver security with other deliverable securities**

7.2.38 R A firm may net a short notional position in the cheapest to deliver security arising from a short future or forward (see BIPRU 7.2.13R(2)(a)) under which the seller has a choice of which debt security it may use to settle its obligations against a long position in any deliverable security up to a maximum of 90% of the common nominal amounts. The residual long and short nominal amounts must be treated as separate long and short positions.

7.2.39 R The netting permitted by BIPRU 7.2.38R only relates to where the firm has sold the future or forward. It does not relate to where the firm has bought a future or forward.

**Deriving the net position in each debt security: Netting zero-specific-risk securities with different maturities**

7.2.40 R A firm may net a notional long position in a zero-specific-risk security against a notional short position in a zero-specific-risk security if:

1. they are denominated in the same currency;
2. their coupons do not differ by more than 15 basis points; and
3. they mature:
   (a) on the same day, if they have residual maturities of less than one month;
   (b) within 7 days of each other, if they have residual maturities of between one month and one year; and
   (c) within 30 days of each other, if they have residual maturities in excess of one year.

**Deriving the net position in each debt security: Reduced net underwriting positions in debt securities**

7.2.41 R A firm must not net a reduced net underwriting position in a debt security with any other debt security position.

7.2.42 G BIPRU 7.2.41R only relates to reduced net underwriting position.
Deriving the net position in the correlation trading portfolio

A correlation trading portfolio may only consist of securitisation positions and nth-to-default credit derivatives that meet the following criteria:

1. The positions are neither resecuritisation positions, nor options on a securitisation position, nor any other derivatives of securitisation exposures that do not provide a pro-rata share in the proceeds of a securitisation tranche;

2. All reference instruments are either single-name instruments, including single-name credit derivatives, for which a liquid two-way market exists, or commonly traded indices based on reference entities which meet this criterion;

3. The positions do not fall under the exposure classes outlined in BIPRU 3.2.9 R (8) (retail claims or contingent retail claims) and BIPRU 3.2.9 R (9) (claims or contingent claims secured on real estate property); and

4. The positions do not reference a claim on a special purpose vehicle.

Positions which are not securitisation positions or nth-to-default credit derivatives may be included in the correlation trading portfolio only if they hedge other such positions in this portfolio and a liquid two-way market exists for the relevant position or its reference entities.

For the purposes of BIPRU 7.2.42A R (2) and BIPRU 7.2.42B R, a two-way market may be deemed to exist only where there are independent, bona fide offers to buy and sell, so that a price reasonably related to the last sales price or current bona fide competitive bid and offer quotations can be determined within one business day and settled at that price within a relatively short time conforming to trade custom.

A firm must calculate both the net long and the net short positions in the correlation trading portfolio by applying BIPRU 7.2.36 R and BIPRU 7.2.37 R or, where applicable, BIPRU 7.11.13 R to BIPRU 7.11.17 R.

Specific risk calculation

1. A firm must calculate the specific risk portion of the interest rate PRR for each debt security by multiplying the market value of the individual net position (ignoring the sign) by the appropriate position risk adjustment from the table in BIPRU 7.2.44R or as specified by BIPRU 7.2.45R - BIPRU 7.2.48L R or by BIPRU 7.11.13 R - BIPRU 7.11.17 R.


3. For the purpose of (1), a firm may cap the product of multiplying the individual net position by the appropriate position risk adjustment at the maximum possible default-risk-related loss. For a short position in a credit derivative, a firm may calculate the maximum possible
default-risk-related loss as a change in value due to the underlying names immediately becoming default-risk-free.

Table: specific risk position risk adjustments
This table belongs to ■ BIPRU 7.2.43R.

<table>
<thead>
<tr>
<th>Issuer</th>
<th>Residual maturity</th>
<th>Position risk adjuster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt securities issued or guaranteed by central governments, issued by central banks, international organisations, multilateral development banks or EEA States' regional governments or local authorities which would qualify for credit quality step 1 or which would receive a 0% risk weight under the standardised approach to credit risk.</td>
<td>Any</td>
<td>0%</td>
</tr>
<tr>
<td>(A) Debt securities issued or guaranteed by central governments, issued by central banks, international organisations, multilateral development banks or EEA States' regional governments or local authorities which would qualify for credit quality step 2 or 3 under the standardised approach to credit risk.</td>
<td>Zero to six months over 6 and up to and including 24 months Over 24 months</td>
<td>0% 1% 16%</td>
</tr>
<tr>
<td>(B) Debt securities issued or guaranteed by institutions which would qualify for credit quality step 1 or 2 under the standardised approach to credit risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C) Debt securities issued or guaranteed by institution which would qualify for credit quality step 3 under BIPRU 7.2.49R (Exposures to institutions: Credit assessment based method) or which would do so if it had an original effective maturity of three months or less.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(D) Debt securities issued or guaranteed by corporates which would qualify for credit quality step 1, 2 or 3 under the standardised approach to credit risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E) Other qualifying debt securities (see BIPRU 7.2.49R)</td>
<td>Any</td>
<td>8%</td>
</tr>
<tr>
<td>(A) Debt securities issued or guaranteed by central governments, issued by central banks, international organisations, multilateral development banks or EEA States' regional governments or local authorities or institutions which would qualify for credit quality step 4 or 5 under the standardised approach to credit risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B) Debt securities issued or guaranteed by corporates which would qualify for credit quality step 4 under the standardised approach to credit risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C) Exposures for which a credit assessment by a nominated ECAI is not available.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.2.45 To the extent that a firm applies the IRB approach, to qualify for a credit quality step for the purpose of the table in BIPRU 7.2.44R the obligor of the exposure must have an internal rating with a PD equivalent to or lower than that associated with the appropriate credit quality step under the standardised approach to credit risk.

7.2.46 A debt security issued by a non-qualifying issuer must receive a specific risk position risk adjustment of 8% or 12% according to the table in BIPRU 7.2.44R. However a firm must apply a higher specific risk position risk adjustment to such a debt security and/or not recognise offsetting for the purposes of defining the extent of general market risk between such a security and any other debt securities to the extent that doing otherwise would not be a prudent treatment of specific risk or general market risk.

7.2.46A BIPRU 7.2.43 R includes both actual and notional positions. However, notional positions in a zero-specific-risk security do not attract specific risk. For example:

(1) interest-rate swaps, foreign-currency swaps, FRAs, interest-rate futures, foreign-currency forwards, foreign-currency futures, and the cash leg of repurchase agreements and reverse repurchase agreements create notional positions which will not attract specific risk; while

(2) futures, forwards and swaps which are based on the price (or yield) of one or more debt securities will create at least one notional position that attracts specific risk.
Specific risk: securitisations and resecuritisations

7.2.47 [deleted]

7.2.47A [deleted]

7.2.47B [deleted]

7.2.47C [deleted]

7.2.48 [deleted]

7.2.48A [deleted]

(1) Subject to (3), a firm must calculate the specific risk portion of the interest rate PRR for each securitisation and resecuritisation position by multiplying the market value of the individual net position (ignoring the sign) by the appropriate position risk adjustment from the table in 7.2.48D or 7.2.48E, or in accordance with 7.2.48F, as applicable.

(2) In calculating the specific risk capital charge of an individual net securitisation or resecuritisation position, a firm may cap the product of the weight and the individual net position at the maximum possible default-risk-related loss. For a short position, that limit may be calculated as a change in value due to the underlying names immediately becoming default-risk-free.

(3) For a transitional period ending on 31 December 2013, where a firm holds securitisation and resecuritisation positions, other than positions included in the correlation trading portfolio, it must calculate:

(a) the total specific risk capital charges that would apply just to the net long positions; and

(b) the total specific risk capital charges that would apply just to the net short positions.

The total specific risk capital charge for securitisation and resecuritisation positions will be the higher of (3)(a) and (3)(b).

7.2.48B The firm must report to the appropriate regulator the total sum of its weighted net long and net short securitisation and resecuritisation positions, broken down by types of underlying assets.

7.2.48C When calculating the PRR of a protection seller in securitisation and resecuritisation credit derivatives, a firm must apply 7.11.3.

7.2.48D Table: specific risk position risk adjustments - standardised approach
### 7.2.48E

A firm may only apply the position risk adjustments in this table where it would have to calculate a risk weighted exposure amount in accordance with the standardised approach to securitisation and resecuritisation positions if such positions were in its non-trading book under BIPRU 9. The appropriate position risk adjustment is calculated as 8% of the risk weight that would apply to the position under the standardised approach in BIPRU 9.11.2 R, subject to the requirements of BIPRU 9.9 to BIPRU 9.11, where appropriate.

#### Table: specific risk Position Risk Adjustments - IRB approach

<table>
<thead>
<tr>
<th>Credit quality step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (only for credit assessments other than short-term credit assessments)</th>
<th>All other credit quality steps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Securitisations</strong></td>
<td>1.6%</td>
<td>4%</td>
<td>8%</td>
<td>28%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Resecuritisations</strong></td>
<td>3.2%</td>
<td>8%</td>
<td>18%</td>
<td>52%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Note: A firm may only apply the position risk adjustments in this table where it would have to calculate a risk weighted exposure amount in accordance with the standardised approach to securitisation and resecuritisation positions if such positions were in its non-trading book under BIPRU 9. The appropriate position risk adjustment is calculated as 8% of the risk weight that would apply to the position under the standardised approach in BIPRU 9.11.2 R, subject to the requirements of BIPRU 9.9 to BIPRU 9.11, where appropriate.*

### 7.2.48F

(1) A firm may use the supervisory formula method to calculate the appropriate position risk adjustment for specific risk where:

(a) the firm is permitted to apply the supervisory formula method to the same position if it was held in its non-trading book in accordance with BIPRU 9.12; or
(b) otherwise, the firm is expressly permitted by its **VaR model permission** to apply the **supervisory formula method** to calculate the **appropriate position risk adjustment** for specific risk.

(2) The **appropriate position risk adjustment** under the **supervisory formula method** must be calculated by multiplying the **risk weight** calculated according to **BIPRU 9.12.21 R** by 8%.

(3) Where relevant, estimates of **PDs and LGDs** as inputs to the **supervisory formula method** must be determined in accordance with **BIPRU 4**.

(4) Where expressly permitted by its **VaR model permission**, a firm may use the approach outlined in **BIPRU 7.10.55A R** to determine **PDs and LGDs** as inputs to the **supervisory formula method**.

Where a securitisation position in the **trading book** is subject to an increased **risk weight** in accordance with **BIPRU 9.15**, the **appropriate position risk adjustment** must be calculated as 8% of the **risk weight** that would apply to the **position** in accordance with **BIPRU 9.15**.

**7.2.48G**

Originators, investors and sponsors of securitisations in the **trading book** will have to meet the requirements of **BIPRU 9.3.1A R**, **BIPRU 9.3.15 R** to **BIPRU 9.3.20 R** and **BIPRU 9.15**.

**7.2.48I**

(1) Subject to **BIPRU 7.2.48G**, **BIPRU 9.15.9 R** and **BIPRU 9.15.10 R**, where the investor, originator or sponsor of a securitisation fails to meet any of the requirements in **BIPRU 9.3.18 R** to **BIPRU 9.3.20 R** (Disclosure requirements) and **BIPRU 9.15.11 R** to **BIPRU 9.15.16 R** (investor due diligence requirements) in any material respect by reason of its negligence or omission, the **appropriate regulator** will use its powers under section 55J (Variation etc. on the Authority’s own initiative) of the **Act** to impose an additional capital charge in accordance with **BIPRU 7.2.48 GR**. The additional capital charge imposed will be progressively increased with each relevant, subsequent infringement of the requirements in **BIPRU 9.3.18 R** to **BIPRU 9.3.20 R** and **BIPRU 9.15.11 R** to **BIPRU 9.15.16A R**, up to a maximum of 1250% **risk weight**.

(2) Subject to **BIPRU 9.3.22 G**, **BIPRU 9.15.9 R** and **BIPRU 9.15.10 R**, where a credit institution fails to meet in any material respect the requirements in **BIPRU 9.15.16A R** (Group level requirements), the **appropriate regulator** may consider using its powers under section 55J (Variation etc on the Authority’s own initiative) of the **Act** in the manner described in (1). In order to calculate the **risk weights** that would apply to the credit institution, the **appropriate regulator** may treat the securitisation investments of the subsidiary undertaking as if they were securitisation positions held directly by the credit institution.

**7.2.48J**

When calculating the additional capital charge it will impose under **BIPRU 7.2.48G R**, the **appropriate regulator** will take into account the exemption of certain securitisations from the scope of **BIPRU 9.15.3 R** under
A securitisation exposure in the trading book that would be subject to deduction in accordance with GENPRU 2.2. (Capital resources) or to a 1250% risk weight in accordance with BIPRU 9 (Securitisation) is subject to a capital charge that is no less than that set out under those provisions, capped at the maximum possible default-risk-related loss. Unrated liquidity facilities are subject to a capital charge that is no less than that set out in BIPRU 9.

**Specific risk: correlation trading portfolio**

1. Where a firm holds a position in the correlation trading portfolio, it must calculate:
   a. The total specific risk capital charges that would apply just to the net long positions of the correlation trading portfolio; and
   b. The total specific risk capital charges that would apply just to the net short positions of the correlation trading portfolio.

2. The higher of (1)(a) and (1)(b) will be the specific risk capital charge for the correlation trading portfolio.

3. In calculating the specific risk capital charge of an individual net position in the correlation trading portfolio, a firm may cap the product of multiplying the individual net position by the appropriate position risk adjustment at the maximum possible default-risk-related loss. For a short position, a firm may calculate the maximum possible default-risk-related loss as a change in value due to the underlying names immediately becoming default-risk-free.

**Definition of a qualifying debt security**

A debt security is a qualifying debt security if:

1. it qualifies for a credit quality step under the standardised approach to credit risk corresponding at least to investment grade; or

2. it has a PD which, because of the solvency of the issuer, is not higher than that of the debt securities referred to under (1) under the IRB approach; or

3. it is a debt security for which a credit assessment by a nominated ECAI is unavailable and which meets the following conditions:
   a. it is considered by the firm to be sufficiently liquid;
   b. it is of investment quality, according to the firm's own discretion, at least equivalent to that of the debt securities referred to under (1); and
   c. it is listed on at least one regulated market or designated investment exchange; or

4. it is a debt security issued by an institution subject to the capital adequacy requirements set out in the EU CRR or, as may be
applicable, the Banking Consolidation Directive that satisfies the following conditions:

(a) it is considered by the firm to be sufficiently liquid;
(b) its investment quality is, according to the firm’s own discretion, at least equivalent to that of the assets referred to under (1) above; or

(5) it is a debt security issued by an institution that is deemed to be of equivalent or higher credit quality than that associated with credit quality step 2 under the standardised approach to credit risk and that is subject to supervision and regulatory arrangements comparable to those under the Capital Adequacy Directive.

7.2.50 A firm must not treat a debt security as a qualifying debt security if it would be prudent to consider that the debt security concerned is subject to too high a degree of specific risk for it to be treated as a qualifying debt security.

7.2.51 The manner in which a firm assesses a debt security for the purpose of treatment as a qualifying debt security will be subject to scrutiny by the appropriate regulator. The appropriate regulator may take action to overturn the firm’s judgement if it considers that the debt security should not be treated as a qualifying debt security.

General market risk calculation: General

7.2.52 A firm must calculate the general market risk portion of the interest rate PRR for each currency using either:

(1) the interest rate simplified maturity method;
(2) the interest rate maturity method; or
(3) the interest rate duration method.

7.2.53 BIPRU 7.2.52R(3) is subject to BIPRU 7.2.54R.

7.2.54 A firm must not use the interest rate duration method for index-linked securities. Instead, these securities must:

(1) be attributed a coupon of 3%; and
(2) be treated separately under either the interest rate simplified maturity method or the interest rate maturity method.

General market risk calculation: Simplified maturity method

7.2.55 The interest rate simplified maturity method weights individual net positions to reflect their price sensitivity to changes in interest rates. The weights are related to the coupon and the residual maturity of the instrument (or the next interest rate re-fix date for floating rate items).
7.2.56 Under the interest rate simplified maturity method, the portion of the interest rate PRR for general market risk equals the sum of each individual net position (long or short) multiplied by the appropriate position risk adjustment in the table in §BIPRU 7.2.57R. A firm must assign its net positions to the appropriate maturity bands in the table in §BIPRU 7.2.57R on the basis of residual maturity in the case of fixed-rate instruments and on the basis of the period until the interest rate is next set in the case of instruments on which the interest rate is variable before final maturity.

7.2.57 Table: general market risk Position Risk Adjustments

This table belongs to §BIPRU 7.2.56R.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Maturity band</th>
<th>Coupon of 3% or more</th>
<th>Coupon of less than 3%</th>
<th>position risk adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>0 ≤ 1 month</td>
<td>0 ≤ 1 month</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 1 ≤ 3 months</td>
<td>&gt; 1 ≤ 3 months</td>
<td>0.20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 3 ≤ 6 months</td>
<td>&gt; 3 ≤ 6 months</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 6 ≤ 12 months</td>
<td>&gt; 6 ≤ 12 months</td>
<td>0.7%</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>&gt; 1 ≤ 2 years</td>
<td>&gt; 1.0 ≤ 1.9 years</td>
<td>1.25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 2 ≤ 3 years</td>
<td>&gt; 1.9 ≤ 2.8 years</td>
<td>1.75%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 3 ≤ 4 years</td>
<td>&gt; 2.8 ≤ 3.6 years</td>
<td>2.25%</td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td>&gt; 4 ≤ 5 years</td>
<td>&gt; 3.6 ≤ 4.3 years</td>
<td>2.75%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 5 ≤ 7 years</td>
<td>&gt; 4.3 ≤ 5.7 years</td>
<td>3.25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 7 ≤ 10 years</td>
<td>&gt; 5.7 ≤ 7.3 years</td>
<td>3.75%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 10 ≤ 15 years</td>
<td>&gt; 7.3 ≤ 9.3 years</td>
<td>4.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 15 ≤ 20 years</td>
<td>&gt; 9.3 ≤ 10.6 years</td>
<td>5.25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 20 years</td>
<td>&gt; 10.6 ≤ 12.0 years</td>
<td>6.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 12.0 ≤ 20.0 years</td>
<td>8.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 20 years</td>
<td>12.50%</td>
<td></td>
</tr>
</tbody>
</table>

General market risk calculation: The maturity method

7.2.58 The interest rate maturity method builds on the interest rate simplified maturity method by partially recognising offsetting positions. §BIPRU 7.2.61G provides an illustration of the interest rate maturity method.

7.2.59 Under the interest rate maturity method, the portion of the interest rate PRR for general market risk is calculated as follows:

(1) Step 1: each net position is allocated to the appropriate maturity band in the table in §BIPRU 7.2.57R and multiplied by the corresponding position risk adjustment;

(2) Step 2: weighted long and short positions are matched within:

(a) the same maturity band;
(b) the same zone (using unmatched positions from (a)); and
(c) different zones (using unmatched positions from (b) and matching between zones 1 and 2 and 2 and 3 before zone 1 and 3); and

(3) Step 3: the portion of the interest rate PRR for general market risk is the sum of:
(a) 10% of the total amount matched within maturity bands;
b) 40% of the amount matched within zone 1 under (2)(b);
c) 30% of the amount matched within zones 2 & 3 under (2)(b);
d) 40% of the amounts matched between zones 1 and 2, and between zones 2 and 3;
e) 150% of the amount matched between zones 1 and 3; and
f) 100% of the weighted positions remaining unmatched after (2)(c).

The table in BIPRU 7.2.57R distinguishes between debt securities with a coupon of less than 3% and those with coupon in excess of 3%. However, this does not mean that the firm has to do a separate general market risk calculation for each; it merely ensures that when allocating debt securities to a particular band, their coupons are taken into account as well as their maturities. So for example, a 21 year 6% debt security falls into the same band as an 11 year 2% debt security. They are both weighted at 6%, and can be matched under BIPRU 7.2.59R(2)(a) (the first part of step two of the interest rate maturity method calculation) because they fall within the same band.
This paragraph sets out an example of a calculation under the interest rate maturity method. In this example, a firm with a £ sterling base currency is processing its euro denominated positions.

General market risk calculation: Duration method

The interest rate duration method produces a more accurate measure of interest rate risk than the maturity methods but it is also more complex to calculate.

(1) A firm must use the following formula to calculate modified duration for the purpose of the interest rate duration method:

\[
\text{Modified duration} = \frac{D}{(1+i)}
\]

(2) For the purposes of the formulae (1),

\[
D = \frac{\sum C_t}{\sum (1+i)^t}
\]

(3) For the purpose of the formulae in (1) and (2):

(a) \(C_t\) = cash payment at time \(t\)

(b) \(m\) = total maturity
(c) \( r = \text{yield to maturity}. \) In the case of a fixed-rate debt security a firm must take the current mark to market of the debt security and thence calculate its yield to maturity, which is the implied discount rate for that instrument. In the case of a floating rate instrument, a firm must take the current mark to market of the debt security and thence calculate its yield on the assumption that the principal is due on the date that the interest rate can next be changed.

(d) \( t = \text{time} \)

**7.2.64** Under the *interest rate duration method*, the portion of the *interest rate PRR for general market risk* is calculated as follows:

1. **Step 1:** allocate each net position to the appropriate duration zone in the table in BIPRU 7.2.65R and multiply it by:
   - (a) its modified duration (using the formula in BIPRU 7.2.63R); and
   - (b) the appropriate assumed interest rate change in the table in BIPRU 7.2.65R;

2. **Step 2:** match weighted long and short positions:
   - (a) within zones; and
   - (b) across zones (using unmatched positions from (2)(a) and following the process in BIPRU 7.2.59R (2)(c)); and

3. **Step 3:** calculate the portion of the *interest rate PRR for general market risk* as the sum of:
   - (a) 100% of the weighted positions remaining unmatched after (2)(b);
   - (b) 2% of the matched weighted position in each zone;
   - (c) 40% of the matched weighted position between zones 1 and 2, and between zones 2 and 3; and
   - (d) 150% of the matched weighted position between zones 1 and 3.

**Table: Assumed interest rate change in the interest rate duration method**

This table belongs to BIPRU 7.2.64R

<table>
<thead>
<tr>
<th>Zone</th>
<th>Modified Duration</th>
<th>Assumed interest rate change (percentage points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>( 0 \leq 12 \text{ months} )</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>( &gt; 12 \text{ months} \leq 3.6 \text{ years} )</td>
<td>0.85</td>
</tr>
<tr>
<td>3</td>
<td>( &gt; 3.6 \text{ years} )</td>
<td>0.70</td>
</tr>
</tbody>
</table>

**7.2.66** If a firm uses the *interest rate duration method* it must do so on a consistent basis.
7.3 Equity PRR and basic interest rate PRR for equity derivatives

General rule

7.3.1 (1) A firm must calculate its equity PRR by:
   (a) identifying which positions must be included within the PRR calculation (see BIPRU 7.3.2R);
   (b) deriving the net position in each equity in accordance with BIPRU 7.3.23R;
   (c) including each of those net positions in either the simplified equity method (see BIPRU 7.3.29R) or, subject to BIPRU 7.3.27R, the standard equity method (see BIPRU 7.3.32R); and
   (d) summing the PRR on each net position as calculated under the simplified equity method and standard equity method.

(2) All net positions, irrespective of their signs, must be converted on a daily basis into the firm’s base currency at the prevailing spot exchange rate before their aggregation.

Scope of the equity PRR calculation

7.3.2 A firm’s equity PRR calculation must:

(1) include all trading book positions in equities, unless:
   (a) the position is fully deducted as a material holding under the calculations under the capital resources table, in which case the firm may exclude it; or
   (b) the position is hedging an option or warrant which is being treated under BIPRU 7.6.26R (Table: Appropriate treatment for equities, debt securities or currencies hedging options);

(2) include notional positions arising from trading book positions in the instruments listed in the table in BIPRU 7.3.3R; and

(3) (if the firm is the transferor of equities or guaranteed rights relating to title to equities in a repurchase agreement or the lender of equities in an equities lending agreement) include such equities if those equities meet the criteria for inclusion in the trading book.

7.3.3 Table: Instruments which result in notional positions

This table belongs to BIPRU 7.3.2R(2)
### Instrument | See
--- | ---
Depository receipts | BIPRU 7.3.12R
Convertibles where: | BIPRU 7.3.13R
- (a) the convertible is trading at a market price of less than 110% of the underlying equity, and the first date at which conversion can take place is less than three months ahead, or the next such date (where the first has passed) is less than a year ahead; or
- (b) the conditions in (a) are not met but the firm includes the convertible in its equity PRR calculation rather than including it in its interest rate PRR calculation set out in BIPRU 7.2 (Interest rate PRR).
Futures, forwards, CFDs and synthetic futures on a single equity | BIPRU 7.3.14R
Futures, forwards, CFDs and synthetic futures on a basket of equities or equity index | BIPRU 7.3.15R
equity legs of an equity swap | BIPRU 7.3.19R
Options or warrants on a single equity, an equity future, a basket of equities or an equity index (unless the firm calculates a PRR on the option or warrant under BIPRU 7.6) | BIPRU 7.3.21R

7.3.4 ■ BIPRU 7.3.2R(1) includes a trading book position in an equity that is subsequently repo'd under a repurchase agreement or lent under a stock lending agreement. Clearly, if the equity had initially been obtained via a reverse repurchase agreement or stock borrowing agreement, the equity would not have been included in the trading book in the first place.

7.3.5 ■ BIPRU 7.3.2R(1) includes net underwriting positions or reduced net underwriting positions in equities. ■ BIPRU 7.3.27R requires a firm to use the simplified equity method in the case of reduced net underwriting positions. In the case of net underwriting positions that have not been reduced according to ■ BIPRU 7.8.27R (Calculating the reduced net underwriting position), there is no such restriction; a firm can choose which of the two equity methods to use.

7.3.6 ■ Firms are reminded that the table in ■ BIPRU 7.6.5R (Table: Appropriate PRR calculation for an option or warrant) divides equity options and warrants into:

- (1) those which must be treated under ■ BIPRU 7.6 (Option PRR); and
(2) those which must be treated under either BIPRU 7.3 or BIPRU 7.6, the firm being able to choose whether BIPRU 7.3 or BIPRU 7.6 is used.

7.3.7 G The table in BIPRU 7.3.3R does not require every convertible to be included in BIPRU 7.3’s PRR calculation. Where a convertible is not included in this PRR calculation, BIPRU 7.2.3R (Scope of the interest rate PRR calculation) requires that it be included in the BIPRU 7.2 PRR calculation.

