

## Chapter 13

The calculation of  
counterparty risk exposure  
values for financial derivatives,  
securities financing transactions  
and long settlement  
transactions

## 13.1 Application and Purpose

### Application

- 13.1.1 **R** ■ BIPRU 13 applies to a *BIPRU firm*.
- 13.1.2 **R**
- (1) ■ BIPRU 13 applies to items in the *non-trading book*.
  - (2) ■ BIPRU 13 applies to *trading book* items for the purposes of ■ BIPRU 14.
- 13.1.3 **G** The requirement to calculate the *counterparty credit risk* capital charge for *trading book* items is set out in ■ BIPRU 14.

### Purpose

- 13.1.4 **G** Pursuant to the third paragraph of article 95(2) of the *EU CRR*, ■ BIPRU 13 implements:
- (1) Article 78(2) and (4);
  - (2) point 3 of Part 1, and Parts 2, 3, 5, 6 and 7 of Annex III; and
  - (3) Annex IV;
- of the *Banking Consolidation Directive*.
- 13.1.5 **G** ■ BIPRU 13.3 sets out the calculations of *exposure values* for *financial derivative instrument*, *long settlement transactions* and certain other transactions under the *standardised approach* and, subject to ■ BIPRU 4, under the *IRB approach*. ■ BIPRU 13.4, ■ 13.5 and ■ 13.6 set out the provisions relating to the *CCR mark to market method*, the *CCR standardised method* and the *CCR internal model method* in turn.
- 13.1.6 **G** ■ BIPRU 13.8 sets out a summary of the treatment of *securities financing transactions*.



## 13.2 Unusual Transactions

- 13.2.1** **R** If the calculation of the amount of an *exposure* or of a combination of *exposures* under ■ BIPRU 13 would materially understate the amount of the *counterparty credit risk* the *firm* must increase the amount of the *credit risk capital requirement* by an amount sufficient to compensate for that understatement.
- 13.2.2** **R** If a *firm* in relation to an *exposure* covered by ■ BIPRU 13:
- (1) has an *exposure* of a non-standard type; or
  - (2) an *exposure* that is part of a non-standard arrangement; or
  - (3) has an *exposure* that, taken together with other *exposures* (whether or not they are subject to ■ BIPRU 13), gives rise to a non-standard *counterparty credit risk*; or
  - (4) is subject to the *rule* in ■ BIPRU 13.2.1 R;
- it must notify the *appropriate regulator* as soon as practicable of that fact, the counterparty involved, the nature of the *exposure* or arrangement and the treatment of those *exposures* it has adopted for the purpose of the calculation of the *credit risk capital requirement*.
- 13.2.3** **R** ■ BIPRU 13.2.2 R does not apply to *exposures* which are within the scope of a *firm's CCR internal model method permission*.
- 13.2.4** **R** A *firm* must judge the question of what is non-standard for the purposes of ■ BIPRU 13.2.2 R by reference to the standards:
- (1) prevailing at the time the *rule* is being applied; and
  - (2) of *firms* generally who carry on business which might give rise to *exposures* covered by ■ BIPRU 13 rather than merely by reference to the *firm's* own business.
- 13.2.5** **G** The methodologies which have been developed assume instruments with standard characteristics. There are many examples, however, of instruments which, although based on a standard contract, contain structural features which make the *rules*, as stated, inappropriate. In such circumstances a *firm* should consult the *appropriate regulator*.

## 13.3 Calculation of exposure values for financial derivatives and long settlement transactions: General provisions

### Financial derivative instruments

**13.3.1** **R** A firm must determine the *exposure* value of a *financial derivative instrument* in accordance with ■ BIPRU 13, with the effects of contracts of novation and other netting agreements taken into account for the purposes of those methods in accordance with ■ BIPRU 13.