7.3.8 G Some of the instruments listed in the table in BIPRU 7.3.3R are also included in a firm’s interest rate PRR calculation. For simplicity, a firm may use the interest rate PRR calculation in BIPRU 7.3 rather than the calculation in BIPRU 7.2 (Interest rate PRR). BIPRU 7.3.44G explains this in more detail.

Derivation of notional positions: General approach

7.3.9 G BIPRU 7.3.10R - BIPRU 7.3.21R convert the instruments listed in the table in BIPRU 7.3.3R into notional positions in individual equities, equity baskets or equity indices.

7.3.10 R Unless specified otherwise, the value of each notional equity position equals the quantity of that equity underlying the instrument multiplied by the current market value of the equity.

7.3.11 G (1) An example of BIPRU 7.3.10R is as follows. The current market value of a particular equity is £2.50. If a firm contracts to sell this equity in five year’s time for £3 it would treat the notional short equity position as having a value of £2.50 when calculating the equity PRR.

(2) In effect, the forward position has been treated as being equivalent to a spot position for the purposes of calculating equity PRR. To capture the risk that the forward price changes relative to the spot price, forward equity positions are included in the firm’s interest rate PRR calculation (see BIPRU 7.3.45R or the table in BIPRU 7.2.4R (Table: Instruments which result in notional positions)).

Derivation of notional positions: Depository receipts

7.3.12 R A depository receipt must be treated as a notional position in the underlying equity.

Derivation of notional positions: Convertibles

7.3.13 R Where a convertible is included in BIPRU 7.3’s PRR calculation (see the table in BIPRU 7.3.3R):

(1) it must be treated as a position in the equity into which it converts; and

(2) the firm’s equity PRR must 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 PRR on the notional position underlying the convertible).

Derivation of notional positions: Futures, forwards and CFDs on a single equity

7.3.14 R A future (including a synthetic future), forward or CFD on a single equity must be treated as a notional position in that equity.

Derivation of notional positions: Futures, forwards and CFDs on equity indices or baskets

7.3.15 R A future (including a synthetic future), forward or CFD on an equity index or basket must be treated as either:

1. a position in each of the underlying equities; or

2. the positions shown in the table in BIPRU 7.3.16R.

Table: Instruments which result in notional positions

This table belongs to BIPRU 7.3.15R(2)

<table>
<thead>
<tr>
<th>Under the simplified equity method (BIPRU 7.3.29R)</th>
<th>Under the standard equity method (BIPRU 7.3.32R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only one country in the index or basket (see BIPRU 7.3.32R)</td>
<td>One position in the index or basket</td>
</tr>
<tr>
<td>More than one country in the index or basket</td>
<td>One position in the index or basket</td>
</tr>
<tr>
<td></td>
<td>Several notional basket positions, one for each country</td>
</tr>
<tr>
<td></td>
<td>One notional basket position in a separate, notional country</td>
</tr>
</tbody>
</table>

7.3.17 G An example of BIPRU 7.3.16R is as follows. A firm decides to treat a FTSE Eurotop 300 future under the standard equity method, and furthermore, chooses to treat it as one notional position. The table in BIPRU 7.3.16R requires that this notional position be treated as if it were from a separate notional country rather than any of the countries to which the underlying equities are from.

7.3.18 R The notional positions created under BIPRU 7.3.15R have the following values:

1. where only one notional position is created, it has a value equal to the total market value of the equities underlying the contract; or
(2) where more than one notional position is created, each one has a value which reflects the relevant equity's or country's contribution to the total market value of the equities underlying the contract.

Derivation of notional positions: Equity legs of equity swaps

7.3.19 The equity leg of an equity swap must be treated as a position in the underlying equity, equity basket or equity index, which is:

(1) long, if the firm has contracted to receive any increase and pay any decrease in the value of the underlying equities or equity index; and

(2) short, if the firm has contracted to receive any decrease and pay any increase in the value of the underlying equities or equity index.

7.3.20 The interest rate leg of an equity swap is included in a firm's interest rate PRR calculation (see the table in BIPRU 7.2.4R (Table: Instruments which result in notional positions)) unless it is treated under BIPRU 7.3.45R.

Derivation of notional positions: Options

7.3.21 If included in BIPRU 7.3's PRR calculation (see the table in BIPRU 7.3.3R), options must be treated as follows:

(1) an option on a single equity must be treated as a notional position in that equity;

(2) an option on a basket of equities or equity index must be treated as a future on that basket or index; and

(3) an option on an equity future must be treated as:
   (a) a long position in that future, for purchased call options and written put options; and
   (b) a short position in that future, for purchased put options and written call options.

Deriving the net position in each equity

7.3.22 The net position in each equity is the difference between the value of the firm's long positions (including notional positions) and the value of its short positions (including notional positions) in the same equity.

7.3.23 (1) When deriving the net position in each equity, a firm must not net long and short positions except in accordance with this rule.

(2) Subject to (3), a firm may net long and short positions in the same equity. Two equities are the same if and only if they:
   (a) enjoy the same rights in all respects; and
   (b) are fungible with each other.

(3) Long and short positions in different tranches of the same equity may be treated as being in the same equity for the purpose of (1), where:
(a) the tranches enjoy the same rights in all respects; and
(b) the tranches become fungible with each other within 180 days, and thereafter the equity of one tranche can be delivered in settlement of the other tranche.

7.3.24 R  A firm must not net a reduced net underwriting position with any other equity position.

7.3.25 G  ■ BIPRU 7.3.24R only relates to reduced net underwriting position.

Simplified and standard equity methods

7.3.26 G  ■ BIPRU 7.3.1R (1) requires that the net position in each equity be included in either the simplified equity method or the standard equity method, subject to the restriction in ■ BIPRU 7.3.27R. A firm does not have to use the same method for all equities.

7.3.27 R  A firm must use the simplified equity method for reduced net underwriting positions.

7.3.28 G  A firm may use either method for a net underwriting position; ■ BIPRU 7.3.27R only relates to reduced net underwriting positions.

Simplified equity method

7.3.29 R  Under the simplified equity method, the PRR for each equity, equity index, or equity basket equals the market value of the net position (ignoring the sign) multiplied by the appropriate position risk adjustment from the table in ■ BIPRU 7.3.30R. The result must be converted into the firm’s base currency at current spot foreign currency rates.

7.3.30 R  Table: simplified equity method position risk adjustments

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Position risk adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single equities</td>
<td>16%</td>
</tr>
<tr>
<td>Qualifying equity indices (see BIPRU 7.3.38R)</td>
<td>8%</td>
</tr>
<tr>
<td>All other equity indices or baskets</td>
<td>16%</td>
</tr>
</tbody>
</table>

If it is necessary to distinguish between the specific risk position risk adjustment and the general market risk position risk adjustment, the specific risk position risk adjustment for the first and third rows is 8% and that for the second row is 0%. The rest of the position risk adjustment in the second column is the general market risk position risk adjustment.

Standard equity method

7.3.31 G  The standard equity method divides the risk of loss from a firm’s equity positions into the risk of loss from a general move in a country’s equity market and the risk of loss from an individual equity’s price changing...
relative to that country’s equity market. These are called general market risk and specific risk respectively.

7.3.32 Under the standard equity method, a firm must:

(1) group equity positions into country portfolios as follows:

(a) a position in an individual equity belongs to:
   (i) the country it is listed in;
   (ii) any of the countries it is listed in, if more than one; or
   (iii) the country it was issued from, if unlisted;

(b) a position in an equity basket or index that is treated under BIPRU 7.3.15R(2), is allocated to one or more country portfolios based on the countries to which the underlying equities belong to under (a) or a notional country provided for in the table in BIPRU 7.3.16R; and

(2) sum:

(a) the PRRs for specific risk calculated under BIPRU 7.3.33R; and

(b) the PRRs for general market risk for each country portfolio as calculated under BIPRU 7.3.41R and BIPRU 7.3.42R.

Standard equity method: Specific risk

7.3.33 Under the standard equity method, a firm must calculate a PRR for specific risk based on the net position in each equity, equity index or equity basket by multiplying its market value (ignoring the sign) by the appropriate position risk adjustment from the table in BIPRU 7.3.34R.

7.3.34 Table: position risk adjustment for specific risk under the standard equity method

This table belongs to BIPRU 7.3.33R

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Position risk adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifying equity indices (see BIPRU 7.3.38R)</td>
<td>0%</td>
</tr>
<tr>
<td>All equities, and other equity indices or equity baskets</td>
<td>8%</td>
</tr>
</tbody>
</table>

Definition of a qualifying equity

7.3.35 [deleted]

7.3.36 [deleted]

7.3.37 [deleted]
Definition of a qualifying equity index

A qualifying equity index is one which is traded on a recognised investment exchange or a designated investment exchange and:

(1) is listed in the table in BIPRU 7.3.39R; or

(2) is not listed in the table in BIPRU 7.3.39R, but is constructed in such a way that:
   (a) it contains at least 20 equities;
   (b) no single equity represents more than 20% of the total index; and
   (c) no five equities combined represent more than 60% of the total index.

Table: Qualifying equity indices

This table belongs to BIPRU 7.3.38R

<table>
<thead>
<tr>
<th>Country or territory</th>
<th>Name of index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>All Ordinaries</td>
</tr>
<tr>
<td>Austria</td>
<td>Austrian Traded Index</td>
</tr>
<tr>
<td>Belgium</td>
<td>BEL 20</td>
</tr>
<tr>
<td>Canada</td>
<td>TSE 35, TSE 100, TSE 300</td>
</tr>
<tr>
<td>France</td>
<td>CAC 40, SBF 250</td>
</tr>
<tr>
<td>Germany</td>
<td>DAX</td>
</tr>
<tr>
<td>European</td>
<td>Dow Jones Stoxx 50 Index, FTSE Eurotop 300, MSCI Euro Index</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Hang Seng 33</td>
</tr>
<tr>
<td>Italy</td>
<td>MIB 30</td>
</tr>
<tr>
<td>Japan</td>
<td>Nikkei 225, Nikkei 300, TOPIX</td>
</tr>
<tr>
<td>Korea</td>
<td>Kospi</td>
</tr>
<tr>
<td>Netherlands</td>
<td>AEX</td>
</tr>
<tr>
<td>Singapore</td>
<td>Straits Times Index</td>
</tr>
<tr>
<td>Spain</td>
<td>IBEX 35</td>
</tr>
<tr>
<td>Sweden</td>
<td>OMX</td>
</tr>
<tr>
<td>Switzerland</td>
<td>SMI</td>
</tr>
<tr>
<td>UK</td>
<td>FTSE 100, FTSE Mid 250, FTSE All Share</td>
</tr>
<tr>
<td>US</td>
<td>S&amp;P 500, Dow Jones Industrial Average, NASDAQ Composite, Russell 2000</td>
</tr>
</tbody>
</table>

Standard equity method: General market risk: General

Under the standard equity method, a firm must apply approach one, as set out in BIPRU 7.3.41R, to each country portfolio (or part portfolio) unless the conditions in BIPRU 7.3.42R(3) are met, in which case the firm may instead apply approach two, as set out in BIPRU 7.3.42R, to the relevant country portfolios (or part portfolios).
Standard equity method: General market risk: Approach One: No offset between different country portfolios

7.3.41 R Under approach one as referred to in BIPRU 7.3.40R, the PRR for general market risk equals the net value (ignoring the sign) of the country portfolio multiplied by 8%.

Standard equity method: General market risk: Approach Two: Limited offset between different country portfolios

7.3.42 R (1) Under approach two as referred to in BIPRU 7.3.40R, the PRR for general market risk is calculated using the following formula:

\[ \sqrt{(8\% \times CP_1)^2 + (8\% \times CP_2)^2 + (8\% \times CP_3)^2 + \ldots + (8\% \times CP_n)^2} \]

(2) In the formula in (1) CP denotes the net value of ith country portfolio (converted to the firm’s base currency using current spot foreign currency rates).

(3) The conditions referred to in BIPRU 7.3.40R that must be met for a firm to be able to use approach two as referred to in BIPRU 7.3.40R are as follows:

(a) at least four country portfolios are included (that is: n 4);
(b) only country portfolios for countries which are full members of the OECD, Hong Kong or Singapore are included;
(c) no individual country portfolio comprises more than 30% of the total gross value of country portfolios included; and
(d) the total net value of country portfolios included equals zero, that is:

\[ \sum CP_i = 0 \]

7.3.43 G In order to meet BIPRU 7.3.42R(3)(d), it is likely that part of a country portfolio will have to be excluded from approach two under BIPRU 7.3.42R (and therefore included in approach one under BIPRU 7.3.41R), even if that country portfolio meets BIPRU 7.3.42R(3)(a) - BIPRU 7.3.42R(3)(c).

Basic interest rate calculation for equity instruments

7.3.44 G A basic interest rate PRR calculation is included in BIPRU 7.3 for a firm that does not wish to use the calculation in BIPRU 7.2 (Interest rate PRR). However, it tends to result in higher charges than the methods in BIPRU 7.2, largely because the interest rate PRR is calculated on each notional equity position separately and then summed without offsetting long and short positions.

7.3.45 R This rule applies to a firm that does not include a forward, future, option or swap on an equity, basket of equities or equity index in the calculation of its interest rate PRR calculation under BIPRU 7.2 (Interest rate PRR). However it does not apply to cliquet as defined in BIPRU 7.6.18R (Table: Option PRR: methods for different types of option). A firm must calculate the interest rate PRR for a position being treated under this rule as follows:
(1) multiply the market value of the notional equity position underlying the instrument by the appropriate percentage from the table in BIPRU 7.3.47R; and

(2) sum the results from (1), ignoring the sign.

7.3.46 Cliquets on equities, baskets of equities or equity indices do not attract an interest rate PRR. BIPRU 7.3.45R excludes them from the basic interest rate PRR calculation and the table in BIPRU 7.2.4R (Table: Instruments which result in notional positions) excludes them from the scope of the interest rate PRR calculation in BIPRU 7.2 (Interest rate PRR).

7.3.47 Table: Percentages used in the basic interest rate PRR calculation for equity instruments

This table belongs to BIPRU 7.3.45R(1)

<table>
<thead>
<tr>
<th>Time to expiration</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ≤ 3 months</td>
<td>0.20</td>
</tr>
<tr>
<td>&gt; 3 ≤ 6 months</td>
<td>0.40</td>
</tr>
<tr>
<td>&gt; 6 ≤ 12 months</td>
<td>0.70</td>
</tr>
<tr>
<td>&gt; 1 ≤ 2 years</td>
<td>1.25</td>
</tr>
<tr>
<td>&gt; 2 ≤ 3 years</td>
<td>1.75</td>
</tr>
<tr>
<td>&gt; 3 ≤ 4 years</td>
<td>2.25</td>
</tr>
<tr>
<td>&gt; 4 ≤ 5 years</td>
<td>2.75</td>
</tr>
<tr>
<td>&gt; 5 ≤ 7 years</td>
<td>3.25</td>
</tr>
<tr>
<td>&gt; 7 ≤ 10 years</td>
<td>3.75</td>
</tr>
<tr>
<td>&gt; 10 ≤ 15 years</td>
<td>4.50</td>
</tr>
<tr>
<td>&gt; 15 ≤ 20 years</td>
<td>5.25</td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Additional capital charge in relation to equity indices

7.3.48 If a firm nets off positions in one or more of the equities constituting an equity index future, forward or CFD against one or more positions in the equity index future, forward or CFD itself, the firm must apply an additional equity PRR to the netted position to cover the risk of loss caused by the value of the future, forward or CFD not moving fully in line with that of its constituent equities. The same applies if a firm holds opposite positions in a future, forward or CFD on an equity index that are not identical in respect of either their maturity or their composition or both.
7.4 Commodity PRR

General rule

A firm must calculate its commodity PRR by:

1. identifying which commodity position must be included within the scope of the PRR calculation (see [BIPRU 7.4.2R]);
2. expressing each such position in terms of the standard unit of measurement of the commodity concerned;
3. expressing the spot price in each commodity in the firm's base currency at current spot foreign exchange rates;
4. calculating an individual PRR for each commodity (see [BIPRU 7.4.20R]); and
5. summing the resulting individual PRRs.

Scope of the commodity PRR calculation

A firm's commodity PRR calculation must, regardless of whether the positions concerned are trading book or non-trading book positions:

1. include physical commodity positions;
2. (if the firm is the transferor of commodities or guaranteed rights relating to title to commodities in a repurchase agreement or the lender of commodities in a commodities lending agreement) include such commodities;
3. include notional positions arising from positions in the instruments listed in the table in [BIPRU 7.4.4R]; and
4. exclude positions constituting a stock financing transaction.

Gold positions are excluded from the scope of the commodity PRR. Instead, they are included within the scope of the foreign exchange PRR ([BIPRU 7.5]).

Table: Instruments which result in notional positions

This table belongs to [BIPRU 7.4.2R(3)].
Instrument | See
--- | ---
*Forwards, futures, CFDs, synthetic futures and options on a single commodity* (unless the *firm* calculates a PRR on the *option* under BIPRU 7.6 (Option PRR)) | BIPRU 7.4.8R

A commitment to buy or sell a single *commodity* at an average of spot prices prevailing over some future period | BIPRU 7.4.10R

*Forwards, futures, CFDs, synthetic futures and options on a commodity index* (unless the *firm* calculates an PRR on the *option* under BIPRU 7.6) | BIPRU 7.4.13R - BIPRU 7.4.14R

*Commodity swaps* | BIPRU 7.4.16R - BIPRU 7.4.17R

A warrant relating to a *commodity* must be treated as an *option on a commodity*. |  

---

### 7.4.5

BIPRU 7.4.2R includes a *trading book position in a commodity* that is subsequently repo’ed under a *repurchase agreement* or lent under a *stock lending agreement*. Clearly, if the *commodity* had initially been obtained via a *reverse repurchase agreement* or stock borrowing agreement, the *commodity* would not have been included in the *trading book* in the first place.

### 7.4.6

Firms are reminded that the table in BIPRU 7.6.5R (Table: Appropriate PRR calculation for an option or warrant) divides *commodity options* into:

1. those which must be treated under BIPRU 7.6; and
2. those which must be treated under either BIPRU 7.4 or BIPRU 7.6 (Option PRR), the *firm* being able to choose whether BIPRU 7.4 or BIPRU 7.6 is used.

### Derivation of notional positions: General

BIPRU 7.4.8R - BIPRU 7.4.19G convert the instruments listed in the table in BIPRU 7.4.4R into notional *positions in the relevant commodities*. These *notional positions* are expressed in terms of quantity (tonnes, barrels, etc), not value. The maturity of the *position* is only relevant where the *firm* is using the *commodity maturity ladder approach* or the *commodity extended maturity ladder approach*.

### Derivation of notional positions: Futures, forwards, CFDs and options on a single commodity

Where a *forward, future, CFD, synthetic future or option* (unless already included in the *firm’s option PRR calculation*) settles according to:

1. the difference between the price set on trade date and that prevailing at contract expiry, the notional *position*:
   
   (a) equals the total quantity underlying the contract; and
(b) has 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, there is a notional position 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.

7.4.9

(1) The following example illustrates BIPRU 7.4.8R (2).

(2) A firm buys a Traded Average Price Option (TAPO - a type of Asian option) allowing it to deliver 100 tonnes of Grade A copper and receive $1,750 in June. If there were 20 business days in June the short notional positions will each:

(a) equal 5 tonnes per day (1/20 of 100 tonnes); and

(b) have a maturity equal to one of the business days in June (one for each day).

(3) In this example as each business day in June goes by the quantity per day for the remaining days does not change (5 tonnes per day) only the days remaining changes. Therefore, halfway through June there are ten, 5 tonne short notional positions remaining each for the ten remaining business days in June.

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

7.4.10

Commitments to buy or sell at the average spot price of the commodity prevailing over some period between trade date and maturity must 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 is:

(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:

(a) is long if the position under (1) is short, or short if the position under (1) is long;

(b) equals a fractional share of the total quantity underlying the contract; and

(c) has a maturity date of the relevant reference date.

7.4.11

The following guidance provides an example of BIPRU 7.4.10R. In January, a firm agrees to buy 100 tonnes of copper for the average spot price prevailing during the 20 business days in February, and will settle on 30 June. After entering into this agreement, the firm faces the risk that the average price
for February increases relative to that for 30 June. Therefore, as highlighted in the table below:

(1) the short positions reflect the fact that this could occur because any one of the remaining forward prices for February increase; and

(2) the long position reflects the fact that this loss could occur because the forward price for 30 June falls.

7.4.12 Table: Example of buying at the average spot price prevailing in the future

This table belongs to [BIPRU 7.4.11G]

<table>
<thead>
<tr>
<th>From trade date to start of averaging period</th>
<th>Application of BIPRU 7.4.10R(1)</th>
<th>Application of BIPRU 7.4.10R(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long position in 100 tonnes of copper with a maturity of 30 June.</td>
<td>A series of 20 notional short positions each equal to 5 tonnes of copper. Each position is allocated a maturity equal to one of the business days in February (one for each day).</td>
<td></td>
</tr>
</tbody>
</table>

| During averaging period | Long position in 100 tonnes of copper with a maturity of 30 June. | As each business day goes by in February the price for 5 tonnes of copper is fixed and so there will be one less notional short position. |

| After averaging period | Long position in 100 tonnes of copper with a maturity of 30 June. | No short positions. |

Derivation of notional positions: CFDs and options on a commodity index

Commodity index futures and commodity index options (unless the option is included in the firm’s option PRR calculation), must be treated as follows:

(1) Step 1: the total quantity underlying the contract must be either:

(a) treated as a single notional commodity position (separate from all other commodities); or

(b) divided into notional positions, one for each of the constituent commodities in the index, of an amount which is a proportionate part of the total underlying the contract according to the weighting of the relevant commodity in the index;

(2) Step 2: each notional position determined in Step 1 must then be included:

(a) when using the commodity simplified approach ([BIPRU 7.4.24R]), without adjustment; or

(b) when using the commodity maturity ladder approach ([BIPRU 7.4.25R]) or the commodity extended maturity ladder approach ([BIPRU 7.4.32R]), with the adjustments in [BIPRU 7.4.14R].
### 7.4.14 Table: Treatment of commodity index futures and commodity index options

This table belongs to [BIPRU 7.4.13R(2)(b)]

<table>
<thead>
<tr>
<th>Construction of index</th>
<th>Notional position (or positions) and maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot level of index is based on the spot price of each constituent commodity</td>
<td>Each quantity determined in Step 1 as referred to in BIPRU 7.4.13R is assigned a maturity equal to the expiry date of the contract.</td>
</tr>
<tr>
<td>Spot level of index is based on an average of the forward prices of each constituent commodity</td>
<td>Each quantity determined in Step 1 as referred to in BIPRU 7.4.13R is divided (on a pro-rata basis) into a series of forward positions to reflect the impact of each forward price on the level of the index. The maturity of each forward position equals the maturity of the relevant forward price determining the level of the index when the contract expires.</td>
</tr>
</tbody>
</table>

### 7.4.15

1. An example of using [BIPRU 7.4.13R] and the table in [BIPRU 7.4.14R] is as follows.

2. A firm is long a three-month commodity index future where the spot level of the index is based on the one, two and three month forward prices of aluminium, copper, tin, lead, zinc and nickel (18 prices in total).

3. Step 1: the firm should decide whether to treat the full quantity underlying the contract as a single notional commodity position or disaggregate it into notional positions in aluminium, copper, tin, lead, zinc and nickel. In this case the firm decides to disaggregate the contract into notional positions in aluminium, copper, tin, lead, zinc and nickel.

4. Step 2: if the firm uses the commodity simplified approach, nothing more need be done to arrive at the notional position. In this case the firm uses the commodity maturity ladder approach and so subdivides each position in each metal into three because the level of the index is based on the prevailing one, two and three month forward prices. Since the future will be settled in three months' time at the prevailing level of the index, the three positions for each metal will have maturities of four, five and six months respectively.

### Derivation of notional positions: Commodity swaps

A firm must treat a commodity swap as a series of notional positions, one position for each payment under the swap, each of which:

1. equals the total quantity underlying the contract;
2. has a maturity corresponding to the payment date; and
3. is long or short according to [BIPRU 7.4.17R].
7.4.17  

Table: Treatment of commodity swaps

This table belongs to [BIPRU 7.4.16R](#).

<table>
<thead>
<tr>
<th>Receiving amounts which are unrelated to any commodity’s price</th>
<th>Receiving the price of commodity ‘b’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying amounts which are unrelated to any commodity’s price</td>
<td>N/A</td>
</tr>
<tr>
<td>Paying the price of commodity ‘a’</td>
<td>Short positions in commodity ‘a’</td>
</tr>
</tbody>
</table>

The table in [BIPRU 7.4.17R](#) shows that where the legs of the swap are in different commodities, a series of forward positions are created for each commodity (that is, a series of short positions in commodity ‘a’ and a series of long positions in commodity ‘b’).

7.4.18  

The table in [BIPRU 7.4.17R](#) also covers the case where one leg is unrelated to any commodity’s price. This leg may be subject to a PRR under another part of [BIPRU 7](#); for example, an interest rate based leg would have to be included in a firm’s interest rate PRR calculation.

Calculating the PRR for each commodity: General

7.4.20  

A firm must calculate a commodity PRR for each commodity separately using either the commodity simplified approach ([BIPRU 7.4.24R](#)), the commodity maturity ladder approach ([BIPRU 7.4.25R](#)) or the commodity extended maturity ladder approach ([BIPRU 7.4.32R](#)).

7.4.21  

A firm must use the same approach for a particular commodity but need not use the same approach for all commodities.

7.4.22  

(1) A firm must treat positions in different grades or brands of the same commodity-class as different commodities unless they:

(a) can be delivered against each other; or

(b) are close substitutes and have price movements which have exhibited a stable correlation coefficient of at least 0.9 over the last 12 months.

(2) If a firm relies on (1)(b) it must then monitor compliance with the conditions in that paragraph on a continuing basis.