[Note: BCD Article 78(2) first sentence]

**13.3.2** **R** Subject to ■ BIPRU 13.3, a firm must determine the *exposure* value for *financial derivative instruments* with the *CCR mark to market method*, the *CCR standardised method* or the *CCR internal model method*.

[Note: BCD Annex III, Part 2 point 1]

### Definition of financial derivative instrument

**13.3.3** **R** Each of the following is a *financial derivative instrument*:

- (1) an interest-rate contract, being:
  - (a) a single-currency interest rate swap;
  - (b) a basis-swap;
  - (c) a forward rate agreement;
  - (d) an interest-rate future;
  - (e) a purchased interest-rate *option*; and
  - (f) other contracts of similar nature.
- (2) a *foreign currency* contract or contract concerning gold, being:
  - (a) a cross-currency interest-rate swap;
  - (b) a forward *foreign currency* contract;
  - (c) a currency future;
  - (d) a currency *option* purchased;
  - (e) other contracts of a similar nature; and
  - (f) a contract concerning gold of a nature similar to (2)(a) to (e).

- (3) a contract of a nature similar to those in 1(a) to (e) and 2(a) to (d) concerning other reference items or indices, including as a minimum all instruments specified in points 4 to 7, 9 and 10 of Section C of Annex I to the *MIFID* not otherwise included in (1) or (2).

[Note: BCD Annex IV]

### Long settlement transactions

**13.3.4** **R** *Long settlement transaction* means a transaction where a counterparty undertakes to deliver a *security*, a *commodity*, or a *foreign currency* amount against cash, other *financial instruments*, or *commodities*, or vice versa, at a settlement or delivery date that is contractually specified as more than the lower of the market standard for this particular transaction and five business days after the date on which the *firm* enters into the transaction.

[Note: BCD Annex III Part 1 point 3]

**13.3.5** **R** A *firm* must calculate the *exposure* value of a *long settlement transaction* in accordance with either:

- (1) ■ BIPRU 13; or
- (2) the *master netting agreement internal models approach*, if it has a *master netting agreement internal models approach waiver* which permits it to apply that approach.

[Note: BCD Article 78(2) second sentence, in respect of *long settlement transaction*]

**13.3.6** **R** A *firm* may determine *exposures* arising from *long settlement transactions* using any of the *CCR mark to market method*, the *CCR standardised method* and the *CCR internal model method*, regardless of the methods chosen for treating *financial derivatives instruments* and *repurchase transactions*, *securities or commodities lending or borrowing transactions*, and *margin lending transactions*. In calculating capital requirements for *long settlement transactions*, a *firm* that uses the *IRB approach* may apply the *risk weights* under the *standardised approach* on a permanent basis and irrespective of the materiality of such positions.

[Note: BCD Annex III Part 2 point 7]

**13.3.7** **G** A *firm* is not required to calculate the *exposure* value of a transaction as a *long settlement transaction* for the purposes of BIPRU 13 if the transaction is a *financial derivative instrument* or a *securities financing transaction* and the *firm* chooses to calculate the capital requirement for the transaction according to the methods applicable to those *exposures*.

### General netting

**13.3.8** **R** Under the *CCR mark to market method*, the *CCR standardised method* and the *CCR internal model method*, a *firm* must determine the *exposure* value for a given counterparty as equal to the sum of the *exposure* values calculated for each *netting set* with that counterparty.

[Note: BCD Annex III Part 2 point 5]

**13.3.9** **R** A *firm* may only recognise netting for the purposes of ■ BIPRU 13.4, ■ BIPRU 13.5 and ■ BIPRU 13.6 if the requirements in ■ BIPRU 13.7 are met.

**Combined use**

**13.3.10** **R** The combined use of the *CCR mark to market method*, the *CCR standardised method* and the *CCR internal model method* is not permitted. The combined use of the *CCR mark to market method* and the *CCR standardised method* is permitted where one of the methods is used for the cases set out in ■ BIPRU 13.5.9 R to ■ BIPRU 13.5.10 R.