7.4.23  

If a firm intends to rely on the approach in [BIPRU 7.4.22R](#)(1)(b):

(1) it must notify the appropriate regulator in writing at least 20 business days prior to the date the firm starts relying on it; and

(2) the firm must, as part of the notification under (1), provide to the appropriate regulator the analysis of price movements on which it relies.
Calculating the PRR for each commodity: Simplified approach

A firm which calculates a commodity PRR using the commodity simplified approach must do so by summing:

1. 15% of the net position multiplied by the spot price for the commodity; and
2. 3% of the gross position (long plus short, ignoring the sign) multiplied by the spot price for the commodity;

(and for these purposes the excess of a firm's long (short) positions over its short (long) positions in the same commodity (including notional positions under BIPRU 7.4.4R) is its net position in each commodity).

Calculating the PRR for each commodity: Maturity ladder approach

A firm using the commodity maturity ladder approach must calculate the commodity PRR following the steps in BIPRU 7.4.26R and then sum all spread charges, carry charges and outright charges that result. A firm must use a separate maturity ladder for each commodity.

1. A firm must calculate the charges referred to in BIPRU 7.4.25R as follows.

2. Step 1: offset long and short positions maturing:
   (a) on the same day; or
   (b) (in the case of positions arising under contracts traded in markets with daily delivery dates) within 10 business days of each other.

3. Step 2: allocate the positions remaining after step 1 to the appropriate maturity band in the table in BIPRU 7.4.28R (physical commodity positions are allocated to band 1).

4. Step 3: match long and short positions within each band. In each instance, calculate a spread charge equal to the matched amount multiplied first by the spot price for the commodity and then by the spread rate of 3%.

5. Step 4: carry unmatched positions remaining after step 3 to another band where they can be matched, then match them. Do this until all matching possibilities are exhausted. In each instance, calculate:
   (a) a carry charge equal to the carried position multiplied by the spot price for the commodity, the carry rate of 0.6% and the number of bands by which the position is carried; and
   (b) a spread charge equal to the matched amount multiplied by the spot price for the commodity and the spread rate of 3%.

6. Step 5: calculate the outright charge on the remaining positions (which will either be all long positions or all short positions). The outright charge equals the remaining position (ignoring the sign) multiplied by the spot price for the commodity and the outright rate of 15%).
7.4.27 The matched amount in BIPRU 7.4.26R is the lesser (ignoring the sign) of either the total long position or the total short position. For example, a band with 1000 long and 700 short results in a matched amount of 700. The unmatched amount would be 300.

7.4.28 Table: Maturity bands for the maturity ladder approach

<table>
<thead>
<tr>
<th>Band</th>
<th>Maturity of position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band 1</td>
<td>0 ≤ 1 month</td>
</tr>
<tr>
<td>Band 2</td>
<td>&gt; 1 month ≤ 3 months</td>
</tr>
<tr>
<td>Band 3</td>
<td>&gt; 3 months ≤ 6 months</td>
</tr>
<tr>
<td>Band 4</td>
<td>&gt; 6 months ≤ 1 year</td>
</tr>
<tr>
<td>Band 5</td>
<td>&gt; 1 year ≤ 2 years</td>
</tr>
<tr>
<td>Band 6</td>
<td>&gt; 2 years ≤ 3 years</td>
</tr>
<tr>
<td>Band 7</td>
<td>&gt; 3 years</td>
</tr>
</tbody>
</table>

7.4.29 BIPRU 7.4.30G is an example illustrating the calculation of the commodity PRR on an individual commodity using the commodity maturity ladder approach (BIPRU 7.4.26R). After the firm has carried out the pre-processing required by BIPRU 7.4.26R(2) (that is, step 1), it follows steps 2 to 5 as shown below. Because the firm is using the commodity maturity ladder approach the spread rate is 3%, the carry rate is 0.6% and the outright rate is 15%. The example assumes that the spot price for the commodity is £25.

7.4.30 Table: Example illustrating the commodity maturity ladder approach

<table>
<thead>
<tr>
<th>Band</th>
<th>Step 2 Allocate remaining positions to appropriate maturity bands</th>
<th>Step 3 Match within bands. Each matched amount incurs a spread change</th>
<th>Step 4a Carry across bands. Each matched amount incurs a carry charge</th>
<th>Step 4b Match within band. Each matched amount incurs a spread charge</th>
<th>Step 5 Remaining positions incur an outright charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ≤ 1 month</td>
<td>1000 long</td>
<td>200 matched</td>
<td>300 carried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1 month ≤ 3 months</td>
<td>700 short</td>
<td>200 matched</td>
<td>300 carried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;3 months ≤ 6 months</td>
<td>600 short</td>
<td>Nothing matched</td>
<td>100 carried</td>
<td>200 short remains</td>
<td></td>
</tr>
<tr>
<td>&gt;6 months ≤ 1 year</td>
<td>600 short</td>
<td>Nothing matched</td>
<td>100 carried</td>
<td>200 short remains</td>
<td></td>
</tr>
<tr>
<td>&gt;1 year ≤ 2 years</td>
<td>600 short</td>
<td>Nothing matched</td>
<td>100 carried</td>
<td>200 short remains</td>
<td></td>
</tr>
<tr>
<td>&gt;2 years ≤ 3 years</td>
<td>600 short</td>
<td>Nothing matched</td>
<td>100 carried</td>
<td>200 short remains</td>
<td></td>
</tr>
<tr>
<td>&gt;3 years</td>
<td>100 long</td>
<td>Nothing matched</td>
<td>100 carried</td>
<td>200 short remains</td>
<td></td>
</tr>
</tbody>
</table>

Spread charges: £25 * 3% = 750 * 0.6% = £3.50
Carry charges: £25 * 3% * 60% = £45
Outright charge: £25 + 15% = £28.75

Total: £1,768.75
Calculating the PRR for each commodity: Extended maturity ladder approach

A firm may use the commodity extended maturity ladder approach to calculate the commodity PRR for a particular commodity provided the firm:

1. has a diversified commodities portfolio;
2. undertakes significant commodities business;
3. is not yet in a position to use the VaR model approach to calculate commodity PRR; and
4. at least twenty business days before the date the firm uses that approach notifies the appropriate regulator in writing of:
   a. its intention to use the commodity extended maturity ladder approach; and
   b. the facts and matters relied on to demonstrate that the firm meets the criteria in (1) - (3).

A firm using the commodity extended maturity ladder approach must calculate its commodity PRR by:

1. following the same steps as in BIPRU 7.4.26R but using the rates from the table in BIPRU 7.4.33R rather than those in BIPRU 7.4.26R; and
2. summing all spread charges, carry charges and outright charge that result.

Table: Alternative spread, carry and outright rates

<table>
<thead>
<tr>
<th></th>
<th>Precious metals (excluding gold)</th>
<th>Base metals</th>
<th>Softs (agricultural)</th>
<th>Other (including energy)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spread rate (%)</strong></td>
<td>2</td>
<td>2.4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Carry rate (%)</strong></td>
<td>0.3</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Outright rate (%)</strong></td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

For the purposes of BIPRU 7.4.31R(1) a firm has a diversified commodity portfolio where it holds positions in more than one commodity in each of the categories set out in the table in BIPRU 7.4.33R and holds positions across different maturities in those individual commodities. A firm would not have a diversified commodity portfolio if it held positions in only one commodity in each of the categories set out in the table in BIPRU 7.4.33R. This is because the rates in the table in BIPRU 7.4.33R assume firms have positions in more than one of that category’s commodities. Different commodities within a given category are likely to exhibit different volatilities, so where a firm does not have a diversified commodity portfolio...
in that category, the rates applying to that category might underestimate the regulatory capital required for a certain commodity at certain times.

7.4.35 What constitutes significant business in BIPRU 7.4.31R(2) will vary from firm to firm. The more regularly the firm undertakes trades in commodities and the more consistently it has positions in the relevant commodity, the more likely it is to be undertaking significant business for the purposes of BIPRU 7.4.31R(2).

7.4.36 Where a firm is:

(1) treating a commodity index derivative as if it was based on a single separate commodity (see BIPRU 7.4.13R(1)(a)); and

(2) using the commodity extended maturity ladder approach to calculate the commodity PRR for that commodity;

it must determine which index constituent incurs the highest rate in the table in BIPRU 7.4.33R and apply that rate to the notional position for the purposes of BIPRU 7.4.32R.

7.4.37 Where an index is only based on precious metals, BIPRU 7.4.13R and BIPRU 7.4.36R allow the firm to treat the single notional position as precious metal for the purposes of BIPRU 7.4.32R. However, if the index contained a mix of precious metals and base metals the firm would have to treat the notional position under BIPRU 7.4.36R as a base metal because base metals attract a higher rate than precious metals in the table in BIPRU 7.4.33R.

Liquidity and other risks

7.4.38 If a short position to which BIPRU 7.4 applies falls due before a long position to which BIPRU 7.4 applies, a firm must also guard against the risk of a shortage of liquidity which may exist in some markets.

7.4.39 In particular, where BIPRU 7.4.38R applies and the short position constitutes a material position compared to a firm’s total commodity positions, it should consider a further commodity PRR charge in respect of that position depending on the likelihood of a shortage of liquidity in that market.

7.4.40 A firm must safeguard against other risks, apart from the delta risk, associated with commodity options.

7.4.41 The interest-rate and foreign-exchange risks not covered by other provisions of BIPRU 7.4 or by the provisions of BIPRU 7.2 (Interest rate PRR) or BIPRU 7.5 (Foreign currency PRR) must be included in the calculation of general market risk for traded debt securities and in the calculation of foreign currency PRR.
7.5 Foreign currency PRR

General rule

7.5.1 A firm must calculate its foreign currency PRR by:

1. identifying which foreign currency and gold positions to include in the PRR calculation;
2. calculating the net open position in each currency in accordance with this section (including where necessary the base currency calculated in the same way as it is for foreign currencies) and in gold;
3. calculating the open currency position for foreign currencies as calculated under BIPRU 7.5.19R and the net gold position (see BIPRU 7.5.20R); and
4. multiplying the sum of the absolutes of that open currency position and that net gold position by 8%.

An example of the operation of BIPRU 7.5.1R is as follows. A firm has an open currency position of £100 and a net gold position of £50. The sum (ignoring the sign) is £150, and so the foreign currency PRR is £12.

Scope of the foreign currency PRR calculation

7.5.3 A firm’s foreign currency PRR calculation must include the following items regardless of whether they are trading book or non-trading book positions:

1. all gold positions;
2. all spot positions in foreign currency (that is, all asset items less all liability items, including accrued interest, in the foreign currency in question);
3. all forward positions in foreign currency;
4. all CRD financial instruments and other items which are denominated in a foreign currency;
5. irrevocable guarantees (and similar instruments) that are certain to be called and likely to be irrecovable to the extent they give rise to a position in gold or foreign currency; and
6. notional positions arising from the instruments listed in the table in BIPRU 7.5.5R.
7.5.4  

The following are excluded from a firm's foreign currency PRR calculation:

(a) foreign currency assets which have been deducted in full from the firm's capital resources under the calculations under the capital resources table;

(b) positions hedging (a);

(c) positions that a firm has deliberately taken in order to hedge against the adverse effect of the exchange rate on the ratio of its capital resources to its capital resources requirement; and

(d) transactions to the extent that they fully hedge net future foreign currency income or expenses which are known but not yet accrued.

(2) If a firm uses an exclusion under (1) it must:

(a) notify the appropriate regulator before it makes use of it;

(b) include in the notification in (a) the terms on which the relevant item will be excluded;

(c) not change the terms of the exclusion under (b); and

(d) document its policy on the use of that exclusion in its trading book policy statement.

(3) A position may only be excluded under (1)(b) or (c) if it is of a non-trading or structural nature.

7.5.5  

Table: instruments which result in notional foreign currency positions

This table belongs to BIPRU 7.5.3R(6).

<table>
<thead>
<tr>
<th>Instruments</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign currency futures, forwards, synthetic futures and CFDs</td>
<td>BIPRU 7.5.11R</td>
</tr>
<tr>
<td>Foreign currency swaps</td>
<td>BIPRU 7.5.13R</td>
</tr>
<tr>
<td>Foreign currency options or warrants (unless the firm calculates a PRR on the option or warrant under BIPRU 7.6 (Option PRR))</td>
<td>BIPRU 7.5.15R</td>
</tr>
<tr>
<td>Gold futures, forwards, synthetic futures and CFDs</td>
<td>BIPRU 7.5.16R</td>
</tr>
<tr>
<td>Gold options (unless the firm calculates a PRR on the option under BIPRU 7.6)</td>
<td>BIPRU 7.5.17R</td>
</tr>
<tr>
<td>Positions in CIUs</td>
<td>BIPRU 7.5.18R</td>
</tr>
</tbody>
</table>

7.5.6  

Firms are reminded that the table in BIPRU 7.6.5R (Table: Appropriate PRR calculation for an option or warrant) divides foreign currency options and warrants into:

(1) those which must be treated under BIPRU 7.6 (Option PRR); and
those which must be treated under either BIPRU 7.5 or BIPRU 7.6, the firm being able to choose whether BIPRU 7.5 or BIPRU 7.6 is used.

When determining the currency of denomination firms must:

1. use the currency in which the firm accounts for the instrument where an instrument is quoted in more than one currency; and
2. treat depository receipts as positions in the underlying security.

Instruments denominated in a foreign currency include, amongst other things, assets and liabilities (including accrued interest); non-foreign currency derivative; net underwriting positions; reduced net underwriting positions; and irrevocable guarantees (or similar instruments) that are certain to be called.

Where a contract is based on a basket of currencies, the firm can choose either to derive notional positions in each of the constituent currencies or treat it as a single notional position in a separate notional currency.

Derivation of notional positions: General

BIPRU 7.11R - BIPRU 7.18R derive notional currency positions for the instruments listed in the table in BIPRU 7.5R.

Derivation of notional positions: Foreign exchange forwards, futures, CFDs and synthetic futures

1. A firm must treat a foreign currency forward, future, synthetic 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 have a value equal to either:
   a. the contracted amount of each currency to be exchanged in the case of a forward, future, synthetic 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, synthetic future or CFD held in the trading book.

The following example illustrates BIPRU 7.5.11R. In this example, a firm contracts to sell $106 for €108 in one year’s time and the present values of each cash flow are $100 and €100 respectively.
2 In the non-trading book, this forward would be treated as a combination of a €108 long position and a $106 short position.

3 In the trading book, this forward would be treated as a combination of a €100 long position and a $100 short position.

4 Firms are reminded that foreign currency forwards held in the trading book should also be included in the firm’s interest rate PRR calculation (see [BIPRU 7.2.4R](#) (Instruments which result in notional positions for the purpose of the interest rate PRR)).

### Derivation of notional positions: Foreign currency swaps

1. A firm must 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 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.

1. The following example illustrates [BIPRU 7.5.13R](#). In this example a firm enters into a five year foreign currency swap where it contracts to pay six month US$ Libor on $100 in return for receiving 6% fixed on €100. The present values of each leg are $100 and €98 respectively.

2. In the non-trading book, this swap would be treated as a combination of a €100 long position and a $100 short position.

3. In the trading book, this swap would be treated as a combination of a €98 long position and a $100 short position.

4. Firms are reminded that foreign currency swaps held in the trading book should also be included in the firm’s interest rate PRR calculation (see [BIPRU 7.2.4R](#) (Instruments which result in notional positions for the purpose of the interest rate PRR)).
Derivation of notional positions: Foreign currency options and warrants

Where included in BIPRU 7.5’s PRR calculation (see the table in BIPRU 7.5.5R), a foreign currency option or warrant must be treated as a foreign currency forward.

Derivation of notional positions: Gold forwards, futures, synthetic futures and CFDs

A forward, future, synthetic future or CFD on gold must be treated as a notional position in gold with a value equal to the amount of gold underlying multiplied by the current spot price for gold.

Derivation of notional positions: Gold options

If included in the PRR calculation under BIPRU 7.5 (see the table in BIPRU 7.5.5R), a gold option must be treated as a gold forward.

Derivation of notional positions: CIUs

(1) This rule deals with positions in CIUs.

(2) The actual foreign currency positions of a CIU must be included in a firm’s foreign currency PRR calculation under BIPRU 7.5.1 R.

(3) A firm may rely on third party reporting of the foreign currency positions in the CIU, where the correctness of this report is adequately ensured.

(4) If a firm is not aware of the foreign currency positions in a CIU, the firm must assume that the CIU is invested up to the maximum extent allowed under the CIUs mandate in foreign currency and the firm must, for trading book positions, take account of the maximum indirect exposure that it could achieve by taking leveraged positions through the CIU when calculating its foreign currency PRR. This must be done by proportionally increasing the position in the CIU up to the maximum exposure to the underlying investment items resulting from the investment mandate.

(5) The assumed position of the CIU in foreign currency calculated in accordance with BIPRU 7.5.18R(4) must be treated as a separate currency according to the treatment of investments in gold, subject to the modification that, if the direction of the CIUs investment is available, the total long position may be added to the total long open foreign currency position and the total short position may be added to the total short open foreign currency position. No netting is allowed between such positions prior to this calculation.

Open currency position

A firm must calculate its open currency position by:

(1) calculating the net position in each foreign currency;
(2) converting each such net *position* into its *base currency* equivalent at current spot rates;

(3) summing all short net *positions* and summing all long net *positions* calculated under (1) and (2); and

(4) selecting the larger sum (ignoring the sign) from (3).

**Net gold position**

A firm must calculate its net gold *position* by:

(1) valuing all gold *positions* using the prevailing spot price for gold (regardless of the maturity of the *positions*);

(2) offsetting long and short *positions*; and

(3) converting the resulting net *position* into the *base currency* equivalent using the current spot *foreign currency* rate.
7.6 Option PRR

Option PRR calculation

A firm must calculate its option PRR by:

1. identifying which option positions must be included within the scope of the option PRR calculation under BIPRU 7.6.3R - BIPRU 7.6.5R;
2. calculating the derived position in each option in accordance with BIPRU 7.6.9R - BIPRU 7.6.15R;
3. calculating the PRR for each derived position in accordance with BIPRU 7.6.16R - BIPRU 7.6.31R;
4. summing all of the PRRs calculated in accordance with (3).

Scope of the option PRR calculation

Except as permitted under BIPRU 7.6.5R, a firm’s option PRR calculation must include:

1. each trading book position in an option on an equity, interest rate or debt security;
2. each trading book position in a warrant on an equity or debt security;
3. each trading book position in a CIU; and
4. each trading book and non-trading book position in an option on a commodity, currency or gold.

BIPRU 7/55

Release 0  ●  Oct 2020  www.handbook.fca.org.uk
Table: Appropriate PRR calculation for an option or warrant

This table belongs to BIPRU 7.6.3R

<table>
<thead>
<tr>
<th>Option type (see BIPRU 7.6.18R) or warrant</th>
<th>PRR calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American option, European option, Bermudan option, Asian option or warrant for which the in the money percentage (see BIPRU 7.6.6R) is equal to or greater than the appropriate position risk adjustment (see BIPRU 7.6.7R and BIPRU 7.6.8R)</td>
<td>Calculate either an option PRR, or the most appropriate to the underlying position of: (a) an equity PRR; or (b) an interest rate PRR; or (c) a commodity PRR; or (d) a foreign currency PRR; or (e) a collective investment undertaking PRR.</td>
</tr>
</tbody>
</table>

American option, European option, Bermudan option, Asian option or warrant:
(a) for which the in the money percentage (see BIPRU 7.6.6R) is less than the appropriate position risk adjustment (see BIPRU 7.6.7R and BIPRU 7.6.8R); or (b) that is at the money; or (c) that is out of the money.

All other types of option listed in BIPRU 7.6.18R (regardless of whether in the money, at the money or out of the money).

The in the money percentage

1. The in the money percentage is calculated in accordance with this rule.

2. For a call option:
   \[
   \frac{\text{Current market price of underlying} - \text{Strike price of the option}}{\text{Strike price of the option}} \times 100
   \]

3. For a put option:
   \[
   \frac{\text{Strike price of option} - \text{Current market price of underlying}}{\text{Strike price of the option}} \times 100
   \]

4. In the case of an option on a basket of securities a firm may not treat the option as being in the money by the relevant percentage so as to enable the firm not to apply an option PRR under BIPRU 7.6.5R unless the conditions in BIPRU 7.6.5R are satisfied with respect to each kind of underlying investment.

5. (4) also applies to an option on a CIU if a firm is using one of the CIU look through methods.

The appropriate position risk adjustment

1. The appropriate position risk adjustment for a position is that listed in the table in BIPRU 7.6.8R against the relevant underlying position.
(2) If the firm uses the commodity extended maturity ladder approach or the commodity maturity ladder approach for a particular commodity under §BIPRU 7.4 (Commodity PRR) the appropriate position risk adjustment for an option on that commodity is the outright rate applicable to the underlying position (see §BIPRU 7.4.26R (Calculating the PRR for each commodity: Maturity ladder approach) and §BIPRU 7.4.33R (Table: Alternative spread, carry and outright rates)).

(3) If a firm does not have commodity positions treated under §BIPRU 7.4 or does not have positions in the commodity in question treated under §BIPRU 7.4 the restrictions in §BIPRU 7.4 that regulate when a firm can and cannot use a particular method of calculating the commodity PRR apply for the purpose of establishing the appropriate position risk adjustment for the purposes of §BIPRU 7.6.

(4) If a firm is using one of the CIU look through methods for an option on a CIU the leveraging requirements in §BIPRU 7.7 (Position risk requirements for collective investment undertakings) apply (see §BIPRU 7.7.11R). For this purpose the amount of the appropriate position risk adjustments under §BIPRU 7.6.6R is increased by the amount of that leveraging (expressed as a percentage) as calculated under §BIPRU 7.7, subject to a maximum appropriate position risk adjustment of 32%.

Table: Appropriate position risk adjustment

<table>
<thead>
<tr>
<th>Underlying position</th>
<th>Appropriate position risk adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>The position risk adjustment applicable to the underlying equity or equity index in the table in BIPRU 7.3.30R (Simplified equity method)</td>
</tr>
<tr>
<td>Interest rate</td>
<td>The sum of the specific risk position risk adjustment (see BIPRU 7.2.43R to BIPRU 7.2.51G (Specific risk calculation)) and the general market risk position risk adjustment (as set out in BIPRU 7.2.57R (General market risk position risk adjustments)) applicable to the underlying position</td>
</tr>
<tr>
<td>Debt securities</td>
<td>The sum of the specific risk position risk adjustment (see BIPRU 7.2.43R to BIPRU 7.2.51G (Specific risk calculation)) and the general market risk position risk adjustment (as set out in the table in BIPRU 7.2.57R (General market risk position risk adjustments)) applicable to the underlying position</td>
</tr>
<tr>
<td>Commodity</td>
<td>18% (unless BIPRU 7.6.7R requires otherwise)</td>
</tr>
<tr>
<td>Currency</td>
<td>8%</td>
</tr>
<tr>
<td>Gold</td>
<td>8%</td>
</tr>
<tr>
<td>CIU</td>
<td>32% (subject to BIPRU 7.6.6R and BIPRU 7.6.7R)</td>
</tr>
</tbody>
</table>
Calculating derived positions

7.6.9 A firm must calculate the derived position specified in the table in BIPRU 7.6.13R for each position included in its option PRR calculation.

Netting positions

7.6.10 A firm may calculate a derived position for its net position in an option or a warrant, if the relevant options or warrants are identical or may be treated as identical under BIPRU 7.6.11R or BIPRU 7.6.12R.

7.6.11 A firm may treat options or warrants as identical if they have the same strike price, maturity (except for an interest rate cap or floor - see BIPRU 7.6.12R) and underlying.

7.6.12 A firm may treat as identical a purchased interest rate cap (or floor) and a written interest rate cap (or floor) only if they mature within 30 days of each other and all other terms are identical (a cap may not be netted against a floor).

Derived positions

7.6.13 Table: Derived positions
This table belongs to BIPRU 7.6.9R

<table>
<thead>
<tr>
<th>Underlying</th>
<th>Option (or warrant)</th>
<th>Derived position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>Option (warrant) on a single equity or option on a future/forward on a single equity</td>
<td>A notional position in the actual equity underlying the contract valued at the current market price of the equity.</td>
</tr>
<tr>
<td></td>
<td>Option (warrant) on a basket of equities or option on a future/forward on a basket of equities</td>
<td>A notional position in the actual equities underlying the contract valued at the current market price of the equities.</td>
</tr>
<tr>
<td></td>
<td>Option (warrant) on an equity index or option on a future/forward on an equity index</td>
<td>A notional position in the index underlying the contract valued at the current market price of the index.</td>
</tr>
<tr>
<td>Interest rate</td>
<td>Option on an interest rate or an interest rate future/FRA</td>
<td>A zero coupon zero-specific-risk security in the currency concerned with a maturity equal to the sum of the time to expiry of the contract and the length of the period on which the settlement amount of the contract is calculated valued at the notional amount of the contract.</td>
</tr>
<tr>
<td>Underlying</td>
<td>Option (or warrant)</td>
<td>Derived position</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Debt securities</td>
<td>Option on an interest rate swap</td>
<td>A zero coupon zero-specific-risk security in the currency concerned with a maturity equal to the length of the swap valued at the notional principal amount.</td>
</tr>
<tr>
<td>Interest rate cap or floor</td>
<td></td>
<td>A zero coupon zero-specific-risk security in the currency concerned with a maturity equal to the remaining period of the cap or floor valued at the notional amount of the contract.</td>
</tr>
<tr>
<td>Debt securities</td>
<td>Option (warrant) on a debt security or option on a future/forward on a debt security</td>
<td>The underlying debt security with a maturity equal to the time to expiry of the option valued as the nominal amount underlying the contract at the current market price of the debt security.</td>
</tr>
<tr>
<td>Debt securities</td>
<td>Option (warrant) on a basket of debt securities or option on a future/forward on a basket of debt securities</td>
<td>A notional position in the actual debt securities underlying the contract valued at the current market price of the debt securities.</td>
</tr>
<tr>
<td>Debt securities</td>
<td>Option (warrant) on an index of debt securities or option on a future/forward on an index of debt securities</td>
<td>A notional position in the index underlying the contract valued at the current market price of the index.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Option on a commodity or option on a future/forward on a commodity</td>
<td>An amount equal to the tonnage, barrels or kilos underlying the option with (in the case of a future/forward on a commodity) a maturity equal to the expiry date of the forward or Futures contract underlying the option. In the case of an option on a commodity the maturity of the position falls into Band 1 in the table in BIPRU 7.4.28R (Table: Maturity bands for the maturity ladder approach).</td>
</tr>
<tr>
<td>Commodity</td>
<td>Option on a commodity swap</td>
<td>An amount equal to the tonnage, barrels or kilos underlying the option with a maturity equal to the length of the swap valued at the</td>
</tr>
<tr>
<td>Underlying</td>
<td>Option (or warrant)</td>
<td>Derived position</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>CIU</td>
<td>Option (warrant) on a single CIU or option on a future/forward on a single CIU</td>
<td>A notional position in the actual CIU underlying the contract valued at the current market price of the CIU.</td>
</tr>
<tr>
<td></td>
<td>Option (warrant) on a basket of CIUs or option on a future/forward on a basket of CIUs</td>
<td>A notional position in the actual CIUs underlying the contract valued at the current market price of the CIUs.</td>
</tr>
<tr>
<td>Gold</td>
<td>Option on gold or option on a future/forward on gold</td>
<td>An amount equal to the troy ounces underlying the option with (in the case of a future/forward on gold) a maturity equal to the expiry date of the forward or futures contract underlying the option.</td>
</tr>
<tr>
<td>Currency</td>
<td>Currency option</td>
<td>The amount of the underlying currency that the firm will receive if the option is exercised converted at the spot rate into the currency that the firm will sell if the option is exercised.</td>
</tr>
</tbody>
</table>

**Combinations of options which can be treated as one option**

A **firm** may treat (for the purpose of calculating an option PRR under BIPRU 7.6) an option strategy listed in the table in BIPRU 7.6.15R as the single position in a notional option specified against that strategy in the table in BIPRU 7.6.15R, if:

1. each element of the strategy is transacted with the same counterparty;
2. the strategy is documented as a single structure;
3. the underlying for each part of the composite position (including any actual holding of the underlying) is the same under the PRR identical product netting rules;
4. the netting achieved does not result overall in a greater degree of netting in the calculation of the market risk capital requirement than would be permitted under the other standard market risk PRR rules;
5. each option in the structure has the same maturity and underlying; and
(6) the constituent parts of the structure form an indivisible single contract, so that neither party can unwind or default on one part of the structure without doing so for the contract as a whole;

except that (1) and (6) only apply to the extent possible with respect to any part of the composite position held by the firm that consists of an actual holding of the underlying.

### Table: Option strategies

This table belongs to **BIPRU 7.6.14R**

<table>
<thead>
<tr>
<th>Option strategy (and an example)</th>
<th>Notional option (and rule it must be treated under)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Spread</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. buy 100 call and sell 101 call)</td>
<td>One written option (treat under BIPRU 7.6.21R)</td>
</tr>
<tr>
<td>Bear Spread</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. sell 100 put and buy 101 put)</td>
<td>One written option (treat under BIPRU 7.6.21R)</td>
</tr>
<tr>
<td>Synthetic Long Call</td>
<td>One purchased option (treat under BIPRU 7.6.20R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>(e.g. long underlying and buy 100 put)</td>
<td>One written option (treat under BIPRU 7.6.21R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>Synthetic Short Call</td>
<td>One purchased option (treat under BIPRU 7.6.20R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>(e.g. short underlying and sell 100 put)</td>
<td>One written option (treat under BIPRU 7.6.21R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>Synthetic Long Put</td>
<td>One purchased option (treat under BIPRU 7.6.20R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>(e.g. short underlying and buy 100 call)</td>
<td>One written option (treat under BIPRU 7.6.21R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>Synthetic Short Put</td>
<td>One purchased option (treat under BIPRU 7.6.20R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>(e.g. buy underlying and sell 100 call)</td>
<td>One written option (treat under BIPRU 7.6.21R or BIPRU 7.6.24R)</td>
</tr>
<tr>
<td>Long Straddle</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. buy 100 call and buy 100 put)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
<tr>
<td>Short Straddle</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. sell 100 call and sell 100 put)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
<tr>
<td>Long Strangle</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. buy 101 call and buy 99 put)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
<tr>
<td>Short Strangle</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. sell 99 call and sell 101 put)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
<tr>
<td>Long Butterfly</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. buy one 100 call, sell two 101 calls, and buy one 102 call)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
<tr>
<td>Short Butterfly</td>
<td>One purchased option (treat under BIPRU 7.6.20R)</td>
</tr>
<tr>
<td>(e.g. sell one 100 put, buy two 101 puts, and sell one 102 put)</td>
<td>One written option (treat under BIPRU 7.6.21R but with no reduction for the amount the option is out of the money)</td>
</tr>
</tbody>
</table>
The option PRR for an individual positions

7.6.16 A firm must calculate the option PRR for each individual derived option position using the method specified in the table in BIPRU 7.6.18, or, if more than one method is permitted, using one of those methods.

7.6.17 A firm must convert its positions into its base currency in accordance with the procedures that apply for whichever of the other PRR charges is appropriate (see BIPRU 7.2.1R(3), BIPRU 7.3.1R(2), BIPRU 7.4.1R(3), BIPRU 7.5.19R(2), BIPRU 7.5.20R(3) and BIPRU 7.7.1R(3)).

7.6.18 Table: Option PRR: methods for different types of option

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>American option</td>
<td>An option that may be exercised at any time over an extended period up to its expiry date.</td>
<td>Option standard method or option hedging method if appropriate</td>
</tr>
<tr>
<td>European option</td>
<td>An option that can only be exercised at expiry.</td>
<td></td>
</tr>
<tr>
<td>Bermudan option</td>
<td>A cross between an American option and European option. The Bermudan option can only be exercised at specific dates during its life.</td>
<td></td>
</tr>
<tr>
<td>Asian option</td>
<td>The buyer has the right to exercise at the average rate or price of the underlying over the period (or part of the period) of the option. One variant is where the payout is based on the average of the underlying against a fixed strike price; another variant is where the payout gives at expiry the price of the underlying against the average price over the option period.</td>
<td>Option standard method or option hedging method if appropriate</td>
</tr>
<tr>
<td>Barrier option</td>
<td>An option which is either cancelled or activated if the price of the underlying reaches a pre-set level regardless of the price at which the underlying may be trading at the expiry of the option. The knock-out type is cancelled if the underlying price or rate trades through the</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
<td>Method</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Corridor option</td>
<td>Provides the holder with a pay-out for each day that the underlying stays within a defined range chosen by the investor.</td>
<td></td>
</tr>
<tr>
<td>Ladder option</td>
<td>Provides the holder with guaranteed pay-outs if the underlying trades through a pre-agreed price(s) or rate(s) at a certain point(s) in time, regardless of future performance.</td>
<td></td>
</tr>
<tr>
<td>Lock-in option</td>
<td>An option where the pay-out to the holder is locked in at the maximum (or minimum) value of the underlying that occurred during the life of the option.</td>
<td></td>
</tr>
<tr>
<td>Look-back option</td>
<td>A European style option where the strike price is fixed in retrospect, that is at the most favourable price (i.e. the lowest (highest) price of the underlying in the case of a call (put)) during the life of the option.</td>
<td></td>
</tr>
<tr>
<td>Forward starting option</td>
<td>An option that starts at a future date.</td>
<td></td>
</tr>
<tr>
<td>Compound option</td>
<td>An option where the underlying is itself an option (i.e. an option on an option).</td>
<td>Option standard method or option hedging method if appropriate</td>
</tr>
<tr>
<td>Interest rate cap</td>
<td>An interest rate option or series of options under which a counter-party contracts to pay any interest costs arising as a result of an increase in rates above an agreed rate: the effect being to provide protection to the holder against a rise above that agreed interest rate.</td>
<td>Option standard method, but no reduction for the amount the option is out of the money is permitted</td>
</tr>
<tr>
<td>Interest rate floor</td>
<td>An interest rate option or series of options under which a counter-</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
<td>Method</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Performance option</td>
<td>An option based on a reference basket comprising any number of assets, where the payout to the holder could be one of the following: the maximum of the worst performing asset, or 0; the maximum of the best performing asset, or 0; the maximum of the spreads between several pairs of the assets, or 0.</td>
<td>Option standard method or option hedging method - using the highest position risk adjustment of the individual assets in the basket</td>
</tr>
<tr>
<td>Quanto</td>
<td>Quanto stands for &quot;Quantity Adjusted Option&quot;. A quanto is an instrument where two currencies are involved. The payoff is dependent on a variable that is measured in one of the currencies and the payoff is made in the other currency.</td>
<td>Subject to BIPRU 7.6.31R, the option standard method</td>
</tr>
<tr>
<td>Cliquet option</td>
<td>A cliquet option consists of a series of forward starting options where the strike price for the next exercise date is set equal to a positive constant times the underlying price as of the previous exercise date. It initially acts like a vanilla option with a fixed price but as time moves on, the strike is reset and the intrinsic value automatically locked in at pre-set dates. If the underlying price is below the previous level at the reset date no intrinsic value is locked in but the strike price will be reset to the current price attained by the underlying. If the underlying</td>
<td>Option standard method for a purchased cliquet, or the method specified in BIPRU 7.6.30R for a written cliquet</td>
</tr>
</tbody>
</table>
### Option Description Method

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital option</td>
<td>A type of option where the pay-out to the holder is fixed. The most common</td>
<td>The method specified in BIPRU 7.6.29 R</td>
</tr>
<tr>
<td></td>
<td>types are all-or-nothing and one-touch options. All-or-nothing will pay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>out the fixed amount if the underlying is above (call) or below (put) a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>set value at expiry. The one-touch will pay the fixed amount if the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>underlying reaches a fixed point any time before expiry.</td>
<td></td>
</tr>
<tr>
<td>Any other option or warrant</td>
<td>The method specified for the type of instrument whose description it most</td>
<td></td>
</tr>
<tr>
<td></td>
<td>closely resembles.</td>
<td></td>
</tr>
</tbody>
</table>

#### 7.6.19

(1) The **option standard method** is described in BIPRU 7.6.20R - BIPRU 7.6.22R.

(2) The **option hedging method** is described in BIPRU 7.6.23G - BIPRU 7.6.28R.

### The standard method: Purchased options and warrants

#### 7.6.20

Under the **option standard method**, the **PRR** for a purchased **option or warrant** is the lesser of:

1. the market value of the derived **position** (see BIPRU 7.6.9R) multiplied by the **appropriate position risk adjustment** (see BIPRU 7.6.8R); and
2. the market value of the **option or warrant**.

### The standard method: Written options and warrants

#### 7.6.21

Under the **option standard method**, the **PRR** for a written **option or warrant** is the market value of the derived **position** (see BIPRU 7.6.9R) multiplied by the **appropriate position risk adjustment** (see BIPRU 7.6.8R). This result may be reduced by the amount the **option or warrant** is **out of the money** (subject to a maximum reduction to zero).
The standard method: Underwriting or sub-underwriting an issue of warrants

Under the option standard method, the PRR for underwriting or sub-underwriting an issue of warrants is the net underwriting position (or reduced net underwriting position) multiplied by the current market price of the underlying securities multiplied by the appropriate position risk adjustment, but the result can be limited to the value of the net underwriting position (or reduced net underwriting position) calculated using the issue price of the warrant.

The hedging method

The option hedging method involves the option PRR being calculated on a combination of the option and its hedge.

Under the option hedging method a firm must calculate the option PRR for individual positions as follows:

1. for an option or warrant on an equity, basket of equities or equity index and its equity hedge(s), the firm must, to the extent specified or permitted in the table in ■ BIPRU 7.6.26R, use the calculation in the table in ■ BIPRU 7.6.27R;

2. for an option or warrant on a debt security, basket of debt securities or debt security index and its debt security hedge(s), the firm must, to the extent specified or permitted in the table in ■ BIPRU 7.6.26R, use the calculation in the table in ■ BIPRU 7.6.27R;

3. for an option on gold and its gold hedge, the firm must, to the extent specified or permitted in the table in ■ BIPRU 7.6.26R, use the calculation in the table in ■ BIPRU 7.6.27R; and

4. for an option on a currency and its currency hedge, the firm must, to the extent specified or permitted in the table in ■ BIPRU 7.6.26R, use the calculation in the table in ■ BIPRU 7.6.28R.

1. A firm may not use the option hedging method for:
   (a) an interest rate option and its hedge; or
   (b) a commodity option and its hedge; or
   (c) a CIU option and its hedge.

2. A firm may only use the option hedging method if the item underlying the option or warrant is the same as the hedge of the option or warrant under the PRR identical product netting rules.

Table: Appropriate treatment for equities, debt securities or currencies hedging options

This table belongs to ■ BIPRU 7.6.24R
<table>
<thead>
<tr>
<th>Hedge</th>
<th>PRR calculation for the hedge</th>
<th>Limits (if hedging method is used)</th>
<th>Naked position</th>
</tr>
</thead>
<tbody>
<tr>
<td>An equity (hedging an option or warrant)</td>
<td>The equity must be treated in either BIPRU 7.3 (equity PRR) or the option hedge method (see the table in BIPRU 7.6.27R)</td>
<td>The option hedging method must only be used up to the amount of the hedge that matches the notional amount underlying the option or warrant</td>
<td>To the extent that the amount of the hedge (or option or warrant) exceeds the notional amount underlying the option or warrant (or hedge), a firm must apply an equity PRR, interest rate PRR or foreign currency PRR (or the option standard method)</td>
</tr>
<tr>
<td>A debt security (hedging an option or warrant)</td>
<td>The debt security must be treated in BIPRU 7.2 (interest rate PRR) or the option hedge method (see the table in BIPRU 7.6.27R)</td>
<td>As for the first row</td>
<td>As for the first row</td>
</tr>
<tr>
<td>Gold (hedging a gold option)</td>
<td>The gold must be treated in either BIPRU 7.5 (foreign currency PRR) or the option hedge method (see the table in BIPRU 7.6.27R)</td>
<td>As for the first row</td>
<td>As for the first row</td>
</tr>
<tr>
<td>A currency or currencies (hedging a currency option)</td>
<td>The currency must be treated in either BIPRU 7.5 (foreign currency PRR) or the option hedge method (see the table in BIPRU 7.6.28R)</td>
<td>As for the first row</td>
<td>As for the first row</td>
</tr>
</tbody>
</table>

7.6.27  

Table: The hedging method of calculating the PRR (equities, debt securities and gold)

This table belongs to BIPRU 7.6.24R(1) - 7.6.28R(3)

<table>
<thead>
<tr>
<th>PRR</th>
<th>Option or warrant position</th>
<th>In the money by more than the position risk adjustment</th>
<th>In the money by less than the position risk adjustment</th>
<th>Out of the money or at the money</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long in security or gold</td>
<td>Long put</td>
<td>Zero</td>
<td>Wp</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Short call</td>
<td>Y</td>
<td>Y</td>
<td>Z</td>
</tr>
</tbody>
</table>
**BIPRU 7 : Market risk**

**Section 7.6 : Option PRR**

<table>
<thead>
<tr>
<th>PRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short in security or gold</td>
</tr>
<tr>
<td>Short put</td>
</tr>
</tbody>
</table>

Where:

- **Wp** means \((\text{position risk adjustment} + 100\%) \times \text{The underlying position valued at strike price}\)
- **Wc** means \((100\% + \text{position risk adjustment} \times \text{The underlying position valued at strike price})\)
- **X** means The market value of the underlying position multiplied by the appropriate position risk adjustment
- **Y** means The market value of the underlying position multiplied by 8%. This result may be reduced by the market value of the option or warrant, subject to a maximum reduction to zero.
- **Z** means The option hedging method is not permitted; the option standard method must be used.

### 7.6.28

Table: The hedging method of calculating the PRR (currencies)

This table belongs to BIPRU 7.6.24R(4)

<table>
<thead>
<tr>
<th>PRR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option position</strong></td>
</tr>
<tr>
<td>Long calls &amp; long puts</td>
</tr>
<tr>
<td>Short calls &amp; short puts</td>
</tr>
</tbody>
</table>

Where:

- **\(W_L\)** means \((1.08\% \times U)\)
- **U** means The amount of the underlying currency that the firm will receive if the option is exercised, converted at the strike price into the currency that the firm will sell if the option is exercised
- **X** means The market value of the underlying position multiplied by 8%
- **Y** means The market value of the underlying position multiplied by 8%. This result may be reduced by the market value of the option, subject to a maximum reduction to zero.

### Specific methods and treatments: Digital options

**7.6.29**

The option PRR for a digital option is the maximum loss of the option.
Specific methods and treatments: Written cliquet options

7.6.30  
The option PRR for a written cliquet option is the market value of the derived position (see BIPRU 7.6.9R) multiplied by the appropriate position risk adjustment (see BIPRU 7.6.8R) multiplied by F+1 (see the following provisions of this paragraph). This result may be reduced by the amount the option is out of the money (subject to a maximum reduction to zero). The option PRR for a written cliquet option is therefore defined by the following formula:

\[ \text{option PRR} = \text{position risk adjustment} \times \text{underlying} \times (F + 1) - \text{OTM} \]

where:

(1) \( F = \min \left\{ FR, \max \left( \frac{PR}{2}, Y \right) \right\} \)

(2) \( FR = \text{Number of forward re-sets} \)

(3) \( Y = \text{Years to maturity} \)

(4) \( \text{OTM} = \text{the amount by which the option is out of the money} \)

Specific methods and treatments: Quantos

7.6.31  
If the pay-out to the holder of a quanto option is fixed at the inception of the transaction a firm must add 8% to the position risk adjustment when applying the option standard method.

Interaction with other chapters

7.6.32  
The application of an option PRR to a position does not prevent any of the other PRR charges from applying if they would otherwise do so. In particular if a firm applies an option PRR to an equity derivative an interest rate PRR will also generally apply.

7.6.33  
The following diagram illustrates the relationship between BIPRU 7.6 and the rest of BIPRU 7.
### Options on a commodity

7.6.34 **R**

BIPRU 7.4.38R to BIPRU 7.4.41R (Liquidity and other risks) apply to commodity options treated under BIPRU 7.6 as well as to those treated under BIPRU 7.4 (Commodity PRR).

### Options on a CIU

7.6.35 **R**

For the purpose of identifying the appropriate treatment for the purpose of BIPRU 7.6.5R, the underlying position for the purpose of BIPRU 7.6.8R and the derived position under BIPRU 7.6.13R a firm may choose between treating an option on a CIU as being:

1. a position in the CIU itself; or

2. (if the conditions in BIPRU 7.7 (Position risk requirements for collective investment undertakings) for the use of the method in question are satisfied) positions in the underlying investments or assumed positions arising through the use of the standard CIU look through method or the modified CIU look through method.

7.6.36 **G**

1. This paragraph gives an example of how the appropriate position risk adjustment should be calculated for the purpose of deciding whether or not an option on a CIU is sufficiently in the money for the firm to have a choice whether or not to apply an option PRR. This example assumes that there is no leveraging (see BIPRU 7.7.11R (CIU modified look through method)).

2. Say that the CIU contains underlying equity position and the firm is using one of the CIU look through methods. The appropriate position risk adjustment for some is 8% and for the others is 12%. The firm should identify the highest appropriate position risk adjustment for the underlyings. In this case it is 12%. Therefore in this case the
option would need to be *in the money* by more than 12% in order for the *firm* to have a choice between applying the *option PRR* or one of the other *PRR charges*.

(3) However if the *firm* is not using one of the *CIU look through methods* the *option* would need to be *in the money* by more than 32% in order for the *firm* to have a choice between applying the *option PRR* or the *CIU PRR*.

---

7.6.37  ■  BIPRU 7.6.10R - ■  BIPRU 7.6.12R are subject to ■  BIPRU 7.7.3R (netting).
■  BIPRU 7.7.4R (use of third party) applies for the purpose of ■  BIPRU 7.6.
7.7 Position risk requirements for collective investment undertakings

Collective investment undertaking PRR calculation

7.7.1 A firm must calculate its CIU PRR by:

1. identifying which CIU positions must be included within the scope of the PRR calculation (see BIPRU 7.7.2R);
2. identifying which CIU positions are to be subject to the CIU PRR and which positions are to be subject to one of the other PRR charges;
3. converting on a daily basis net positions into the firm’s base currency at the prevailing spot exchange rate before their aggregation;
4. calculating an individual PRR for each position in a CIU (see BIPRU 7.7.5R);
5. summing the resulting individual PRRs.

Scope of the PRR calculation for collective investment undertakings

7.7.2 (1) A firm’s PRR calculation must include all trading book positions in CIUs.

(2) A firm’s CIU PRR calculation must include all trading book positions in CIUs unless they are treated under one of the CIU look through methods and included in the PRR calculations for the relevant underlying investments or subject to an option PRR.

(3) A firm’s PRR calculation for CIUs must include notional positions arising from trading book positions in options or warrants on collective investment undertakings.

General rules

7.7.3 Unless noted otherwise, no netting is permitted between the underlying investments of a CIU and other positions held by a firm for the purposes of calculating the PRR charge for a position in a CIU.

7.7.4 A firm may rely on a third party to calculate and report PRR capital requirements for position risk (general market risk and specific risk) for positions in CIUs falling within BIPRU 7.7.9R and BIPRU 7.7.11R, in
accordance with the methods set out in BIPRU 7, provided that the correctness of the calculation and the report is adequately ensured.

**Calculation of the collective investment undertaking PRR**

**7.7.5** Without prejudice to other provisions in BIPRU 7, a *position* in a CIU is subject to a collective investment undertaking PRR (general market risk and specific risk) of 32%. Without prejudice to provisions in BIPRU 7.5.18R (Foreign currency PRR for CIUs) or, if the firm has a VaR model permission, BIPRU 7.10.44R (Commodity risks and VaR models) taken together with BIPRU 7.5.18R, where the modified gold treatment set out in those rules is used, a *position* in a CIU is subject to a securities PRR requirement for position risk (general market risk and specific risk) and a foreign currency PRR of no more than 40%.

**Look through methods: General criteria**

**7.7.6** A firm may determine the securities PRR requirement for *positions* in CIUs which meet the criteria set out in BIPRU 7.7.7R, by one of the following methods:

1. the *standard CIU look through method* (**BIPRU 7.7.4R** and **BIPRU 7.7.7R - BIPRU 7.10R**); or
2. the *modified CIU look through method* (**BIPRU 7.7.4R**, **BIPRU 7.7.7R - BIPRU 7.8R** and **BIPRU 7.11R - BIPRU 7.12R**).

**7.7.7** The general eligibility criteria for using the methods in BIPRU 7.7.4R and BIPRU 7.9R - BIPRU 7.11R, for CIUs issued by companies supervised or incorporated within the EEA are that:

1. the CIU’s prospectus or equivalent document must include:
   a. the categories of assets the CIU is authorised to invest in;
   b. if investment limits apply, the relative limits and the methodologies to calculate them;
   c. if leverage is allowed, the maximum level of leverage; and
   d. if investment in OTC financial derivatives or repo-style transactions are allowed, a policy to limit counterparty risk arising from these transactions;
2. the business of the CIU must be reported in half-yearly and annual reports to enable an assessment to be made of the assets and liabilities, income and operations over the reporting period;
3. the units/shares of the CIU are redeemable in cash, out of the undertaking’s assets, on a daily basis at the request of the Unitholder;
4. investments in the CIU must be segregated from the assets of the CIU manager; and
5. there must be adequate risk assessment, by the investing firm, of the CIU.
Third country CIUs are eligible if the requirements in BIPRU 7.7.7R (1) - BIPRU 7.7.7R (5) are met.

**Standard CIU look through method: General**

1. Where a firm is aware of the underlying investments of the CIU on a daily basis the firm may look through to those underlying investments in order to calculate the securities PRR for position risk (general market risk and specific risk) for those positions in accordance with the methods set out in the securities PRR requirements or, if the firm has a VaR model permission, in accordance with the methods set out in BIPRU 7.10 (Use of a Value at Risk Model).

2. Under this approach, positions in CIUs must be treated as positions in the underlying investments of the CIU. Netting is permitted between positions in the underlying investments of the CIU and other positions held by the firm, as long as the firm holds a sufficient quantity of units to allow for redemption/creation in exchange for the underlying investments.

**Standard CIU look through method: Index or basket funds**

1. A firm may calculate the securities PRR for position risk (general market risk and specific risk) for positions in CIUs in accordance with the methods set out in the securities PRR requirements, subject to the following conditions:

   a. the purpose of the CIU's mandate is to replicate the composition and performance of an externally generated index or fixed basket of equities or debt securities referred to in (a), subject to the following conditions:

   b. a minimum correlation of 0.9 between daily price movements of the CIU and the index or basket of equities or debt securities it tracks can be clearly established over a minimum period of six months.

   2. Correlation as referred to in (1)(b) means the correlation coefficient between daily returns on the CIU and the index or basket of equities or debt securities it tracks.

**CIU modified look through method**

1. Where a firm is not aware of the underlying investments of the CIU on a daily basis, the firm may calculate the securities PRR for position risk (general market risk and specific risk) in accordance with the methods set out in the securities PRR requirements, subject to the following conditions:

   a. it must be assumed that the CIU first invests to the maximum extent allowed under its mandate in the asset classes attracting the highest securities PRR for position risk (general market risk and specific risk), and then continues making investments in descending order until the maximum total investment limit is reached;
(2) the firm must take account of the maximum indirect exposure that it could achieve by taking leveraged positions through the CIU when calculating its securities PRR for position risk, by proportionally increasing the position in the CIU up to the maximum exposure to the underlying investment items resulting from the investment mandate; and

(3) should the securities PRR for position risk (general market risk and specific risk) under this approach exceed that set out in BIPRU 7.7.5R, the PRR charge must be capped at that level.

7.7.12  For the purpose of BIPRU 7.7.11R (1) the position in the CIU must be treated as a direct holding in the assumed position.

7.7.13  CAD 1 models and VaR models

Where BIPRU 7 permits a firm to calculate the PRR charge for a position in a CIU using the rules in BIPRU 7 relating to the underlying investment, a firm that has:

(1) a CAD 1 model waiver that covers positions in CIUs may use the rules as modified by that waiver; and

(2) a VaR model permission that covers positions in CIUs may use its VaR model.

7.7.14  Options on a CIU

An option on a CIU should be treated in accordance with BIPRU 7.6.35R to BIPRU 7.6.37G (Options on a CIU).
7.8 Securities underwriting

General rules

7.8.1 G BIPRU 7.8 sets out the method for calculating a net underwriting position or reduced net underwriting position, which is then included in the PRR calculation in other parts of BIPRU 7. It also deals with concentration risk. BIPRU 7.8 only relates to new securities, which is defined in BIPRU 7.8.12R.

7.8.2 R A firm which underwrites or sub-underwrites an issue of securities must, for the purposes of calculating its market risk capital component:

(1) identify commitments to underwrite or sub-underwrite which give rise to an underwriting position (see BIPRU 7.8.8R);

(2) identify the time of initial commitment (see BIPRU 7.8.13R); and

(3) calculate the net underwriting position (set out in BIPRU 7.8.17R), reduced net underwriting position or the net underwriting exposure.