[Note: BCD Annex III Part 2 point 1(part)]

**13.3.11** **G** The combined use of different approaches may be used across a group as described in ■ BIPRU 8.7.8 G and ■ BIPRU 8.7.9 G.

**Exposure to a central counterparty**

**13.3.12** **R** Notwithstanding ■ BIPRU 13.3.1 R and ■ BIPRU 13.3.5 R, a *firm* may determine the *exposure* value of a credit risk *exposure* outstanding with a *central counterparty* in accordance with ■ BIPRU 13.3.13 R, provided that the *central counterparty's counterparty credit risk exposure* with all participants in its arrangements are fully collateralised on a daily basis.

[Note: BCD Article 78(4) in respect of *financial derivatives* and *long settlement transactions*]

**13.3.13** **R** A *firm* may attribute an *exposure* value of zero for *CCR* to derivative contracts and *long settlement transactions*, or to other *exposures* arising in respect of those contracts or transactions (but excluding an *exposure* arising from collateral held to mitigate losses in the event of the default of other participants in the *central counterparty's* arrangements) where they are outstanding with a *central counterparty* and have not been rejected by the *central counterparty*.

[Note: BCD Annex III Part 2 point 6 in respect of *financial derivatives* and *long settlement transactions*]

**Exceptions**

**13.3.14** **R** When a *firm* purchases credit derivative protection against a *non-trading book ,exposure* or against a *CCR exposure*, it must compute its capital requirement for the hedged asset in accordance with:

- (1) ■ BIPRU 5.7.16 R to ■ BIPRU 5.7.25 R and ■ BIPRU 4.10.49 R (4) to ■ (6) (Unfunded credit protection: Valuation and calculation of risk-weighted exposure amounts and expected loss amounts); or
- (2) where a *firm* calculates *risk weighted exposure amounts* in accordance with the *IRB approach*:
  - (a) ■ BIPRU 4.4.79 R (Double default); or
  - (b) ■ BIPRU 4.10.40 R to ■ BIPRU 4.10.48 R. (Unfunded credit protection: Minimum requirements for assessing the effect of guarantees and credit derivatives).

(3) [deleted]

[Note: BCD Annex III Part 2 point 3 (part)]

13.3.15

**R**

(1) In the cases in ■ BIPRU 13.3.14R, and where the option in the second sentence of ■ BIPRU 14.2.10 R is not applied, the *exposure* value for CCR for these *credit derivatives* is set to zero.

(2) However, a *firm* may choose consistently to include for the purposes of calculating capital requirements for *counterparty credit risk* all credit derivatives not included in the *trading book* and purchased as protection against a non-trading *exposure* or against a CCR *exposure* where the credit protection is recognised under the BCD.

[Note: BCD Annex III Part 2 point 3 (part)]

13.3.16

**R**

A *firm* must set the *exposure* value for CCR from sold credit default swaps in the *non-trading book*, where they are treated as credit protection provided by the *firm* and subject to a capital requirement for credit risk for the full notional amount, to zero.

[Note: BCD Annex III Part 2 point 4]

## 13.4 CCR mark to market method

### General

- 13.4.1** **R** The *rules* in ■ BIPRU 13.4 set out the *CCR mark to market method*.
- 13.4.2** **R** A *firm* must obtain the current replacement cost of all contracts with positive values by attaching current market values to contracts (marking to market).  
[Note: BCD Annex III Part 3, Step (a)]
- 13.4.3** **R** A *firm* must obtain a figure for potential future credit *exposure* by multiplying the notional principal amounts or underlying values by the percentages in the table in ■ BIPRU 13.4.5 R.  
[Note: BCD Annex III Part 3, Step (b) (part)]
- 13.4.4** **R** ■ BIPRU 13.4.3 R does not apply in the case of single-currency "floating/floating" interest rate swaps.  
[Note: BCD Annex III Part 3, Step (b) (part)]