7.8.3 R A firm must include the net underwriting position or reduced net underwriting position in whichever one or more of the following is or are relevant:

(1) BIPRU 7.2.3R (1) where debt securities are being underwritten;

(2) BIPRU 7.3.2R (1) where equities are being underwritten;

(3) BIPRU 7.6.22R where warrants are being underwritten; and

(4) BIPRU 7.5.3R where the equities, debt securities or warrants being underwritten are denominated in a foreign currency.

7.8.4 R A firm must comply with BIPRU 7.8.3R from initial commitment (as determined under BIPRU 7.8.8R) until the end of the fifth business day after working day 0 (as determined under BIPRU 7.8.23R).

7.8.5 G Sub-underwriting is a commitment given by one firm to someone other than the issuer or seller of the securities to sub-underwrite all or part of an issue of securities.
7.8.6 G The net underwriting position calculated in BIPRU 7.8.17R will also be used in calculating the net underwriting exposure under BIPRU 7.8.34R.

7.8.7 G The net underwriting position or reduced net underwriting position arising from underwriting or sub-underwriting a rights or warrants issue should be calculated using the current market price of the underlying security for the purposes of the equity PRR or option PRR. However, the PRR will be limited to the value of the net underwriting position calculated using the initial issue price of the rights or warrants. Where there is no market price because the rights or warrants are in relation to a new class of securities and the initial price has not been set the net underwriting position or reduced net underwriting is the amount of the commitment.

Commitment to underwriting securities

7.8.8 R (1) For the purpose of BIPRU 7.8.2R (1), a firm has a commitment to underwrite or sub-underwrite an issue of securities where:
   (a) it gives a commitment to an issuer of securities to underwrite an issue of securities; or
   (b) (where BIPRU 7.8.12R (2) applies) it gives a commitment to a seller of securities to underwrite a sale of those securities;
   (c) it gives a commitment to a person, other than the issuer of securities or, if BIPRU 7.8.12R (2) applies, the seller of the securities, to sub-underwrite an issue of securities; or
   (d) it is a member of a syndicate or group that gives a commitment of the type described in (1)(a)-(c).

   (2) Unless a rule deals with them separately or the context otherwise requires, a provision of BIPRU 7.8 that deals with underwriting also applies to sub-underwriting.

Exclusions from BIPRU 7.8

7.8.9 G (1) Block trades, including bought deals, and private placements are not within the scope of BIPRU 7.8 because they involve an outright purchase by the firm of the relevant securities.

   (2) For the purpose of BIPRU 7.8 securities include debt and equity instruments and convertibles but excludes loans.

Grey market transactions

7.8.10 R (1) A firm that buys and sells securities before issue is dealing in the grey market for the purposes of BIPRU 7.8.

   (2) BIPRU 7.8 does not apply to a firm with respect to its dealings in the grey market unless the firm:
      (a) has an underwriting commitment to the issuer in respect of those securities; or
      (b) has a sub-underwriting commitment in respect of those securities and is using the grey market solely for the purpose of reducing that sub-underwriting commitment.
(3) BIPRU 7.8 does not apply to a firm with respect to its dealings in the grey market if the transaction is undertaken by the proprietary trading part of the firm or is undertaken for proprietary trading purposes.

(4) BIPRU 7.8 does not apply to a firm with respect to its dealings in the grey market except as described in BIPRU 7.8.17R.

7.8.11 In BIPRU 7.8 the grey market is the market in which dealers "buy" and "sell" securities ahead of issue. In reality the dealers are buying and selling promises to deliver the securities when issued.

New securities

For the purposes of BIPRU 7.8, a firm must treat securities as being new for the purposes of the definition of underwriting if they are:

(1) securities that, prior to the allotment following the underwriting, were not in issue; or

(2) securities that do not fall within (1) but that have not previously been offered for sale or subscription to the public and have not been admitted to trading on a market operated by a recognised investment exchange or an overseas investment exchange.

Time of initial commitment

Subject to BIPRU 7.8.14R, the time of initial commitment is the earlier of:

(1) (in the case of underwriting) the time the firm agrees with the issuer of securities to underwrite those securities; or

(2) (in the case of underwriting falling under BIPRU 7.8.12R (2)) the time the firm agrees with the seller of securities to underwrite those securities; or

(3) (in the case of sub-underwriting) the time the firm agrees with the person referred to BIPRU 7.8.8R (1)(c) to sub-underwrite those securities; or

(4) (in the case of BIPRU 7.8.8R (1)(d)) the time the group or syndicate in question (or a member of that group or syndicate on behalf of the others) agrees with the issuer or other person to whom the commitment is given as referred to in BIPRU 7.8.8R (1)(d) to underwrite or sub-underwrite the securities in question; or

(5) (if the firm at that time has a commitment, whether legally or binding or not) the time the price and allocation of the issue or offer are set.

7.8.14 If a firm has an irrevocable and unfettered right to withdraw from an underwriting commitment, exercisable within a certain period, the commitment commences (and thus the time of initial commitment occurs) when that right expires.
Subject to the existence of a right described in BIPRU 7.8.14R an underwriting commitment commences even if it is subject to formal, legal or other conditions that would normally be expected to be satisfied.

A force majeure or material adverse change clause would not be a right of the sort referred to in BIPRU 7.8.14R.

Calculating the net underwriting position

A firm must calculate a net underwriting position by adjusting the gross amount it has committed to underwrite for:

1. any sales or sub-underwriting commitments received that have been confirmed in writing at the time of initial commitment (but excluding any sales in the grey market as defined in BIPRU 7.8.10R (1));

2. any underwriting or sub-underwriting commitments obtained from others since the time of initial commitment;

3. any purchases or sales of the securities since the time of initial commitment (other than purchases or sales in the grey market as defined in BIPRU 7.8.10R (1));

4. (in the case of sales in the grey market as defined in BIPRU 7.8.10R (1)) any sales of the securities as at the time of initial commitment or since the time of initial commitment subject, in both cases, to the following conditions:
   a. any sales of the securities as at the time of initial commitment must be confirmed in writing at the time of initial commitment; and
   b. sales must be net of any purchases in the grey market as defined in BIPRU 7.8.10R (1); and

5. any allocation of securities granted or received, arising from the commitment to underwrite the securities, since the time of initial commitment.

If the allocation of securities has not been fixed a firm must calculate the gross amount of its commitment, for the purposes of BIPRU 7.8.17R, by reference to the maximum amount it has committed to underwrite until the time the allocation is set.

An underwriting commitment may only be reduced under BIPRU 7.8.17R on the basis of a formal agreement.

Allocations may arise, after date of initial commitment, from the agreement to underwrite. For example obligations or rights may be allocated to or from the issuer, the underwriting group or syndicate.
Over-allotment options

7.8.21 R

(1) This rule deals with the treatment of short positions that arise when a firm commits to distribute securities that it is underwriting in an amount that exceeds the allocation to the firm made by the issuer of the securities being underwritten.

(2) When calculating its net underwriting position, a firm may use an over-allotment option granted to it by the issuer of the securities being underwritten to reduce the short positions in (1).

(3) A firm may also use an over-allotment option granted to another member of the underwriting syndicate for the purpose in (2).

(4) (2) and (3) only apply from working day 0.

(5) (2) and (3) only apply to the extent that the treatment is consistent with the terms of the over-allotment option.

7.8.22 R

Except as provided in 7.8.21R, a firm must not take into account an over-allotment option granted to it or another member of the underwriting syndicate in calculating its net underwriting position.

Working day 0

7.8.23 R

For the purposes of 7.8 working day 0 is the business day on which a firm that is underwriting or sub-underwriting becomes unconditionally committed to accepting a known quantity of securities at a specified price.

7.8.24 G

For debt issues and securities which are issued in a similar manner, working day 0 is the later of the date on which the securities are allotted and the date on which payment for them is due.

7.8.25 G

For equity issues and securities which are issued in a similar manner, working day 0 is the later of the date on which the offer becomes closed for subscriptions and the date on which the allocations are made public.

7.8.26 G

For rights issues, working day 0 is the first day after the date on which the offer becomes closed to acceptances for subscription.

Calculating the reduced net underwriting position

7.8.27 R

To calculate the reduced net underwriting position a firm must apply the reduction factors in the table in 7.8.28R to the net underwriting position (calculated under 7.8.17R) as follows:

1. In respect of debt securities, a firm must calculate two reduced net underwriting positions: one for inclusion in the firm’s interest rate PRR specific risk calculation (7.2.43R), the other for inclusion in its interest rate PRR general market risk calculation (7.2.52R); and
(2) In respect of equities, a firm must calculate only one reduced net underwriting position, and then include it in the simplified equity method (see BIPRU 7.8.29).

7.8.28 Table: Net underwriting position reduction factors

This table belongs to BIPRU 7.8.27R

<table>
<thead>
<tr>
<th>Underwriting timeline</th>
<th>Debt</th>
<th>General market risk</th>
<th>Specific risk</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of initial commitment until working day 0</td>
<td>0%</td>
<td>100%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Working day 1</td>
<td>0%</td>
<td>90%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Working day 2</td>
<td>0%</td>
<td>75%</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Working day 3</td>
<td>0%</td>
<td>75%</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Working day 4</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Working day 5</td>
<td>0%</td>
<td>25%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Working day 6 and onwards</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

The table in BIPRU 7.8.30G gives an example of the reduced net underwriting position calculation. The example is based on the firm starting with a commitment to underwrite £100 million of a new equity issue. Firms are reminded that in the case of an equity, the reduced net underwriting position should be treated under the simplified equity method (see BIPRU 7.8.27R (Simplified and standard equity methods) and BIPRU 7.8.27R).

7.8.30 Table: Example of the reduced net underwriting position calculation

This table belongs to BIPRU 7.8.29G

<table>
<thead>
<tr>
<th>Time</th>
<th>Net underwriting position (see BIPRU 7.8.17R)</th>
<th>Percentage reduction (see BIPRU 7.8.28R)</th>
<th>Reduced net underwriting position</th>
</tr>
</thead>
<tbody>
<tr>
<td>At initial commitment 9.00am Monday</td>
<td>£100m gross amount is reduced by £20m due to sales/sub-underwriting commitments confirmed in writing at the time of initial commitment (see BIPRU)</td>
<td>= £80m</td>
<td>£8m</td>
</tr>
</tbody>
</table>
### Large exposure risk from underwriting securities: Calculating the net underwriting exposure

For the purposes of calculating the total amount of its trading book exposures to a person for concentration risk purposes, a firm must include net underwriting exposure to that person.

<table>
<thead>
<tr>
<th>Time</th>
<th>Net underwriting position (see BIPRU 7.8.17R)</th>
<th>Percentage reduction (see BIPRU 7.8.28R)</th>
<th>Reduced net underwriting position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post initial commitment 9.02am Monday</td>
<td>Remaining £80m is reduced by £40m due to further sales, sub-underwriting commitments obtained and allocations granted (see BIPRU 7.8.17R (1)) and (4)).</td>
<td>90%</td>
<td>£4m</td>
</tr>
<tr>
<td>At the end of working day 1</td>
<td>Remaining £40m is reduced to £20m due to further sales.</td>
<td>90%</td>
<td>£2m</td>
</tr>
<tr>
<td>End of working day 3</td>
<td>Remaining £20m is reduced to £5m due to further sales.</td>
<td>75%</td>
<td>£1.25 m</td>
</tr>
<tr>
<td>End of working day 4</td>
<td>Remaining £5m is reduced to £2m due to further sales.</td>
<td>50%</td>
<td>£1m</td>
</tr>
<tr>
<td>End of working day 5</td>
<td>Remaining £2m is reduced to £1m due to further sales.</td>
<td>25%</td>
<td>£0.75 m</td>
</tr>
<tr>
<td>Start of working day 6</td>
<td>Remaining £1m = £1m</td>
<td>0%</td>
<td>£1m</td>
</tr>
</tbody>
</table>
7.8.32  A firm must include any other exposures arising out of underwriting (including any counterparty exposures to any sub-underwriters) for the purposes of calculating the total amount of its trading book exposures to a person for concentration risk purposes.

7.8.33  [deleted]

7.8.34  Except where otherwise specified by a requirement on its Part 4A permission, a firm must calculate the net underwriting exposure to an issuer by applying the relevant reduction factors in the table in BIPRU 7.8.35R to its net underwriting position calculated under BIPRU 7.8.17R.

7.8.35  Table: Calculation of net underwriting exposure

This table belongs to BIPRU 7.8.34R

<table>
<thead>
<tr>
<th>Time</th>
<th>Reduction factor to be applied to net underwriting position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial commitment to working day 0</td>
<td>100%</td>
</tr>
<tr>
<td>Working day 0</td>
<td>100%</td>
</tr>
<tr>
<td>Working day 1</td>
<td>90%</td>
</tr>
<tr>
<td>Working day 2</td>
<td>75%</td>
</tr>
<tr>
<td>Working day 3</td>
<td>75%</td>
</tr>
<tr>
<td>Working day 4</td>
<td>50%</td>
</tr>
<tr>
<td>Working day 5</td>
<td>25%</td>
</tr>
<tr>
<td>Working day 6 onwards</td>
<td>0%</td>
</tr>
</tbody>
</table>

7.8.36  The effect of BIPRU 7.8.34R is that there is no concentration limit for net underwriting exposures between initial commitment and the end of working day 0, except where specified by a requirement on a firm’s Part 4A permission.

Large exposure risk from underwriting securities: Monitoring and reporting concentration risk

7.8.37  For the purposes of concentration risk monitoring only, a firm must report its net underwriting exposure both before and after the application of the reduction factors in the table in BIPRU 7.8.35R.

Risk management

7.8.38  A firm must take reasonable steps to establish and maintain such systems and controls to monitor and manage its underwriting and sub-underwriting business as are appropriate to the nature, scale and complexity of its underwriting and sub-underwriting business. In particular, a firm must have systems to monitor and control its underwriting exposures between the time of the initial commitment and working day one in the light of the nature of the risks incurred in the markets in question.
A firm should take reasonable steps to:

(1) allocate responsibility for the management of its underwriting and sub-underwriting business;

(2) allocate adequate resources to monitor and control its underwriting and sub-underwriting business;

(3) satisfy itself that its systems to monitor exposure to counterparties will calculate, revise and update its exposure to each counterparty arising from its underwriting or sub-underwriting business;

(4) satisfy itself of the suitability of each person who performs functions for it in connection with the firm's underwriting and sub-underwriting business having regard to the person's skill and experience; and

(5) satisfy itself that its procedures and controls to monitor and manage its underwriting business address, on an on-going basis, the capacity of sub-underwriters to meet sub-underwriting commitments.
7.9 Use of a CAD 1 model

Introduction

7.9.1 A firm is required under GENPRU 2.1.52 R (Calculation of the market risk capital requirement) to calculate its market risk capital requirement using the rules in BIPRU 7. However, the appropriate regulator may at the firm's request modify GENPRU 2.1.52 R to allow the firm to calculate all or part of the PRR for the positions covered by that model by using a CAD 1 model (for options risk aggregation and/or interest rate pre-processing) or a VaR model (value at risk model) instead. BIPRU 7.10 (Use of a Value at Risk Model) deals with VaR model permissions.

7.9.2 The purpose of BIPRU 7.9 is to provide guidance on the appropriate regulator's policy for granting CAD 1 model waivers under section 138A of the Act (Modification or waiver of rules). The policy recognises that CAD 1 models may vary across firms but, as a minimum, the appropriate regulator will need to be satisfied:

1) about the quality of the internal controls and risk management relating to the model (see BIPRU 7.9.19G - BIPRU 7.9.23G for further details);

2) about the quality of the model standards; and

3) that the CAD 1 model captures and produces an accurate measure of the risks inherent in the portfolio covered by the CAD 1 model (see BIPRU 7.9.25G - BIPRU 7.9.53G for further details).

7.9.3 BIPRU 7.9 also explains how the output from the CAD 1 model is fed into the market risk capital requirement calculation.

7.9.4 If a CAD 1 model waiver is granted by the appropriate regulator, the waiver will contain certain requirements. In order adequately to address individual circumstances, these may differ from what is set out in BIPRU 7.9. The waiver will also identify the rules to which the waiver applies and the scope of model recognition granted to the firm.

7.9.5 Waivers permitting the use of models in the calculation of PRR will not be granted if that would be contrary to the CAD. Any waiver which is granted will only be granted on terms that are compatible with the CAD. Accordingly, the only waivers permitting the use of models in calculating PRR
that the appropriate regulator is likely to grant are CAD 1 model waivers and VaR model permissions.

**Scope of CAD 1 models**

The appropriate regulator recognises two types of CAD 1 model. The table in BIPRU 7.9.7G describes them.

**Table: Types of CAD 1 model**

This table belongs to BIPRU 7.9.6G

<table>
<thead>
<tr>
<th>Options risk aggregation models</th>
<th>Interest rate pre-processing models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief description and eligible instruments</strong></td>
<td><strong>May be used to calculate duration weighted positions for:</strong></td>
</tr>
<tr>
<td>Analyse and aggregate options risks for:</td>
<td>• interest rate futures;</td>
</tr>
<tr>
<td>• interest rate options;</td>
<td>• forward rate agreements (FRAs);</td>
</tr>
<tr>
<td>• equity options;</td>
<td>• forward commitments to buy or sell debt securities;</td>
</tr>
<tr>
<td>• foreign currency options;</td>
<td>• options, swaps or warrants on interest rates or debt securities and options on such swaps;</td>
</tr>
<tr>
<td>• commodity options;</td>
<td>• amortising bonds;</td>
</tr>
<tr>
<td>and</td>
<td>• equity futures, forwards, warrants and options (but only in relation to the interest rate risk inherent in these products); and</td>
</tr>
<tr>
<td></td>
<td>• foreign currency futures, forwards, swaps and options, but only in relation to the interest rate risk inherent in these products.</td>
</tr>
</tbody>
</table>

The output and how it is used in the PRR calculation

Depending on the type of model and the requirements in the CAD 1 model waiver granted, the outputs from an options risk aggregation model are used as an input to the market risk capital requirement calculation.

Depending on the type of model and the requirements in the CAD 1 model waiver granted, the individual sensitivity figures produced by this type of CAD 1 model are either input into the calculation of interest rate PRR under the interest rate duration method (see BIPRU 7.2.63R) or are converted into notional position and input into the calculation of interest rate PRR under the interest rate maturity method (see BIPRU 7.2.59R).
Currently the appropriate regulator only envisages allowing recognition for options on CIUs if the CIU satisfies one of the following conditions:

1. it is a regulated collective investment scheme; or
2. the firm can demonstrate that it has characteristics that are similar to or better than an undertaking in (1) from the point of view of transparency and liquidity.

The CAD 1 model waiver application and review process

Details of the general waiver process are set out in SUP 8 (Waiver and modification of rules). Further details of the waiver process applicable to certain waivers relating to BIPRU (including CAD 1 model waivers) can be found in BIPRU 1.3 (Applications for advanced approaches). Because of the complexity of a CAD 1 model waiver, it is recommended that, as set out in SUP 8.3.4 G and BIPRU 1.3.21 G, a firm contact its usual contact at the appropriate regulator to discuss its proposed application. It should also be noted that the waiver recognition process in the case of a CAD 1 model may take longer than the timescales indicated in SUP 8.3.5 G.

In order to consider a CAD 1 model waiver request, the appropriate regulator may undertake a review to ensure that it is adequate and appropriate for the PRR calculation.

The model review process may be conducted through a series of visits covering various aspects of the firm’s control and IT environment. Before these visits the appropriate regulator may ask the firm to provide some information relating to its waiver request accompanied by some specified background material. The model review visits are organised on a timetable that allows a firm being visited sufficient time to arrange the visit and provide the appropriate pre-visit information.

As part of the model review process, the following may be reviewed: organisational structure and personnel; details of the firm’s market position in the relevant products; profit and risk information; valuation and reserving policies; operational controls; IT systems; model release and control procedures; risk management and control framework; risk appetite and limit structure and future developments relevant to model recognition.

The appropriate regulator will normally require meetings with senior management and staff from the front office, financial control, risk management, operations, systems development, information technology and audit areas.

A review by a skilled person may be used before a CAD 1 model waiver is granted to supplement the waiver process or after the waiver has been granted to review the CAD 1 model.

If the appropriate regulator grants a CAD 1 model waiver, the waiver direction will specify the particular rule which has been modified, and set
out the requirements subject to which the waiver has been granted. These requirements may include:

1. the details of the calculation of PRR;
2. the CAD 1 model methodology to be employed;
3. the products covered by the model (e.g. option type, maturity, currency); and
4. any notification requirements relating to the CAD 1 model waiver.

Where a firm operates any part of its CAD 1 model outside the United Kingdom, the appropriate regulator may take into account the results of any review of that model carried out by any overseas regulator concerned. The appropriate regulator may wish to receive information directly from that regulator.

**Maintenance of model recognition**

No changes should be made to a CAD 1 model unless the change is not material. Material changes to a CAD 1 model will require a renewed waiver to be issued. Materiality is measured from the time that the waiver is granted or, if the waiver has been varied in accordance with section 138A of the Act, any later time that may be specified in the waiver for these purposes. If a firm is considering making material changes to its CAD 1 model, then it should notify the appropriate regulator at once. If a firm wishes to change the products covered by the model it should apply for a variation of its CAD 1 model waiver.

If the CAD 1 model ceases to meet the requirements of the waiver, the firm should notify the appropriate regulator at once. The appropriate regulator may then revoke the waiver unless it is varied in accordance with section 138A of the Act. If the CAD 1 model waiver contains conditions it is a condition of using the CAD 1 model approach that the firm should continue to comply with those conditions.

**Risk management standards**

A firm with a complex portfolio is expected to demonstrate more sophistication in its modelling and risk management than a firm with a simple portfolio.

A firm should be able to demonstrate that the risk management standards set out in BIPRU 7.9 are satisfied by each legal entity with respect to which the CAD 1 model approach is being used (even though they are expressed to refer only to a firm). This is particularly important for subsidiary undertakings in groups subject to matrix management where the business lines cut across legal entity boundaries.

(1) A firm should have a conceptually sound risk management system which is implemented with integrity and should meet the minimum standards set out in this paragraph.
(2) A firm should have a risk control unit that is independent of business trading units and reports directly to senior management. The unit should be responsible for designing and implementing the firm's risk management system. It should produce and analyse daily reports on the risks run by the business and on the appropriate measures to be taken in terms of the trading limits.

(3) A firm's senior management should be actively involved in the risk control process and the daily reports produced by the risk control unit should be reviewed by a level of management with sufficient authority to enforce reductions of positions taken by individual traders as well as in the firm's overall risk exposure.

(4) The risk control group should have a sufficient number of staff with appropriate skills in the use of models.

(5) A firm should have established procedures for monitoring and ensuring compliance with a documented set of appropriate internal policies and controls concerning the overall operation of the risk measurement and control framework. This should take into account the front, middle and back office functions.

(6) A firm should conduct, as part of its regular internal audit process, a review of the systems and controls relating to its CAD 1 model. This review should include the valuation process, compliance with the CAD 1 model waiver's scope and the activities of the business trading units and the risk control units. This review should be undertaken by staff independent of the areas being reviewed.

7.9.22 In assessing whether the risk management and control framework is implemented with integrity, the appropriate regulator will consider the IT systems used to run the CAD 1 model and associated calculations. The assessment will include, where appropriate:

(1) feeder systems; risk aggregation systems; the integrity of the data (i.e. whether it is complete, coherent and correct); reconciliations and checks on completeness of capture; and

(2) system development, change control and documentation; security and audit trails; system availability and contingency procedures; network adequacy.

7.9.23 A firm should take appropriate steps to ensure that it has adequate controls relating to:

(1) the derivation of the PRR from the CAD 1 model output;

(2) CAD 1 model development, including independent validation;

(3) reserving;

(4) valuation (see GENPRU 1.3 (Valuation)), including independent validation; and

(5) the adequacy of the IT infrastructure.
Model standards

7.9.24 G A firm should take appropriate steps to ensure that its CAD 1 model captures and produces an accurate measure of the risks inherent in the portfolio covered by the CAD 1 model. These risks may include, but are not limited to, gamma, vega and rho.

Options risk aggregation models

7.9.25 G For a firm to obtain a CAD 1 model waiver for its options risk aggregation model, it should have in place an appropriate options valuation model.

7.9.26 G The appropriate regulator does not specify the methodology that a firm should employ in order to produce the appropriate outputs from its options risk aggregation CAD 1 model. However, BIPRU 7.9.27G - BIPRU 7.9.43G provide details of how a firm could meet the requirement to capture gamma, vega and rho risks using a scenario matrix approach. Where a firm adopts the scenario matrix approach then the standards set out in BIPRU 7.9.27G - BIPRU 7.9.43G should be followed. The firm should also take into account other risks not captured by the scenario matrix approach. If a firm does not use the scenario matrix approach it should use an equivalent methodology. If a firm uses an equivalent methodology it should be able to demonstrate that the approach used meets the requirements of BIPRU 7.9.

7.9.27 G A scenario matrix is an approach by which an options portfolio is revalued given a number of simultaneous shifts in both the spot level of the underlying and the implied volatility.

7.9.28 G The scenario matrix approach may be employed for all types of options on all types of underlying asset.

7.9.29 G (1) This paragraph provides an outline of the initial steps to be taken when using the scenario matrix approach.

(2) A value for an option should be obtained using the firm’s options valuation model.

(3) The inputs into the options valuation model for implied volatility of the underlying asset and the price of the underlying asset should then be altered so that a new value for the option is obtained (details of the amount by which the implied volatility and the price of the underlying should be amended are set out in BIPRU 7.9.30G - BIPRU 7.9.36G).

(4) The difference between the original value of the option and the new value obtained following the alterations should be input into the appropriate cell in the matrix. The value in the central cell where there is no change in implied volatility or price of the underlying should therefore be zero.

(5) The process of obtaining a new price for the option should be repeated until the matrix is completed.
7.9.30 The alteration to the implied volatility (known as the implied volatility shift) referred to in BIPRU 7.9.29G (3) may be a proportional shift. The size of the shift depends on the remaining life of the option and the asset class of the underlying. The table in BIPRU 7.9.32G sets out the shifts that should be applied where a proportional shift is used. Alternatively, a firm may use a single shift across all maturities or use an absolute rather than a proportional implied volatility shift. Where a single shift or an absolute shift is used it should be at least as conservative as the proportional shifts. Any use of a single shift or an absolute shift should be reviewed and, if necessary, updated, on a regular basis.

7.9.31 A firm may choose to use a less detailed term structure than that in the table in BIPRU 7.9.32G, but the shifts used should be no less conservative than those set out in that table. For example, a firm that uses one <3 month band, rather than the two bands (≤1 month and 1-3 months) set out in the table, should use the most conservative shift set out in the table for the bands covered. In this example that shift is 30%.

7.9.32 Table: proportional implied volatility shifts

<table>
<thead>
<tr>
<th>Remaining life of option</th>
<th>Equities, foreign currency and commodities</th>
<th>Interest rates and CIUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1 month</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>&gt; 1 ≤ 3 months</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>&gt; 3 ≤ 6 months</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>&gt; 6 ≤ 9 months</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>&gt; 9 ≤ 12 months</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 1 ≤ 2 years</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 2 ≤ 4 years</td>
<td>4.5%</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 4 years</td>
<td>3%</td>
<td>9%</td>
</tr>
</tbody>
</table>

7.9.33 The size of the underlying price/rate shift depends on the asset class of the underlying as referred to in BIPRU 7.9.29G (3) and is set out in the table in BIPRU 7.9.34G.

7.9.34 Table: underlying price/rate shifts

<table>
<thead>
<tr>
<th>Underlying asset class</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities</td>
<td>±8%</td>
</tr>
<tr>
<td>Foreign currency</td>
<td>±8%</td>
</tr>
<tr>
<td>Commodities</td>
<td>±15%, (but a firm may use the percentages applicable under the commodity extended maturity ladder approach if it would qualify under BIPRU 7.4 (Commodity PRR) to use that approach).</td>
</tr>
</tbody>
</table>
BIPRU 7 : Market risk

Section 7.9 : Use of a CAD 1 model

<table>
<thead>
<tr>
<th>Underlying asset class</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rates</td>
<td>±100bp (but a firm may use the sliding scale of shifts by maturity as applicable to the interest rate duration method).</td>
</tr>
<tr>
<td>CIU</td>
<td>±32%, (but a firm may use the percentages applicable to the underlyings if the firm applies one of the CIU look through methods under BIPRU 7.7 (Position risk requirements for collective investment undertakings)).</td>
</tr>
</tbody>
</table>

7.9.35 The shifts outlined in the table in BIPRU 7.9.34G are the maximum shifts required; in addition there will be a number of intermediate shifts as a result of the minimum matrix size criteria set out in BIPRU 7.9.36G.

7.9.36 The minimum size of the scenario matrix should be 3x7, that is, three observations for implied volatility (including the actual implied volatility) and seven observations for the price of the underlying (including the actual price of the underlying). A firm should be able to justify its choice of granularity. Greater granularity may be required where the portfolio contains, for example, a large proportion of barrier options.

7.9.37 (1) A different scenario matrix should be set up for each underlying asset type in accordance with this paragraph.

(2) For equities (including single equities, baskets and indices) there should be a separate matrix for each national market or non-decomposed basket or non-decomposed multi-national index.

(3) For foreign currency products there should be a separate matrix for each currency pair where appropriate.

(4) For commodity products there should be a separate matrix for each commodity. The question whether two items are the same commodity should be decided in accordance with BIPRU 7.4 (Commodity PRR).

(5) For interest rate products there should be a separate matrix for each currency. In addition, a firm should not offset the gamma and vega exposures (except in the circumstances set out in BIPRU 7.9.38G) arising from any one of the following types of product with the gamma and vega exposures arising from any of the other products in the list:

(a) swaptions (options on interest rates);
(b) interest rate options (including options on exchange-traded deposit or bill futures);
(c) bond options (including options on exchange-traded bond futures); and
(d) other types of options required by the CAD 1 model waiver to form their own separate class of underlying asset.
(6) The other types of options referred to in (5)(d) will generally be exotic options that do not fall easily into (5)(a) - (c)).

(7) For CIUs there should be a separate matrix for each CIU fund. If the firm applies one of the CIU look through methods under BIPRU 7.7 (Position risk requirements for collective investment undertakings), then (1) - (6) apply based on what the underlyings are.

7.9.38 A firm may offset gamma and vega exposures arising from the products listed in BIPRU 7.9.37G (5) where it can demonstrate that it trades different types of interest rate-related options as a portfolio and takes steps to control the basis risk between different types of implied volatility. To the extent that this is the case an individual matrix is not required for each of the products listed in BIPRU 7.9.37G (5) and a combined scenario matrix may be used.

7.9.39 Where it is imprudent fully to offset long-dated and short-dated vega exposure owing to the risk of non-parallel shifts in the yield curve, a firm should use an appropriate number of scenario matrices to take account of non-parallel shifts in the yield curve according to the maturity of the option or underlying.

7.9.40 Following the steps outlined in BIPRU 7.9.29G, a firm then removes the portion of the values in the matrix that can be attributed to the effect that delta has had on the change in the value of the option (a process known as delta-stripping).

7.9.41 Once the effect of delta has been removed from the matrix, the values left in the matrix relate to gamma and vega risk. A firm’s PRR in relation to gamma and vega risk on the individual option is the absolute of the most negative cell in the scenario matrix produced. Where all cells are positive the PRR is zero. The total PRR for the gamma and vega risk on the portfolio of options is a simple sum of the individual requirements. This amount should then be fed into a firm’s PRR calculation.

7.9.42 The values that have been obtained for the delta-equivalent positions of instruments included in the scenario matrix should then be treated in the same way as positions in the underlying. Where the delta obtained relates to interest rate position risk, the delta equivalent positions may be fed into the firm’s interest rate pre-processing model to the extent that the positions fall within the scope of interest rate pre-processing models as set out in BIPRU 7.9.7G and provided that the firm’s CAD 1 model waiver allows the firm’s CAD 1 model to be used in this way. Alternatively, the delta obtained should be fed into the standard PRR calculations in BIPRU 7.2 (Interest rate PRR), BIPRU 7.3 (Equity PRR and basic interest rate PRR for equity derivatives), BIPRU 7.4 (Commodity PRR) or BIPRU 7.5 (Foreign currency PRR) as appropriate.

7.9.43 In using the scenario matrix approach, none of the steps followed will take specific account of a firm’s exposure to rho risk. Where a firm can demonstrate that for interest rate-related options the rho sensitivity is effectively included in the delta sensitivities produced, there is no separate capital requirement relating to rho. For all other options except commodity
options, a firm should calculate a rho sensitivity ladder by currency using its CAD 1 model and either feed this into the interest rate maturity method or interest rate duration method calculation or, where the firm's CAD 1 model waiver allows the firm's CAD 1 model to be used in this way, feed that ladder into an interest rate pre-processing model. Generally a CAD 1 model does not need to deal specifically with rho risk for commodity options.

### Interest rate pre-processing models

7.9.44 To the extent that a firm's CAD 1 model waiver is for the use of an interest rate pre-processing model the firm should use it for the pre-processing of the instruments set out in § BIPRU 7.9.7G, from which the residual positions are fed into the interest rate maturity method or interest rate duration method calculation.

7.9.45 There are a number of different methods of constructing pre-processing models but all should comply with § BIPRU 7.9.45G - § BIPRU 7.9.53G. All pre-processing models should generate positions that have the same sensitivity to defined interest rate changes as the underlying cash flows.

7.9.46 In an interest rate pre-processing model each transaction is converted into its constituent cash flows. The cash flows are discounted using zero coupon rates derived from the firm's own yield curves.

7.9.47 The cash flows are then calculated again using the firm's own yield curve shifted by the amount set out in § BIPRU 7.9.49G.

7.9.48 The difference between the present values calculated using the firm's own yield curve and those calculated using the firm's curve shifted under § BIPRU 7.9.47G are known as the sensitivity figures. Alternatively, a firm may shift the yield curve by one basis point and multiply up the sensitivity figures by the appropriate amount in order to achieve the shifts set out in § BIPRU 7.9.47G. These sensitivity figures are then allocated to each of the 15 maturity bands set out in § BIPRU 7.9.49G.

7.9.49 Table: yield curve shifts

<table>
<thead>
<tr>
<th>Zone</th>
<th>Modified duration</th>
<th>Assumed interest rate change (percentage points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 ≤ 1 months</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>&gt; 1 ≤ 3 months</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>&gt; 3 ≤ 6 months</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>&gt; 6 ≤ 12 months</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 1.0 ≤ 1.9 years</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>&gt; 1.9 ≤ 2.8 years</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>&gt; 2.8 ≤ 3.6 years</td>
<td>0.85</td>
</tr>
<tr>
<td>3</td>
<td>&gt; 3.6 ≤ 4.3 years</td>
<td>0.75</td>
</tr>
</tbody>
</table>
7.9.50 Sensitivity figures calculated by a firm using an interest rate pre-processing model are usually produced in the format of a net sensitivity by maturity bucket or by discrete gridpoint. These maturity buckets or gridpoints should then be allocated to the 15 bands set out in BIPRU 7.9.49G. The number of maturity buckets or gridpoints used to represent a yield curve can be referred to as granularity. The granularity should always be adequate to capture the material curve risk in the portfolio. Curve risk can be defined as the risk associated with holding long and short positions at different points along the yield curve.

7.9.51 Positive and negative amounts placed in each of the different maturity bands in BIPRU 7.9.49G under the sensitivity calculation in BIPRU 7.9.50G should then be netted off to produce one figure for each of the bands. There is no capital requirement for this netting process.

7.9.52 The individual sensitivity figures produced should then be input into the interest rate duration method calculation. The individual sensitivity figures for each band should be included with the other positions in the appropriate column in the table in BIPRU 7.2.65R (Table: Assumed interest rate change in the interest rate duration method).

7.9.53 Instead of using the approach in BIPRU 7.9.52G a firm may use an approach based on the interest rate maturity method, making appropriate adjustments to the sensitivity figures.
7.10 Use of a Value at Risk Model

Application

7.10.1 R BIPRU 7.10 applies to a firm with a VaR model permission.

Introduction and purpose

7.10.2 G BIPRU 7.10 provides details of when the appropriate regulator expects to allow a firm to use a VaR model (value at risk model) for the purpose of calculating part or all of its PRR. It introduces the concept of a VaR model, the methodology behind it and the link to the standard market risk PRR rules. It then goes on to detail the application and review process. The bulk of BIPRU 7.10 specifies the model standards and risk management standards that firms will be required to meet in order to use a VaR model. It further stipulates requirements for stress testing, backtesting, capital calculations and finally the reporting standards expected by the appropriate regulator.

7.10.3 G The models described in BIPRU 7.10 are described as VaR models in order to distinguish them from CAD 1 models, which are dealt with in BIPRU 7.9 (Use of a CAD 1 model). A VaR model is a risk management model which uses a statistical measure to predict profit and loss movement ranges with a confidence interval. From these results PRR charges can be calculated. The standards described in BIPRU 7.10, and which will be applied by the appropriate regulator, are based on and implement Annex V of the Capital Adequacy Directive.

7.10.4 G The aim of the VaR model approach is to enable a firm with adequate risk management systems to be subject to a PRR requirement that is more closely aligned with the risks to which it is subject than the PRR requirements generated by the standard market risk PRR rules. This provides a firm with an incentive to measure market risks as accurately and comprehensively as possible. It is crucial that those responsible for managing market risk at a firm should be aware of the assumptions and limitations of the firm’s VaR model.

7.10.5 G There are a number of general methodologies for calculating PRR using a VaR model. The appropriate regulator does not prescribe any one method of computing VaR measures. Moreover, it does not wish to discourage any firm from developing alternative risk measurement techniques. A firm should discuss the use of any alternative techniques used to calculate PRR with the appropriate regulator.
A firm should not use the VaR model approach to calculate PRR unless it has a VaR model permission. If a firm does not have such a permission it should use the standard market risk PRR rules. Therefore, a firm needs to apply for a VaR model permission in order to calculate its PRR using a VaR model instead of (or in combination with) the standard market risk PRR rules.

### Conditions for granting a VaR model permission

A waiver or other permission allowing the use of models in the calculation of PRR will not be granted if that would be contrary to the Capital Adequacy Directive and any VaR model permission which is granted will only be granted on terms that are compatible with the Capital Adequacy Directive. Accordingly, the appropriate regulator is likely only to grant a waiver or other permission allowing the use of models in the calculation of PRR if it is a VaR model permission or a CAD 1 model waiver.

BIPRU 7.10 sets out the minimum standards that the appropriate regulator expects firms to meet before granting a VaR model permission. The appropriate regulator will not grant a VaR model permission unless it is satisfied that the requirements of BIPRU 7.10 are met and it is satisfied about the procedures in place at a firm to calculate the model PRR. In particular the appropriate regulator will not normally grant a VaR model permission unless it is satisfied about the quality of:

1. the internal controls and risk management relating to the VaR model (see BIPRU 7.10.56G - BIPRU 7.10.82R);
2. the VaR model standards (see BIPRU 7.10.24R - BIPRU 7.10.55G); and
3. stress testing and backtesting procedures relating to a VaR model (see, in addition to (2), BIPRU 7.10.83R - BIPRU 7.10.112G).

The appropriate regulator recognises that the nature of VaR models will vary between firms. The scope of and the requirements and conditions set out in a VaR model permission may therefore differ in substance or detail from BIPRU 7.10 in order to address individual circumstances adequately. However any differences will only be allowed if they are compliant with the Capital Adequacy Directive. A VaR model permission will implement any such variation by modifying BIPRU 7.10. A VaR model permission may also include additional conditions to meet the particular circumstances of the firm or the model.

### The VaR model permission application and review process

Details of the general process for applying for a VaR model permission are set out in BIPRU 1.3 (Applications for advanced approaches). Because of the complexity of a VaR model permission, it is recommended that a firm discuss its proposed application with its usual contact at the appropriate regulator before it makes the application.

In order for a VaR model permission to be granted, the appropriate regulator is likely to undertake a review to ensure that it is adequate and appropriate for the PRR calculation.
The VaR model review process may be conducted through a series of visits covering various aspects of a firm's control and IT environment. Before these visits the appropriate regulator may ask the firm to provide some information relating to the firm's VaR model permission request accompanied by some specified background material. The VaR model review visits are organised on a timetable that allows the firm being visited sufficient time to arrange the visit and provide the appropriate pre-visit information.

As part of the process for dealing with an application for a VaR model permission the following may be reviewed: organisational structure and personnel; details of the firm's market position in the relevant products; revenue and risk information; valuation and reserving policies; operational controls; information technology systems; model release and control procedures; risk management and control framework; risk appetite and limit structure; future developments relevant to model recognition.

A visit will usually involve the appropriate regulator wishing to meet senior management and staff from the front office, financial control, risk management, operations, systems development, information technology and internal audit areas.

The appropriate regulator may complement its own review of a VaR model permission request with one or more reviews by a skilled person under section 166 of the Act (Reports by skilled persons). Such a review may also be used where a VaR model permission has been granted to ensure that the requirements and of the VaR model permission continue to be met.

**Conditions for a VaR model outside the United Kingdom**

Where a VaR model used outside the United Kingdom differs from that used in the United Kingdom the appropriate regulator may request details of the reasons for using different models.

Where a firm operates any part of its VaR model outside the United Kingdom, the appropriate regulator may take into account the results of the home supervisor's review of that model. The appropriate regulator may wish to receive information directly from the home supervisor.

**Scope of VaR models**

A firm must use the VaR model approach to calculate the PRR for a position:

1. to the extent that the risks in relation to that position are within the scope of the VaR model permission (see [standard PRR rules: Incorporation of the model output into the capital calculation](#)); and
2. if the position is of a type that comes within the scope of the VaR model permission.
In accordance with BIPRU 7.10.18R (1) a VaR model permission will set out the risk categories that it covers, which are expected to be one or more of the following types:

1. interest rate general market risk;
2. interest rate specific risk (in conjunction with interest rate general market risk);
3. equity general market risk;
4. equity specific risk (in conjunction with equity general market risk);
5. CIU risk;
6. foreign currency risk; and
7. commodity risk.

A VaR model permission will generally set out the broad classes of position within its scope. It may also specify how individual products within one of those broad classes may be brought into or taken out of the scope of the VaR model permission.

The broad classes of position referred to in BIPRU 7.10.20G are as follows:

1. linear products, which comprise securities with linear pay-offs (e.g. bonds and equities) and derivative products which have linear pay-offs in the underlying risk factor (e.g. interest rate swaps, FRAs, total return swaps);
2. European, American and Bermudan put and call options (including caps, floors and swaptions) and investments with these features (see BIPRU 7.6.18R (Table: Option PRR: methods for different types of option) for an explanation of some of these terms);
3. Asian options, digital options, single barrier options, double barrier options, look back options, forward starting options, compound options and investments with these features (see BIPRU 7.6.18R for an explanation of some of these terms); and
4. all other option based products (e.g. basket options, quantos, outperformance options, timing options) and investments with these features (see BIPRU 7.6.18R for an explanation of some of these terms).

The categorisation described in BIPRU 7.10.21G may be amended or replaced in the case of a particular firm’s VaR model permission.

It is the appropriate regulator’s view that, where a firm uses a VaR model for one risk category as described in BIPRU 7.10.19G, it is good practice to extend its model over time to calculate all of its PRR risk categories. A firm will typically be expected to have a realistic plan in place to do this.
Model standards: General

7.10.24 R A firm must comply with the minimum standards set out in BIPRU 7.10.26R - BIPRU 7.10.53R in calculating the model PRR.

7.10.25 G The appropriate regulator accepts that the scope and nature of VaR models varies across firms. This means that different firms are likely to calculate different estimates of market risk for the same portfolio. Systematic differences are due to length of data series, choice of methodology (historical or Monte Carlo simulation or variance-covariance method or a hybrid of these), differences in aggregating risks within and across broad risk factors, the treatment of options and other non-linear products and the specification of risk factors.

Model standards: Frequency of calculations and confidence level

7.10.26 R The model PRR must be computed at least once every business day, using a 99% one-tailed confidence limit.

7.10.27 G A firm may meet the requirement in BIPRU 7.10.26R by using different model parameters and employing a suitable adjustment mechanism to produce a figure which is equivalent to the figure produced using the parameters set out in BIPRU 7.10.26R. For example, a firm’s model may use a 95% one-tailed confidence limit if the firm has a mechanism to convert the output of the model to reflect a 99% one-tailed confidence limit.

7.10.27A R Stressed VaR must be calculated at least weekly, using a 99% one-tailed confidence limit.

Model standards: Holding period

7.10.28 R In calculating the VaR number, a firm must either use a ten business day holding period, or use a holding period converted to a ten business day holding period. However if the firm’s VaR model permission specifies that the firm must use a specific method, the firm must do so.

7.10.29 G If a firm uses a holding period other than 10 business days and converts the resulting VaR measure to a ten business day equivalent measure, it should be able to justify the choice of conversion technique. For example, the square root of time method will usually be justifiable. The appropriate regulator considers it good practice ultimately to move towards the application of an actual ten business day holding period, rather than using different holding periods.

Model standards: Observation period

7.10.30 R Subject to BIPRU 7.10.31R, the calculation of VaR numbers must be based on an effective historical observation period that is the longest possible consistent with a prudent VaR number. That period must be at least one year or such longer period as may be set out in the firm’s VaR model permission. However if using that prescribed observation period does not result in a sufficiently prudent way of calculating a VaR measure or a component of a
VaR measure the firm must shorten this observation period until the observation period is consistent with a prudent VaR number.

7.10.30A R The stressed VaR measure must be based on inputs calibrated to historical data from a continuous twelve-month period of significant financial stress relevant to the firm's portfolio. The choice of that historical period will be subject to the appropriate regulator's approval and will form part of a firm's VaR model permission.

7.10.30B R A firm must review the selection of the stressed VaR historical observation period at least annually.

Model standards: Data series

7.10.31 R A firm must 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 technique must be used. A firm must be able to demonstrate that the technique is appropriate and does not materially understate the modelled risks.

7.10.32 G A data series is unreliable if it has, for example, missing data points, or data points which contain stale data. Reliable data series may be difficult to obtain for new products (for example an instrument of longer dated tenor that did not previously trade) and for less liquid risk factors or positions. With regard to less liquid risk factors or positions, a firm may use 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.

7.10.33 R (1) If a weighting scheme or other similar method is used to calculate VaR numbers, then the effective observation period must be at least one year. Where a weighting scheme is used, the weighted average time lag of the individual observations must not be less than six Months.

(2) If a specific observation period or weighted average time lag is specified in a firm’s VaR model permission, the firm must comply with that if it is longer than the period specified in (1).

(3) However, if a weighting scheme in (1) or (2) would result in imprudent VaR numbers then the weighting scheme must be adjusted so that it is consistent with a prudent VaR number.

7.10.34 R A firm must update data sets in accordance with the frequency set out in its VaR model permission. If volatility in market prices or rates necessitates more frequent updating in order to ensure a prudent calculation of the VaR measure the firm must do so.

7.10.35 G The minimum updating frequency for the current VaR measure that can be specified in a VaR model permission is monthly.
Model standards: Aggregation across risk categories

7.10.36 R  
The process for determining and implementing correlations within and across risk categories must be sound, implemented with integrity and consistent with the terms of the firm’s VaR model permission.

7.10.37 R  
In aggregating VaR measures across risk or product categories, a firm must not use the square root of the sum of the squares approach 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 must simply be added in order to determine its aggregate VaR measure. But to the extent that a firm’s VaR model permission provides for a different way of aggregating VaR measures:

(1) that method applies instead of this rule; 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.

Model standards: Risk factors: Introduction

7.10.38 G  
Subject to ■BIPRU 7.10.53R (Model standards: Materiality), a VaR model should capture and accurately reflect all material risks arising on the underlying portfolio on a continuing basis insofar as those risks are within the scope of the VaR model permission. This should encompass general market risk and, to the extent that this comes within the scope of the VaR model permission, specific risk. A firm should ensure that the VaR model has sufficient risk factor granularity to be able to capture all such material risks and that these are properly documented and specified.

Model standards: Risk factors: General

7.10.39 R  
In the case of general market risk and risks with respect to which the standard market risk PRR rules do not distinguish between general market risk and specific risk, a firm’s VaR model must capture a sufficient number of risk factors in relation to the level of activity of the firm and in particular the risks set out in ■BIPRU 7.10.40R - ■BIPRU 7.10.44R.

7.10.39A R  
A firm must incorporate risk factors that are included in its pricing model in its VaR model. A firm’s VaR model must capture nonlinearities for options and other products, as well as correlation risk and basis risk. Where proxies for risk factors are used they must show a good track record for the actual position held. In addition, ■BIPRU 7.10.40 R to ■BIPRU 7.10.44 R apply for individual risk types.

7.10.39B R  
A firm with a VaR model permission must justify to the appropriate regulator any omissions of risk factors from its VaR model, if they are included in its pricing model.

7.10.40 R  
For interest rate risk, a VaR model must incorporate a set of risk factors corresponding to the interest rate curves in each currency in which the firm has interest rate sensitive positions. A firm must ensure that it captures the
variations of volatility of rates along the yield curve. In order to achieve this, a firm must divide the yield curves of, at a minimum, the major currencies and markets in which it has material interest rate exposures into a minimum of six maturity segments. The VaR model must also capture the risk of less than perfectly correlated movements between different yield curves.

For equity risk, a VaR model must use a separate risk factor at least for each of the equity markets in which the firm has material positions.

For foreign currency risk, a VaR model must incorporate risk factors corresponding to the individual foreign currencies, including gold, in which the firm's positions are denominated.

For commodity risk, the VaR model must use a separate risk factor at least for each commodity in which the firm has material positions. The VaR model must also capture the risk of less than perfectly correlated movements between similar, but not identical, commodities and the exposure to changes in forward prices arising from maturity mismatches. It must also take account of market characteristics, notably delivery dates and the scope provided to traders to close out positions.

1. For CIUs the actual foreign currency positions of the CIU must be taken into account.

2. A firm may rely on third party reporting of the foreign currency position of the CIU, where the correctness of this report is adequately ensured.

3. If a firm is not aware of the foreign currency positions in a CIU, this position must be carved out and treated in BIPRU 7.5.18R (Derivation of notional positions in CIUs for the foreign currency PRR).

4. A firm may use a look-through approach, under which the VaR model estimates are based on the underlying positions. If a firm uses a look through approach it should also ensure that all the relevant risk factors relating to the underlying positions are captured. BIPRU 7.7
BIPRU 7 : Market risk  

Section 7.10 : Use of a Value at Risk Model

(Position risk requirements for collective investment undertakings) sets out rules relating to the look through approach when a firm is using the VaR model approach.

Model standards: Risk factors: Specific risk

7.10.46  R

(1) If a firm’s VaR model covers the calculation of PRR with respect to specific risk the firm must meet the VaR specific risk minimum requirements in addition to the other requirements of § BIPRU 7.10.

(2) The VaR model must explain the historical price variation in the portfolios concerned.

(3) The VaR model must capture concentration in terms of magnitude and changes of composition of the portfolios concerned.

(4) The VaR model must be robust to an adverse environment.

(5) The VaR model must capture name-related basis risk. That is the firm must be able to demonstrate that the VaR model is sensitive to material idiosyncratic differences between similar but not identical positions.

(6) The VaR model must capture event risk.

(7) In addition to the other requirements in § BIPRU 7.10, a firm must have an approach in place to capture, in the calculation of its capital requirements, the incremental risk charge of its trading book positions that is incremental to the default and migration risk captured by the VaR measures, as specified in § BIPRU 7.10.55A.R to § BIPRU 7.10.55S.G and § BIPRU 7.10.107.R (Backtesting: Specific risk backtesting).

(8) [deleted]

7.10.47  G

This paragraph provides guidance on § BIPRU 7.10.46.R (2). Take as an example a VaR model based on a factor model or on a historical simulation model. The ability of the model to explain price variation could be demonstrated by a statistical comparison over the same period of time between actual price changes on the portfolio and the profit and loss impact of risk factors included within the model. A firm may wish to include an estimate of residual variation not explained by the model.

7.10.48  R

(1) [deleted]

(2) A firm’s VaR model must conservatively assess the risk arising from less liquid positions and positions with limited price transparency under realistic market scenarios. In addition, the VaR model must meet minimum data standards. Proxies must be appropriately conservative and may be used only where available data is insufficient or is not reflective of the true volatility of a position or portfolio.