### Table: multiples to be applied to notional principal amounts or underlying values

- 13.4.5** **R** This table belongs to ■ BIPRU 13.4.5 R

Residual maturity	Interest-rate contracts	Contracts concerning foreign currency rates and gold	Contracts concerning equities	Contracts concerning precious metals except gold	Contracts concerning commodities other than precious metals
One year or less	0%	1%	6%	7%	10%
Over one year, not exceeding five years	0,5%	5%	8%	7%	12%
Over five years	1.5%	7.5%	10%	8%	15%

[Note: BCD Annex III Part 3, Table 1]



- 13.4.6 **R** A *firm* must treat a contract which does not fall within one of the five categories indicated in the table in **■ BIPRU 13.4.5 R** as a contract concerning *commodities* other than precious metals.  
[Note: BCD Annex III Part 3, Table 1 footnote 25]
- 13.4.7 **R** For contracts with multiple exchanges of principal, a *firm* must multiply the percentages in the table in **■ BIPRU 13.4.5 R** by the number of remaining payments still to be made according to the contract.  
[Note: BCD Annex III Part 3, Table 1 footnote 26]
- 13.4.8 **R** For contracts that are structured to settle outstanding *exposure* following specified payment dates and where the terms are reset such that the market value of the contract is zero on these specified dates, a *firm* must treat the residual maturity as equal to the time until the next reset date.  
[Note: BCD Annex III Part 3, Table 1 footnote 27 (part)]
- 13.4.9 **R** In the case of interest-rate contracts that meet the criteria in **■ BIPRU 13.4.8 R** and have a remaining maturity of over one year, a *firm* must apply a percentage no lower than 0.5%.  
[Note: BCD Annex III Part 3, Table 1 footnote 27 (part)]
- 13.4.10 **R** For the purpose of calculating the potential future credit *exposure* in accordance with **■ BIPRU 13.4.3 R** a *firm* may apply the percentages in the table in **■ BIPRU 13.4.11 R** instead of those prescribed in the table in **■ BIPRU 13.4.5 R** provided that it makes use of the *commodity extended maturity ladder approach* for contracts relating to commodities other than gold.

**Table: alternative multiples to be applied to notional principal amounts or underlying values**

13.4.11 **R** This table belongs to **■ BIPRU 13.4.10 R**

Residual maturity	Precious metals (except gold)	Base metals	Agricultural products (softs)	Other, including energy products
One year or less	2%	2,5%	3%	4%
Over one year, not exceeding five years	5%	4%	5%	6%
Over five years	7.5%	8%	9%	10%

[Note: BCD Annex III Part 3, Table 2]

13.4.12 **R** A *firm* must calculate the *exposure* value as the sum of:  
(1) the current replacement cost calculated under **■ BIPRU 13.4.2 R**; and

(2) the potential future credit *exposure* calculated under ■ BIPRU 13.4.3 R.  
 [Note: BCD Annex III Part 3, Step (c)]

**13.4.13** **G** Contracts with a negative replacement cost should still be subject to an add-on if there is a possibility of the replacement costs becoming positive before maturity. Written options should therefore be exempt from add-ons.

**13.4.14** **G** For the purposes of calculating the replacement cost, where an *exposure* relates to collateral posted to cover a negative mark to market position on a derivative contract, the negative mark to market *exposure* may be offset against the collateral *exposure* if the requirements in ■ BIPRU 5 are met.

**Alternative approach**

**13.4.15** **R** A *firm* must ensure that the notional amount to be taken into account is an appropriate yardstick for the risk inherent in the contract. Where, for instance, the contract provides for a multiplication of cash flows, a *firm* must adjust the notional amount in order to take into account the effects of the multiplication on the risk structure of that contract.  
 [Note: BCD Annex III Part 2 point 8]

**Netting: Contracts for novation**

**13.4.16** **R** The single net amounts fixed by contracts for novation, rather than the gross amounts involved, may be weighted. For the purposes of the *CCR mark to market method*, a *firm* may obtain:

- (1) in ■ BIPRU 13.4.2 R, the current replacement cost; and
- (2) in ■ BIPRU 13.4.3 R, the notional principal amounts or underlying values;

by taking account of the contract for novation.