7.10.49  R

As techniques and best practices evolve, a firm must avail itself of these advances.
Model standards: Materiality

A firm’s VaR model must capture accurately all material price risks for positions within the scope of its VaR permission, including risks relating to options or option-like positions. The firm must ensure that, if its VaR model does not accurately capture any material risk, the firm has capital resources adequate to cover that risk. These capital resources must be additional to those required to meet its capital resources requirement.

For example, BIPRU 7.10.53 might involve creating and documenting a prudent incremental PRR charge for the risk not captured in the VaR model and holding sufficient capital resources against this risk. In that case the firm should hold capital resources at least equal to its capital resources requirement as increased by adding this incremental charge to the model PRR. Alternatively the firm may make valuation adjustments through its profit and loss reserves to cover this material risk. These reserves should be transparent to senior management and auditable. The reserves should also be consistent with GENPRU 1.3 (Valuation) while not being excessive in relation to the principles of mark-to-market accounting. Therefore, a firm should be able to satisfy the appropriate regulator that all material risks are adequately addressed, whether this be through the VaR model, through taking an incremental PRR charge or through making an adjustment through profit and loss reserves.

A firm is expected ultimately to move towards full revaluation of option positions. For portfolios containing path dependent options, an instantaneous price shock applied to a static portfolio will be acceptable provided that the risks not captured by such an approach are not material. Where a risk is immaterial and does not justify further capital resources, that immaterial risk should still be documented.

Incremental risk charge: Scope and parameters

A firm must demonstrate that its incremental risk charge meets soundness standards comparable to those under the IRB approach, assuming a constant level of risk and adjusted, where appropriate, to reflect the impact of liquidity, concentrations, hedging and optionality.

The incremental risk charge must cover all positions which are subject to a capital charge for interest-rate specific risk in accordance with the firm’s VaR model permission, except securitisation positions and nth-to-default credit derivatives. Where permitted by its VaR model permission, a firm may choose consistently to include all listed equity positions and derivatives positions based on listed equities for which that inclusion is consistent with how the firm internally measures and manages risk, but the approach must reflect the impact of correlations between default and migration events, and it must
not reflect the impact of diversification between default and migration events and other market risk factors.

7.10.55C  

The *firm's* approach to capture the *incremental risk charge* must measure losses due to default and internal or external ratings migration at the 99.9% confidence interval over a capital horizon of one year.

7.10.55D  

The *firm's* correlation assumptions must be supported by the analysis of objective data in a conceptually sound framework. The approach to capture the *incremental risk charge* must appropriately reflect *issuer* concentrations. Concentrations that can arise within and across product classes under stressed conditions must also be reflected.

7.10.55E  

The *firm's* approach must be based on the assumption of a constant level of risk over the one-year capital horizon, implying that given individual *trading book positions* or sets of *positions* that have experienced default or migration over their liquidity horizon are re-balanced at the end of their liquidity horizon to attain the initial level of risk. Alternatively, a *firm* may choose consistently to use a one-year constant *position* assumption.

**Incremental risk charge: Liquidity horizons**

7.10.55F  

(1) The *firm's* liquidity horizons for calculating *incremental risk charge* must be set according to the time required to sell the *position* or to hedge all material and relevant price risks in a stressed market, having particular regard to the size of the *position*.

(2) Liquidity horizons must reflect actual practice and experience during periods of both systematic and idiosyncratic stresses. The liquidity horizon must be measured under conservative assumptions and must be sufficiently long that the act of selling or hedging, in itself, would not materially affect the price at which the selling or hedging would be executed.

7.10.55G  

The determination of the appropriate liquidity horizon for a *position* or set of *positions* is subject to a floor of three months. The determination of the appropriate liquidity horizon for a *position* or set of *positions* must take into account a *firm's* internal policies relating to valuation adjustments and the management of stale *positions*.

7.10.55H  

When a *firm* determines liquidity horizons for sets of *positions* rather than for individual *positions*, the criteria for defining sets of *positions* must be defined in a way that meaningfully reflects differences in liquidity. The liquidity horizons must be greater for *positions* that are concentrated, reflecting the longer period needed to liquidate those *positions*.

7.10.55I  

The liquidity horizon for a *securitisation* warehouse must reflect the time to build, sell and securitise the assets, or to hedge the material risk factors, under stressed market conditions.
Incremental risk charge: Hedges

(1) Hedges may be incorporated into the calculation of a firm’s incremental risk charge. Positions may be netted only when long and short positions refer to the same financial instrument.

(2) Hedging or diversification effects associated with long and short positions involving different instruments or different securities of the same obligor, as well as long and short positions in different issuers, may only be recognised by explicitly modelling gross long and short positions in the different instruments.

(3) A firm must reflect the impact of material 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 by product, seniority in the capital structure, internal or external rating, maturity, vintage and other differences in the instruments. A firm must reflect a hedge only to the extent that it can be maintained even as the obligor approaches a credit or other event.

For trading book positions that are hedged via dynamic hedging strategies, a rebalancing of the hedge within the liquidity horizon of the hedged position may be recognised only if the firm:

(1) chooses to model rebalancing of the hedge consistently over the relevant set of trading book positions;

(2) demonstrates that the inclusion of rebalancing results in a better risk measurement;

(3) demonstrates that the markets for the instruments serving as hedges are liquid enough to allow for this rebalancing even during periods of stress; and

(4) reflects in the capital charge any residual risks resulting from dynamic hedging strategies.

Incremental risk charge: Nonlinear positions and model risk

(1) The incremental risk charge must reflect the nonlinear impact of options, structured credit derivatives and other positions with material nonlinear behaviour with respect to price changes.

(2) The firm must also consider the amount of model risk inherent in the valuation and estimation of price risks associated with those products.

The incremental risk charge must be based on objective and up-to-date data.

Incremental risk charge: Validation

A firm must validate its approach to incremental risk charge. In particular, a firm must:
BIPRU 7 : Market risk

Section 7.10 : Use of a Value at Risk Model

(1) validate that its modelling approach for correlations and price changes is appropriate for its portfolio, including the choice and weights of its systematic risk factors;

(2) perform a variety of stress tests (not limited to the range of events experienced historically), including sensitivity analysis and scenario analysis, to assess the qualitative and quantitative reasonableness of the approach, with particular regard to the treatment of concentrations; and

(3) apply appropriate quantitative validation including relevant internal modelling benchmarks.

A firm's approach for incremental risk charge must be consistent with the firm's internal risk management methodologies for identifying, measuring, and managing trading risks.

Incremental risk charge: Documentation and frequency of calculation

A firm must document its approach for the incremental risk charge clearly, setting out its correlation and other modelling assumptions.

A firm must calculate its incremental risk charge at least weekly.

Incremental risk charge: Internal approaches based on different parameters

A firm may use an approach for incremental risk charge that does not comply with all the requirements in BIPRU 7.10.55A R to BIPRU 7.10.55P R, only if:

(1) such an approach is consistent with the firm's internal methodologies for identifying, measuring, and managing risks; and

(2) the firm can demonstrate that its approach results in a capital requirement that is at least as high as it would be if based on an approach in full compliance with the requirements in BIPRU 7.10.55A R to BIPRU 7.10.55P R.

The appropriate regulator will review at least annually any approach taken by the firm under BIPRU 7.10.55R R.

All price risk measure: General requirements

As part of its VaR model permission, the appropriate regulator may authorise a firm to use the all price risk measure to calculate an additional capital charge in relation to positions in its correlation trading portfolio if it meets the following minimum standards:

(1) it adequately captures all price risks at a 99.9% confidence interval over a capital horizon of one year under the assumption of a
constant level of risk, and adjusted, where appropriate, to reflect the impact of liquidity, concentrations, hedging and optionality;

(2) it adequately captures the following risks:

(a) the cumulative risk arising from multiple defaults, including the ordering of defaults, in tranched products;
(b) credit spread risk, including the gamma and cross-gamma effects;
(c) volatility of implied correlations, including the cross effect between spreads and correlations;
(d) basis risk, including both:
   (i) the basis between the spread of an index and those of its constituent single names; and
   (ii) the basis between the implied correlation of an index and that of bespoke portfolios;
(e) recovery-rate volatility, as it relates to the propensity for recovery rates to affect tranche prices; and
(f) to the extent that the all price risk measure incorporates benefits from dynamic hedging, the risk of hedge slippage and the potential costs of rebalancing those hedges.

7.10.55U The amount of the capital charge for the correlation trading portfolio calculated in accordance with the all price risk measure must not be less than 8% of the capital charge that would result from applying BIPRU 7.2.48L R to all positions in the correlation trading portfolio subject to the all price risk measure.

7.10.55V A firm may include in its all price risk measure positions that are jointly managed with positions in the correlation trading portfolio and would otherwise be included in the incremental risk charge. In that case, the firm must exclude these positions from the calculation of its incremental risk charge.

7.10.55W A firm must have sufficient market data to ensure that it fully captures the salient risks of the positions in its all price risk measure in accordance with the standards set out in BIPRU 7.10.55T R.

7.10.55X A firm must demonstrate through backtesting or other appropriate means that its all price risk measure can appropriately explain the historical price variation of these positions. A firm must be able to demonstrate to the appropriate regulator that it can identify the positions within its correlation trading portfolio, in relation to which it is authorised to use the all price risk measure, separately from those other positions in relation to which it is not authorised to do so.

7.10.55Y A firm must calculate the capital charge under the all price risk measure at least weekly.
**All price risk measure: Stress testing**

(1) For positions within its *correlation trading portfolio* in relation to which a *firm* may use the *all price risk measure*, a *firm* must regularly apply a set of specific, predetermined stress scenarios. These stress scenarios must examine the effects of stress to default rates, recovery rates, credit spreads, and correlations on the profit and loss of the *correlation trading portfolio*.

(2) A *firm* must apply the stress scenarios in (1) at least weekly and report the results to the *appropriate regulator* in accordance with BIPRU 7.10.129 R.

**Risk management standards: Introduction**

A *firm* with a complex portfolio is expected to demonstrate greater sophistication in its modelling and risk management than a *firm* with a simple portfolio. For example, a *firm* will be expected to consider, where necessary, varying degrees of liquidity for different risk factors, the complexity of risk modelling across time zones, product categories and risk factors. Some trade-off is permissible between the sophistication and accuracy of the model and the conservatism of underlying assumptions or simplifications.

A *firm* should be able to demonstrate that it meets the risk management standards set out in the *VaR model permission* on a legal entity basis. This is particularly important for a *subsidiary undertaking* in a *group* subject to matrix management where the business lines cut across legal entity boundaries.

**Risk management standards: General requirement**

A *firm* must have a conceptually sound risk management system surrounding the use of its *VaR model* that is implemented with integrity and that in particular meet the qualitative standards set out in BIPRU 7.10.59R - BIPRU 7.10.82R.
Risk management standards: Use requirement

7.10.59 A firm must base its model PRR calculation on the output of the VaR model which is used for its internal risk management rather than one developed specifically to calculate its PRR.

7.10.60 The VaR model must be fully integrated into the daily risk management process of the firm, and serve as the basis for reporting risk exposures to senior management of the firm.

7.10.61 A firm’s VaR model output should be an integral part of the process of planning, monitoring and controlling a firm’s market risk profile. The VaR model should be used in conjunction with internal trading and exposure limits. The links between these limits and the VaR model should be consistent over time and understood by senior management. The firm should regard risk control as an essential aspect of the business to which significant resources need to be devoted.

Risk management standards: Risk control unit

7.10.62 A firm must have a risk control unit which is independent from business trading units and which reports directly to senior management. It:

(1) must be responsible for designing and implementing the firm’s risk management system;

(2) must produce and analyse daily reports on the output of the VaR model and on the appropriate measures to be taken in terms of the trading limits; and

(3) conduct the initial and on-going validation of the VaR model.

Risk management standards: Senior management

7.10.63 A firm’s governing body and senior management must be actively involved in the risk control process, and the daily reports produced by the risk control unit must be reviewed by a level of management with sufficient authority to enforce both reductions of positions taken by individual traders as well as in the firm’s overall risk exposure.

7.10.64 It is the responsibility of a firm’s own management to ensure the accuracy and integrity of its VaR model. This responsibility includes obtaining appropriate independent validation of the VaR model.

Risk management standards: Skilled staff

7.10.65 A firm must have sufficient numbers of staff skilled in the use of sophisticated models in the trading, risk control, audit and back office areas.

Risk management standards: Controls and compliance

7.10.66 A firm must establish, document and maintain policies, controls and procedures to an auditable standard:
(1) concerning the operation of its VaR model approach; and
(2) for monitoring and ensuring compliance with the policies, controls and procedures in (1).

Risk management standards: Documentation

7.10.67 R A VaR model must be adequately documented.

7.10.68 G (1) An example of documents required by BIPRU 7.10.67R may be a manual that describes the basic principles of the risk management framework, clearly setting out empirical techniques, principles and assumptions used within it.
(2) This documentation should be of sufficient detail for the appropriate regulator to be able to develop a clear understanding of how the VaR model works from that documentation on its own.

Risk management standards: Track record

7.10.69 R A firm’s VaR model must have a proven track record of acceptable accuracy in measuring risk.

Risk management standards: Development validation

7.10.70 R Adequate procedures must be in place to ensure that model changes are validated before being introduced.

7.10.71 G The procedures in BIPRU 7.10.70R need not necessarily rely on backtesting using a back-run of recreated data.

Risk management standards: Stress testing

7.10.72 R (1) A firm must frequently conduct a rigorous programme of stress testing. The results of these tests must be reviewed by senior management and reflected in the policies and limits the firm sets.
(2) The programme must particularly address:
   (a) concentration risk;
   (b) illiquidity of markets in stressed market conditions;
   (c) one way markets;
   (d) event and jump to default risks;
   (e) non linearity of products;
   (f) deep out of the money positions;
   (g) positions subject to the gapping of prices;
   (h) full revaluation, or a reliable approximation, of positions;
   (i) instant shocks as well as effects of longer term periods of stress;
   (j) calibration changes under stressed conditions;
(k) secondary risk factors (such as volatility);
(l) basis risk;
(m) systemic and localised stresses; and
(n) other risks that may not be captured appropriately in the \textit{VaR model} (for example, recovery rate uncertainty, implied correlations and skew risk).

(3) The shocks applied must reflect the nature of the portfolios and the time it could take to hedge out or manage risks under severe market conditions.

\section*{Risk management standards: Valuation}

A firm must have procedures to ensure that the valuation of assets and liabilities is appropriate, that valuation uncertainty is identified and appropriate reserving is undertaken where necessary.

\section*{Risk management standards: Risk review}

At least once a year, a firm must conduct, as part of its regular internal audit process, a review of its risk management process. This review must include both the activities of the business trading units and of the independent risk control unit, and must be undertaken by suitably qualified staff independent of the areas being reviewed. This review must consider, at a minimum:

1. the adequacy of the documentation of the risk management system and process;
2. the organisation of the risk control unit;
3. the integration of \textit{market risk} measures into daily risk management;
4. the integrity of the management information system;
5. the process for approving risk pricing models and valuation systems used in front and back offices;
6. the validation of any significant changes in the risk management process;
7. the scope of risks and products captured by the \textit{VaR model};
8. the accuracy and completeness of position data;
(9) the process used to ensure the consistency, timeliness, independence and reliability of data sources (including the independence of such data sources);

(10) the accuracy and appropriateness of volatility and correlation assumptions;

(11) reserving policies and the accuracy of the valuation procedures and risk sensitivity calculations;

(12) the process employed to evaluate the VaR model's accuracy, including the programme of backtesting;

(13) the controls surrounding the development of the VaR model; and

(14) the process employed to produce the calculation of the model PRR.

**Risk management standards: Validation and backtesting**

7.10.76 The appropriate regulator will require a period of initial monitoring or live testing before a VaR model can be recognised. This will be agreed on a firm by firm basis.

7.10.77 In assessing the firm's VaR model and risk management, the appropriate regulator has regard to the results of internal model validation procedures used by the firm to assess the VaR model.

7.10.78 A firm must have processes in place to ensure that its VaR model has been adequately validated by suitably qualified parties independent of the development process to ensure that it is conceptually sound and adequately captures all material risks. This validation must be conducted when the VaR model is initially developed and when any significant changes are made to the VaR model. The validation must also be conducted on a periodic basis but especially where there have been any significant structural changes in the market or changes to the composition of the portfolio which might lead to the VaR model no longer being adequate. As techniques and best practices evolve, a firm must avail itself of these advances. Model validation must not be limited to backtesting, but must, at a minimum, also include the following:

(1) tests to demonstrate that any assumptions made within the VaR model are appropriate and do not underestimate or overestimate the risk (including testing of the validity of the assumptions and approximations underlying the VaR model);

(2) in addition to the regulatory backtesting programmes, a firm must carry out its own model validation tests in relation to the risks and structures of its portfolios, such as statistical validation techniques and other methods of measuring performance and validity;

(3) the use of hypothetical portfolios to ensure that the VaR model is able to account for particular structural features that may arise, for example material basis risks and concentration risk; and
(4) investigation of the limitations of the VaR model including testing of the accuracy of parts of the VaR model as well as of the whole.

7.10.79 In addition to regulatory backtesting programs, testing for model validation should be carried out using additional tests which may include for example:

(a) testing carried out using hypothetical changes in portfolio value that would occur were end of day positions to remain unchanged;

(b) testing carried out for longer periods than required for the regular backtesting programme (for example, 3 years);

(c) testing carried out using confidence intervals other than the 99 percent interval required under the quantitative requirements in BIPRU 7.10; and

(d) testing of parts of portfolios.

(2) 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.

7.10.80 Further material on backtesting can be found in BIPRU 7.10.91G - BIPRU 7.10.112G.

Risk management standards: Information technology

7.10.81 In assessing whether the VaR model is implemented with integrity as described in BIPRU 7.10.58R (Stress testing), the appropriate regulator will consider in particular the information technology systems used to run the model and associated calculations. The assessment may include:

(1) feeder systems; risk aggregation systems; time series databases; the VaR model system; stress testing system; the backtesting system including profit and loss cleaning systems where appropriate; data quality; reconciliations and checks on completeness of capture;

(2) system development, change control and documentation; security and audit trails; system availability and contingency procedures; network adequacy; and

(3) operational statistics relating to the VaR model production process, including, for example, statistics relating to timeliness, number of re-runs required and the reliability of data feeds.

Risk management standards: Controls

7.10.82 A firm must ensure that it has adequate controls relating to:

(1) the derivation of the model PRR;

(2) the integrity of the backtesting programme, including the calculation of the profit and loss account;
(3) the integrity and appropriateness of the VaR model, including the VaR model's geographic coverage and the completeness of data sources;

(4) the VaR model’s initial and ongoing development, including independent validation;

(5) the valuation models, including independent validation; and

(6) the adequacy, security and integrity of the information technology infrastructure.

### Stress testing

7.10.83 R [BIPRU 7.10.84G-BIPRU 7.10.90G relate to stress testing of a VaR model (see BIPRU 7.10.72R (Risk management standards: Stress testing)).]

7.10.84 G Stress testing is a way of identifying the risk to a firm posed by a breakdown of model assumptions or by low-probability events. Where stress tests reveal unacceptable vulnerability to a given set of circumstances, a firm should take prompt steps to manage those risks appropriately, for example by hedging against the outcome or reducing the size of the firm's exposure.

7.10.85 R A firm must have the capacity to run daily stress tests.

7.10.86 R Stress testing must involve identifying market scenarios or other low probability events in all types of risks that generate the greatest losses on a firm's portfolio.

7.10.87 R A firm must periodically and actively identify all the worst case scenarios that are relevant to its portfolio. Scenarios used must be appropriate to test the effect of adverse movements in market volatilities and correlations and the effect of any change in the assumptions underlying the VaR model. Scenarios involving low probability market events must nevertheless be plausible.

7.10.88 R Stress testing must capture non-linear effects.

7.10.89 R A firm must have procedures to assess and respond to the results produced from stress testing. In particular, stress testing results must be:

1. used to evaluate its capacity to absorb such losses or identify steps to be taken to reduce risk; and

2. communicated routinely to senior management and periodically to the governing body.

7.10.90 G A firm may want to conduct the more complex stress tests at longer intervals or on an ad hoc basis.
A firm must also carry out reverse stress tests.

**Backtesting: Introduction**

Backtesting is the process of comparing value-at-risk risk measures to portfolio performance. It is intended to act as one of the mechanisms for the ongoing validation of a firm’s VaR model and to provide incentives for firms to improve their VaR measures.

It is a condition for granting a VaR model permission that a firm should have a backtesting programme in place and should provide three months of backtesting history.

Backtesting conducted only at a whole portfolio level using a single measure of profit and loss has limited power to distinguish an accurate VaR model from an inaccurate one. Backtesting should therefore be regarded as an additional safeguard rather than a primary validation tool. Such testing does however form the basis of the appropriate regulator’s plus factor system. The test has been chosen as the basis of the backtesting regime because of its simplicity. A firm will therefore be expected to complement this backtesting with more granular backtesting analysis and involving more than one measure of profit and loss (i.e. both a profit and loss figure and a hypothetical profit and loss figure).

A firm must have the capacity to analyse and compare its profit and loss figures and hypothetical profit and loss figures to the VaR measure, both at the level of the whole portfolio covered by the VaR model permission and at the level of individual books that contain material amounts of risk.

At a minimum, backtesting of hypothetical profit and loss figures must be used for regulatory backtesting and also to calculate plus factors.

Backtesting of hypothetical profit and loss figures is also used for model validation and for reporting to the appropriate regulator.

**Backtesting: Basic testing requirements**

At a minimum, a firm must, on each business day, compare each of its 250 most recent business days' hypothetical profit and loss figures (ending with the business day preceding the business day in question) with the corresponding one-day VaR measures.

Generally the positions underlying the profit and loss account and VaR measures should not be materially different.

The one-day VaR measure for a particular business day is the VaR number for that business day calibrated to a one business day holding period and a 99% one-tailed confidence level.
Backtesting: Calculating the profit and loss

7.10.99 G

The ultimate purpose of backtesting is to assess whether capital is sufficient to absorb actual losses. Actual daily profit and loss means the day’s profit and loss arising from trading activities within the scope of the VaR model permission. This measure should, however, be ‘cleaned’ using R7.10.100 inclusion in profit and loss of non-modelled factors.

7.10.100 R

The profit and loss figure for a particular business day is the firm’s actual profit or loss for that day in respect of the trading activities within the scope of the firm’s VaR model permission, adjusted by stripping out:

1. fees and commissions;
2. brokerage;
3. additions to and releases from reserves which are not directly related to market risk (e.g. administration reserves); and
4. any inception profit exceeding an amount specified for this purpose in the firm’s VaR model permission (where inception profit is defined as any profit arising immediately on entering into a new transaction).

7.10.101 G

The definition of profit and loss figure may be amended or replaced in an individual VaR model permission if the firm can demonstrate to the appropriate regulator that the alternative method meets the spirit and purpose of the provisions in BIPRU 7.10 about the profit and loss figure.

7.10.102 G

The appropriate regulator 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.

Backtesting: Definition of backtesting exception

7.10.103 R

A backtesting exception is deemed to have occurred for any business day if the hypothetical profit and loss figure for that business day shows a loss, which in absolute magnitude, exceeds the one-day VaR measure for that business day. The only exception is if that business day is identified in the firm’s VaR model permission as giving rise to an excluded backtesting exception.

Backtesting: Obligation to notify the appropriate regulator

7.10.104 R

If a backtesting exception occurs, the firm must notify its usual supervisory contact at the appropriate regulator orally by close of business two business days after the business day for which the backtesting exception occurred. Within five business days following the end of each Month, the firm must submit to the appropriate regulator a written account of the previous Month’s backtesting exceptions (if any). This explanation must include the causes of the backtesting exceptions, an analysis of whether the backtesting
exception indicate a deficiency in the firm’s VaR model and the firm’s planned response (if any).

**Backtesting: Summary of the backtesting cycle**

1. This paragraph gives guidance on the backtesting calculation and reporting process in BIPRU 7.10.96R - BIPRU 7.10.104R.

2. Let the day on which the loss referred to in BIPRU 7.10.100R is made be 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 backtesting exceptions by close of business on day n+2.

3. Any backtesting exception initially counts for the purpose of the calculation of the plus factor even if subsequently the appropriate regulator agrees to exclude it under the process described in BIPRU 7.10.106G. Thus, where the firm experiences a backtesting exception and already has four or more backtesting exceptions for the previous 250 business days, changes to the multiplication factor arising from changes to the plus factor become effective at n+3 (using the time-line terminology in (2)).

**Backtesting: Process for disregarding backtesting exceptions**

1. This paragraph gives guidance on the process for excluding backtesting exceptions as referred to in BIPRU 7.10.103R.

2. The appropriate regulator will respond flexibly to backtesting exceptions. However, the appropriate regulator’s starting assumption will be that a backtesting exception should be taken into account for the purpose of the calculation of plus factors. If the firm believes that a backtesting exception should not count for that purpose, then it should seek a variation of its VaR model permission in order to exclude that particular backtesting exception. The appropriate regulator will then decide whether to agree to such a variation.

3. One example of when a firm’s backtesting exception 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.

**Backtesting: Specific risk backtesting**

1. If a firm’s VaR model permission covers specific risk, the firm must validate its VaR model through backtesting aimed at assessing whether specific risk is being accurately captured. This backtesting must be carried out in accordance with the provisions of its VaR model permission. If the VaR model permission provides for this backtesting to be performed on the basis of relevant sub-portfolios, these must be chosen in a consistent manner.

2. Specific risk backtesting involves the backtesting of a standalone specific risk VaR measure against a profit and loss series determined by reference to exposure risk factors categorised as specific risk. Alternatively specific risk
backtesting may take the form of regular backtesting of trading books and portfolios that are predominantly exposed to risk factors categorised as specific risk. The precise requirements for specific risk backtesting will be specified in the firm’s VaR model permission as will the definition of a specific risk backtesting exception.

### Backtesting: Multiple exceptions

7.10.109 **R** If ten or more backtesting exceptions or ten or more specific risk backtesting exceptions are recorded in a 250 business day period, a firm must take immediate corrective action.

7.10.110 **G** Where backtesting reveals severe problems with the basic integrity of the VaR model, the appropriate regulator may withdraw model recognition. In particular, if ten or more backtesting exceptions are recorded in a 250 business day period, the appropriate regulator may apply a plus factor greater than one or the appropriate regulator may consider revoking a firm’s VaR model permission. The appropriate regulator may also consider revoking a firm’s VaR model permission if ten or more specific risk backtesting exceptions occur in such a period.

### Backtesting: Hypothetical profit and loss

7.10.111 **R** A firm must perform backtesting against a hypothetical profit and loss figure with respect to each business day. A hypothetical profit and loss figure for a business day means the hypothetical profit and loss figure that would have occurred for that business day if the portfolio on which the VaR number for that business day is based remained unchanged.

7.10.112 **G**

1. A hypothetical profit and loss figure is based on the day’s change in the value of the same portfolio that was used to generate the value-at-risk forecast.

2. [deleted]

3. The firm may also need to calculate a hypothetical profit and loss figure in order to produce profit attribution reports and to analyse the cause of backtesting exceptions.

7.10.112A **G** The definition of hypothetical profit and loss figure may be amended or replaced in an individual VaR model permission if the firm can demonstrate to the appropriate regulator that the alternative method meets the spirit and purpose of the provisions in BIPRU 7.10 about the hypothetical profit and loss figure.

### Capital calculations: General

7.10.113 **R** The model PRR is, for any business day (the “relevant” business day), calculated in accordance with the following formula:

1. the higher of:
   1. the VaR number for the relevant business day; and
(b) the average of its daily VaR numbers for each of the 60 business days ending with the relevant business day, multiplied by the multiplication factor for the relevant business day; and

(2) (in the case of a VaR model permission that covers specific risk) the higher of:
   (a) the incremental risk charge for the relevant business day; and
   (b) the average of the twelve-week incremental risk charge; and

(3) the higher of:
   (a) the latest stressed VaR number; and
   (b) the average of the firm’s daily stressed VaR number for the 60 business days ending with the relevant business day, multiplied by the multiplication factor applied to the stressed VaR measure for the relevant business day; and

(4) (in the case of a VaR model permission that covers all price risk measure) the higher of:
   (a) the all price risk measure for the relevant business day; and
   (b) the average of the twelve-week all price risk measure.

For any day that is not a business day, the model PRR is the amount for the prior business day.

The VaR number for any business day means the VaR measure, in respect of the previous business day’s close-of-business positions in products coming within the scope of the VaR model permission, calculated by the VaR model and in accordance with BIPRU 7.10 and any methodology set out in the VaR model permission. The VaR number must not be calculated taking into account matters on the business day for which it is the VaR number.

The incremental risk charge for any business day means the incremental risk charge required under the provisions in BIPRU 7.10 about specific risk, in respect of the previous business day’s close-of-business positions with respect to which those provisions apply.

The all price risk measure for any business day means the all price risk measure required under the provisions in BIPRU 7.10 about specific risk for the correlation trading portfolio.

The following equation expresses BIPRU 7.10.113R mathematically:

\[
PRR_{\text{Var}} = \max \left\{ \text{Var}_{t}, \frac{1}{60} \sum_{i=1}^{60} \text{VaR}_{t-i} \right\} \times \max \left\{ \sum_{i=1}^{12} \text{VaR}_{t-i}, \sum_{i=1}^{12} \text{VaR}_{t-i} \right\} \times \max \left\{ \sum_{i=1}^{12} \text{IRC}_{t-i}, \sum_{i=1}^{12} \text{IRC}_{t-i} \right\} \times \max \left\{ \sum_{i=1}^{12} \text{APR}_{t-i}, \sum_{i=1}^{12} \text{APR}_{t-i} \right\}
\]

where:

(1) \( PRR_{\text{Var}} \) is a firm’s model PRR;

(2) \( \text{Var}_{t} \) represents the previous day’s value-at-risk figure;
(3) $\text{VaR}_{t-i}$ represents the value-at-risk calculated for $i$ business days earlier;

(4) $f$ is the multiplication factor for VaR;

(5) $\text{SVAR}_t$ represents the latest stressed VaR figure;

(6) $\text{SVAR}_{t-i}$ represents the stressed VaR calculated for $i$ business days earlier;

(7) $s$ is the multiplication factor for stressed VaR;

(8) $y$ is the number of times the stressed VaR was calculated in the last 60 business days;

(9) $\text{IRC}_t$ represents the latest incremental risk charge;

(10) $\text{IRC}_{t-i}$ represents the incremental risk charge calculated for $i$ business days earlier;

(11) $z$ is the number of times the incremental risk charge was calculated in the last 12 weeks;

(12) $\text{APR}_t$ represents the latest all price risk measure;

(13) $\text{APR}_{t-i}$ represents the all price risk measure calculated for $i$ business days earlier; and

(14) $w$ is the number of times the all price risk measure was calculated in the last 12 weeks.

**Capital calculations: Multiplication factors**

7.10.118 **R**

The multiplication factor, for VaR and stressed VaR, for any business day is the sum of the minimum multiplication factor and the plus factor for that day.

7.10.119 **R**

The minimum multiplication factor, for VaR and stressed VaR, is three or any higher amount the VaR model permission defines it as.

7.10.120 **G**

The minimum multiplication factor, for VaR and stressed VaR, will never be less than three. If the appropriate regulator does set the minimum multiplication factor, for VaR and stressed VaR, above three the VaR model permission will have a table that sets out the reasons for that add on and specify how much of the add on is attributable to each reason (see 7.10.121R). If there are weaknesses in the VaR model that may otherwise be considered a breach of the minimum standards referred to in 7.10.24R the appropriate regulator may apply such an add on to act as a mitigant for those weaknesses.

7.10.121 **R**

Something that would otherwise be a breach of the minimum standards in 7.10.26R - 7.10.53R is not a breach to the extent that that thing is identified in the firm's VaR permission as a reason for an increase in the minimum multiplication factor, for VaR and stressed VaR, above 3.
Typically, any add on will be due to a specific weakness in systems and controls identified during the appropriate regulator’s review that the appropriate regulator does not consider material enough to justify withholding overall model recognition. The firm will be expected to take action to address the reasons for any add on. The appropriate regulator will then review these periodically and, where satisfactory action has been taken, the add on will be removed through a variation of the VaR model permission.

The plus factor system is designed so that the more often a VaR model has under-predicted losses in the past, the higher should be the capital requirement based on the VaR model. It is intended to provide a capital incentive for the firm to continue to improve the accuracy of its VaR model.

The table in BIPRU 7.10.125R sets out the plus factors to be added to the minimum multiplication factor, for VaR and stressed VaR, for any business day. It is based on the number of backtesting exceptions that occurred during the backtesting period as referred to in BIPRU 7.10.96R (Backtesting: Basic testing requirements) ending three business days preceding the business day for which the model PRR is being calculated.

### Table: Backtesting plus factors

<table>
<thead>
<tr>
<th>Zone</th>
<th>Number of recorded exceptions</th>
<th>Plus factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>4 or less</td>
<td>0.00</td>
</tr>
<tr>
<td>Yellow</td>
<td>5</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>0.85</td>
</tr>
<tr>
<td>Red</td>
<td>10 or more</td>
<td>1.00</td>
</tr>
</tbody>
</table>

A VaR model that correctly predicts a one-tailed 99% confidence level is expected to produce, on average, 2.5 backtesting exceptions every 250 days. Random events may cause the number of backtesting exceptions actually observed to vary. The plus factor system is designed to take this into account. Hence plus factors are only imposed on the firm if it has five or more recorded backtesting exceptions. Therefore, where a backtesting exception appears to be caused simply by chance, it will not be appropriate for a VaR model permission to be varied to exclude that backtesting exception as described in BIPRU 7.10.106G (Backtesting: Process for disregarding backtesting exceptions).

**Capital calculations: Specific risk surcharge: transitional requirements**

Firms who gained model recognition before 1 January 2007 will be permitted to calculate PRR for specific risk in accordance with the methodology they were permitted to use immediately before that date.
instead of capturing event and default risk in their models (see BIPRU TP 14 (Market risk: VaR models)). This treatment will not be available to a firm that gains model recognition after that date.

### Reporting procedures and requirements

A VaR model permission will contain requirements for what the firm should report to the appropriate regulator and the procedures for reporting. The precise requirements will vary from VaR model permission to VaR model permission. BIPRU 7.10.129- BIPRU 7.10.130 set out what the appropriate regulator regards as the standard requirements.

A firm must, no later than the number of business days after the end of each quarter specified in the VaR model permission for this purpose, submit, in respect of that quarter, a report to the appropriate regulator about the operation of the VaR model, the systems and controls relating to it and any changes to the VaR model and those systems and controls. Each report must outline as a minimum the following information in respect of that quarter:

1. methodological changes and developments to the VaR model;
2. the introduction of all new pricing models used in connection with the VaR model and any changes to any pricing models used in connection with the VaR model, including details of any material associated valuation or risk management issues;
3. a summary of backtesting performance against profit and loss figures (if calculated) and hypothetical profit and loss figures, which must be provided in electronic format as stipulated by the VaR model permission;
4. (if the VaR model permission covers specific risk) the results of the specific risk backtesting including specific risk backtesting exceptions;
5. any change to any feeder or pre-processing systems in connection with the VaR model, including changes to any of the systems set out in the list described in BIPRU 7.10.131G (1) (as it exists at the date of the VaR model permission), and any introduction of a new such system;
6. any changes to the products coming within the scope of the VaR model;
7. any material changes or additions to any of the matters referred to in the firm’s internal documentation in relation to the VaR model (as it exists at the date of the VaR model permission) or to any matters subsequently notified under (7);
8. any changes in senior management;
9. an up-to-date list of products covered by the VaR model permission showing all changes made since the VaR model permission was granted;
10. where applicable (nil returns are not required), details of:
(a) any use of a changed historical observation period in accordance with BIPRU 7.10.30R or any change in the use of any weighting scheme as described in BIPRU 7.10.33R;
(b) any data series becoming unreliable as described in BIPRU 7.10.31R and any subsequent use of alternative value-at-risk measurement techniques;
(c) the frequency of updating data sets being increased in accordance with BIPRU 7.10.34R;
(d) any change in the method employed to derive 10-day VaR measure (see BIPRU 7.10.28R);
(e) to the extent that the use of correlations is permitted by a firm’s VaR model permission, a summary of any notifications that are required under BIPRU 7.10.37R; and
(f) the VaR model not accurately capturing risks (as referred to in BIPRU 7.10.53R) and any steps taken under BIPRU 7.10.53R; and

(11) the results of the stress tests on the firm’s correlation trading portfolio under BIPRU 7.10.55ZR, including a comparison to the current capital charge.

7.10.130  A firm must provide to, and discuss with, the appropriate regulator details of any significant planned changes to the VaR model before those changes are implemented. These details must include information about the nature of the change and an estimate of the impact on VaR numbers and the incremental risk charge.

Updating the VaR model permission

The VaR model permission will generally contain a list of the following:

(1) feeder systems and pre-processing systems;
(2) products covered by the VaR model permission; and
(3) the firm’s internal documentation in relation to the VaR model.

7.10.132  The information in BIPRU 7.10.131G will vary over time. It is therefore not included in a VaR model permission as a rule but for information only. The appropriate regulator will update that information regularly in accordance with information supplied under BIPRU 7.10.129R. That updating will not amount to a variation of the VaR model permission.

Link to standard PRR rules: Incorporation of the model output into the capital calculation

A VaR model permission will modify GENPRU 2.1.52R (Calculation of the market risk capital requirement) to provide that a firm should calculate its market risk capital requirement in accordance with BIPRU 7.10 to the extent set out in the VaR model permission.
By modifying GENPRU 2.1.52 R (Calculation of the market risk capital requirement) to allow the firm to use the VaR model to calculate all or part of its PRR for certain positions, the appropriate regulator is treating it like an application rule. The modification means that the PRR calculation set out in BIPRU 7.10 supersedes the standard market risk PRR rules for products and risks coming within the scope of the VaR model permission.

To the extent that a position does not fall within the scope of a firm's VaR model permission the firm must calculate the PRR under the standard market risk PRR rules or, as applicable, those provisions as modified by the firm's CAD 1 waiver.

(1) This rule applies to a position of a type that comes within the scope of a firm's VaR model permission.

(2) Subject to BIPRU 7.10.136A R, if, where the standard market risk PRR rules apply, a position is subject to a PRR charge and the firm's VaR model permission says that it covers the risks to which that PRR charge relates, the firm must, for those risks, calculate the PRR for that position under the VaR model approach rather than under the standard market risk PRR rules.

(3) If, where the standard market risk PRR rules apply, a position is subject to one or more PRR charges and the firm's VaR model permission does not cover all the risks to which those PRR charges relate, the firm must calculate the PRR for that position under the VaR model approach (for those risks that are covered) and under the standard market risk PRR rules (for those other risks).

(4) Where the standard market risk PRR rules distinguish between specific risk and general market risk a firm's VaR model permission covers specific risk to the extent that it says it does. If the firm's VaR model permission does not cover specific risk, BIPRU 7.10.143R and BIPRU 7.10.144R apply.

(5) If a firm's VaR model permission covers positions in CIUs it covers specific risk with respect to those positions.

A firm must calculate the market risk capital requirement for securitisation positions and positions in the correlation trading portfolio in accordance with the standard market risk PRR rules, with the exception of those positions subject to the all price risk measure.

A firm may exclude from the VaR model approach immaterial risks within the scope of its VaR model approach. If a firm does so it must instead apply the standard market risk PRR rules to those risks.

(1) If a firm calculates its market risk capital requirement using a combination of the standard market risk PRR rules and either the VaR model approach or the VaR model approach with the CAD 1 model approach the PRR from each method must be added together.
(2) A firm must take appropriate steps to ensure that all of the approaches are applied in a consistent manner.

7.10.139 An example of the effect of BIPRU 7.10.138R is that where a firm normally calculates the PRR for a particular portfolio using a VaR model, a firm should not switch to the standard market risk PRR rules purely to achieve a more attractive PRR.

7.10.140 If:

(1) the standard market risk PRR rules provide for a choice of which of the PRR charges to use or specify that one type must be used in some circumstances and that another type must be used in other circumstances;

(2) one of those types is disapplied under BIPRU 7.10.136R; and

(3) the other type is not disapplied;

the firm:

(4) must use the VaR model approach if under the standard market risk PRR rules the firm must use the standard market risk PRR rules in (2); and

(5) may use the VaR model approach if under the standard market risk PRR rules the firm may use the standard market risk PRR rules in (2).

7.10.141 The treatment of a convertible is an example of a situation in which BIPRU 7.10.140R applies. The table in BIPRU 7.3.3R (Table: Instruments which result in notional positions) shows that there are circumstances in which under the standard market risk PRR rules a firm should calculate an equity PRR and that there are circumstances in which a firm may choose between calculating an equity PRR and an interest rate PRR. BIPRU 7.10.140R would be relevant if a firm’s VaR model permission only covers one of equity risk and interest rate risk.

7.10.142 The standard market risk PRR rules for the option PRR are only disapplied to the extent that the derived positions arising under BIPRU 7.6.13R (Table: Derived positions) come within the scope of the VaR model permission.

Link to standard PRR rules: General market risk only

7.10.143 If a firm’s VaR model permission covers interest rate general market risk but not interest rate specific risk, the firm must calculate the interest rate PRR so far as it relates to interest rate specific risk in accordance with the standard market risk PRR rules except that the firm must not use the basic interest rate PRR calculation in BIPRU 7.3.45R (Basic interest rate calculation for equity instruments).
**Link to standard PRR rules: General market risk only**

7.10.144 If a firm's VaR model permission covers equity general market risk but not equity specific risk, the firm must calculate the equity PRR so far as it relates to equity specific risk in accordance with the standard market risk PRR rules except that the PRR for equity specific risk must be calculated under the standard equity method.

**Link to standard PRR rules: Miscellaneous**

7.10.145 (1) To the extent that a firm's VaR model permission does not allow it to use an approach set out in BIPRU 7.10 the relevant provisions in BIPRU 7.10 do not apply to that firm.

(2) If a provision of the Handbook refers to BIPRU 7.10, that reference must, in the case of a particular firm with a VaR model permission, be treated as excluding provisions of BIPRU 7.10 that do not apply under the VaR model permission and as taking into account any modifications to BIPRU 7.10 made by the VaR model permission. Such references also include requirements and conditions contained in the VaR model permission but not BIPRU 7.10 and to the rules modified by the VaR model permission.

**Requirement to use value at risk methodology**

7.10.146 A VaR model must be a value-at-risk model. It must provide an estimate of the worst expected loss on a portfolio resulting from market movements over a period of time with the specified confidence level.

**Ceasing to meet the requirements of BIPRU 7.10**

7.10.147 If a firm ceases to meet any of the requirements set out in BIPRU 7.10, the appropriate regulator's policy is that the VaR model permission should cease to have effect. In part this will be achieved by making it a condition of a firm's VaR model permission that it complies at all times with the minimum standards referred to in BIPRU 7.10.26R - BIPRU 7.10.53R. Even if they are not formally included as conditions, the appropriate regulator is likely to consider revoking the VaR model permission if the requirements are not met.

7.10.148 If a firm ceases to meet the conditions or requirements in its VaR model permission or BIPRU 7.10 it must notify the appropriate regulator at once.

**Changes to a VaR model**

7.10.149 A firm may change its VaR model to such extent as it sees fit, except that it must not make a change that (either on its own or together with other changes since the date of VaR model permission) would:

1. be inconsistent with VaR model permission or BIPRU 7.10; or

2. mean that backtesting in accordance with BIPRU 7.10 and the VaR model permission would result in the use of data that is inappropriate for the purposes of measuring the performance of the VaR model.
7.11 Credit derivatives in the trading book

Scope

7.11.1 This section applies to the treatment of credit derivatives in the trading book.

Establishment of positions created by credit derivatives: Treatment of the protection seller

7.11.2 BIPRU 7.11.3R - BIPRU 7.11.11R relate to the treatment of the protection seller for the purpose of calculating the securities PRR. Positions are determined in accordance with BIPRU 7.11.4R - BIPRU 7.11.11R.

7.11.3 (1) When calculating the PRR of the protection seller, unless specified differently by other rules and subject to (2), the notional amount of the credit derivative contract must be used. For the purpose of calculating the specific risk PRR charge, other than for total return swaps, the maturity of the credit derivative contract is applicable instead of the maturity of the obligation.

(2) When calculating the PRR of the protection seller, a firm may choose to replace the notional value of the credit derivative by the notional value adjusted for changes in the market value of the credit derivative since trade inception.

7.11.4 A total return swap creates a long position in the general market risk of the reference obligation and a short position in the general market risk of a zero-specific-risk security with a maturity equivalent to the period until the next interest fixing and which is assigned a 0% risk weight under the standardised approach to credit risk. It also creates a long position in the specific risk of the reference obligation.

7.11.5 A credit default swap does not create a position for general market risk. For the purposes of specific risk, a firm must record a synthetic long position in an obligation of the reference entity, unless the derivative is rated externally and meets the conditions for a qualifying debt security, in which case a long position in the derivative is recorded. If premium or interest payments are due under the product, these cash flows must be represented as notional positions in zero-specific-risk securities.
7.11.6 R A single name credit linked note creates a long position in the general market risk of the note itself, as an interest rate product. For the purpose of specific risk, a synthetic long position is created in an obligation of the reference entity. An additional long position is created in the issuer of the note. Where the credit linked note has an external rating and meets the conditions for a qualifying debt security, a single long position with the specific risk of the note need only be recorded.

7.11.7 R In addition to a long position in the specific risk of the issuer of the note, a multiple name credit linked note providing proportional protection creates a position in each reference entity, with the total notional amount of the contract assigned across the positions according to the proportion of the total notional amount that each exposure to a reference entity represents. Where more than one obligation of a reference entity can be selected, the obligation with the highest risk weighting determines the specific risk.

7.11.8 R Where a multiple name credit linked note has an external rating and meets the conditions for a qualifying debt security, a single long position with the specific risk of the note need only be recorded.

7.11.9 R A first-asset-to-default credit derivative creates a position for the notional amount in an obligation of each reference entity. If the size of the maximum credit event payment is lower than the PRR requirement under the method in the first sentence of this rule, the maximum payment amount may be taken as the PRR requirement for specific risk.

7.11.10 R A second-asset-to-default credit derivative creates a position for the notional amount in an obligation of each reference entity less one (that with the lowest specific risk PRR requirement). If the size of the maximum credit event payment is lower than the PRR requirement under the method in the first sentence of this rule, this amount may be taken as the PRR requirement for specific risk.

7.11.11 R If an nth-to-default derivative is externally rated and meets the conditions for a qualifying debt security, then the protection seller need only calculate one specific risk charge reflecting the rating of the derivative. The specific risk charge must be based on the securitisation PRAs in BIPRU 7.2 as applicable.

Establishment of positions created by credit derivatives: Treatment of the protection buyer

For the protection buyer, the positions are determined as the mirror principle of the protection seller, with the exception of a credit linked note (which entails no short position in the issuer). If at a given moment there is a call option in combination with a step-up, such moment is treated as the maturity of the protection. In the case of first-to-default credit derivatives and nth to default credit derivatives, the treatment in BIPRU 7.11.12AR and BIPRU 7.11.12B R applies instead of the mirror principle.

[Note: CAD Annex I point 8.B]
Where a firm obtains credit protection for a number of reference entities underlying a credit derivative under the terms that the first default among the assets will trigger payment and that this credit event will terminate the contract, the firm may off-set specific risk for the reference entity to which the lowest specific risk percentage charge among the underlying reference entities applies according to the Table in BIPRU 7.2.44R.

[Note: CAD Annex I point 8.B]

Where the nth default among the exposures triggers payment under the credit protection, the protection buyer may only off-set specific risk if protection has also been obtained for defaults 1 to n-1 or when n-1 defaults have already occurred. In those cases, the methodology set out in BIPRU 7.11.12AR for first-to-default credit derivatives must be followed, appropriately modified for nth-to-default products.

[Note: CAD Annex I point 8.B]

Deriving the net position in each debt security: Credit derivatives

A firm must calculate both the net long and the net short positions in credit derivatives by applying BIPRU 7.2.36 R and BIPRU 7.2.37 R and, where applicable, BIPRU 7.2.42A R to BIPRU 7.2.42C R or BIPRU 7.11.13 R to BIPRU 7.11.17 R.

Recognition of hedging provided by credit derivatives

(1) BIPRU 7.11.14R - BIPRU 7.11.17R relate to specific risk PRR for trading book positions hedged by credit derivatives for the purposes of the calculation of the securities PRR.

(2) A firm may take an allowance for protection provided by credit derivatives for the purposes in (1) in accordance with the principles set out in the rules referred to in (1).

(3) [deleted]

(1) A firm may take full allowance when the value of two legs always move in the opposite direction and broadly to the same extent.

(2) This will be the case in the following situations:

(a) the two legs consist of completely identical instruments; or

(b) a long cash position is hedged by a total rate of return swap (or vice versa) and there is an exact match between the reference obligation and the underlying exposure (i.e., the cash position).

(3) The maturity of the swap itself may be different from that of the underlying exposure for the purposes of (2)(b).

(4) In these situations, a firm must not apply a specific risk PRR to either side of the position.
An 80% offset may be applied when the value of two legs always move in the opposite direction and where there is an exact match in terms of the reference obligation, the maturity of both the reference obligation and the credit derivative, and the currency of the underlying exposure. In addition, key features of the credit derivative contract must not cause the price movement of the credit derivative materially to deviate from the price movements of the cash position. To the extent that the transaction transfers risk, an 80% specific risk offset may be applied to the side of the transaction with the higher PRR, while the specific risk requirements on the other side are zero.

(1) A firm may take partial allowance when the value of two legs usually move in the opposite direction. This would be the case in the situations set out in (2) - (4).

(2) The first situation referred to in (1) is that the position falls under BIPRU 7.11.16 R (2)(b) but there is an asset mismatch between the reference obligation and the underlying exposure. However, the positions meet the following requirements:

(a) the reference obligation ranks pari passu with or is junior to the underlying obligation; and

(b) the underlying obligation and reference obligation share the same obligor and have legally enforceable cross-default or cross-acceleration clauses.

(3) The second situation referred to in (1) is that the position falls under BIPRU 7.11.14 R (2)(a) or BIPRU 7.11.15 R but there is a currency or maturity mismatch between the credit protection and the underlying asset (currency mismatches must be included in the normal reporting with respect to the foreign currency PRR).

(4) The third situation referred to in (1) is that the position falls under BIPRU 7.11.15 R but there is an asset mismatch between the cash position and the credit derivative. However, the underlying asset is included in the (deliverable) obligations in the credit derivative documentation.

(5) In each of those situations, rather than adding the specific risk PRR requirements for each side of the transaction, only the higher of the two PRR requirements applies.

In all situations not falling under BIPRU 7.11.14 R - BIPRU 7.11.16 R, a firm must assess a specific risk PRR charge against both sides of the positions.

Specific risk calculation

[deleted]

[deleted]

The specific risk portion of the interest rate PRR for credit derivatives in the trading book must be calculated in accordance with BIPRU 7.2.43 R to
| 7.11.21 R | [deleted] |
| 7.11.22 R | [deleted] |
| 7.11.23 R | [deleted] |
| 7.11.24 R | [deleted] |
| 7.11.25 R | [deleted] |
| 7.11.26 R | [deleted] |
| 7.11.27 R | [deleted] |
| 7.11.28 R | [deleted] |
| 7.11.29 R | [deleted] |
| 7.11.30 R | [deleted] |
| 7.11.31 R | [deleted] |
| 7.11.32 R | [deleted] |
| 7.11.33 R | [deleted] |
| 7.11.34 R | [deleted] |
| 7.11.35 R | [deleted] |
| 7.11.36 R | [deleted] |
| 7.11.37 R | [deleted] |

[deleted]
<table>
<thead>
<tr>
<th>7.11.38</th>
<th>R</th>
<th>[deleted]</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.11.39</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.40</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.41</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.42</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.43</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.44</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.45</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.46</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.47</td>
<td>G</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.48</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.49</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.50</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.51</td>
<td>R</td>
<td>[deleted]</td>
</tr>
<tr>
<td>7.11.52</td>
<td>R</td>
<td>[deleted]</td>
</tr>
</tbody>
</table>
Section 7.11: Credit derivatives in the trading book

Valuation

7.11.59 [deleted]

Other risks relating to credit derivatives

7.11.60 A firm must be able to describe, demonstrate and explain to the appropriate regulator its trading strategies in relation to credit derivatives both in theory and in practice.

7.11.61 [deleted]

7.11.62 [deleted]

7.11.63 [deleted]