[Note: BCD Annex III Part 7 point c(i)]

**Netting: Other netting agreements**

**13.4.17** **R** In application of the *CCR mark to market method*:

(1) in ■ BIPRU 13.4.2 R a *firm* may obtain the current replacement cost for the contracts included in a netting agreement by taking account of the actual hypothetical net replacement cost which results from the agreement; in the case where netting leads to a net obligation for the *firm* calculating the net replacement cost, the current replacement cost is calculated as "0"; and

(2) in ■ BIPRU 13.4.3 R a *firm* may reduce the figure for potential future credit *exposure* for all contracts included in a netting agreement according to the following formula:

$$PCE_{red} = 0.4 * PCE_{gross} + 0.6 * NGR * PCE_{gross}$$

where:

- (a)  $PCE_{red}$  = the reduced figure for potential future credit *exposure* for all contracts with a given counterparty included in a legally valid bilateral netting agreement;
- (b)  $PCE_{gross}$  = the sum of the figures for potential future credit *exposure* for all contracts with a given counterparty which are included in a legally valid bilateral netting agreement and are calculated by multiplying their notional principal amounts by the percentages set out in the table in ■ BIPRU 13.4.5 R; and
- (c) NGR = "net-to-gross ratio": the quotient of the net replacement cost for all contracts included in a legally valid bilateral netting agreement with a given counterparty (numerator) and the gross replacement cost for all contracts included in a legally valid bilateral netting agreement with that counterparty (denominator).

[Note: BCD Annex III Part 7 point c(ii) (part)]

**13.4.18** **R** For the calculation of the potential future credit exposure according to the formula in ■ BIPRU 13.4.17 R perfectly matching contracts included in the netting agreement may be taken into account as a single contract with a notional principal equivalent to the net receipts.

[Note: BCD Annex III Part 7 point c(ii) (part)]

**13.4.19** **R** For the purposes of ■ BIPRU 13.4.18 R a perfectly matching contract is a forward *foreign currency* contract or similar contract in which a notional principal is equivalent to cash flows if the cash flows fall due on the same value date and fully or partly in the same currency.

[Note: BCD Annex III Part 7 point c(ii) (part)]

## 13.5 CCR standardised method

### Scope

**13.5.1** **R** A firm may use the CCR standardised method only for financial derivative instruments and long settlement transactions.

[Note: BCD Annex III Part 5 point 1 (part)]

### Derivation of risk position: payment legs

- 13.5.2** **R**
- (1) When a financial derivative instrument transaction with a linear risk profile stipulates the exchange of a financial instrument for a payment, the payment Part is referred to as the payment leg.
  - (2) Transactions that stipulate the exchange of payment against payment consist of two payment legs.
  - (3) The payment legs consist of the contractually agreed gross payments, including the notional amount of the transaction.
  - (4) A firm may disregard the interest rate risk from payment legs with a remaining maturity of less than one year for the purposes of the calculations in ■ BIPRU 13.5.
  - (5) A firm may treat transactions that consist of two payment legs that are denominated in the same currency, such as interest rate swaps, as a single aggregate transaction. The treatment for payment legs applies to the aggregate transaction.

[Note: BCD Annex III Part 5 point 2]

### Derivation of risk position: mapping

- 13.5.3** **R**
- (1) Transactions with a linear risk profile with equities (including equity indices), gold, other precious metals or other commodities as the underlying financial instruments must be mapped to a risk position in the respective equity (or equity index) or commodity (including gold and other precious metals) and an interest rate risk position for the payment leg.
  - (2) If the payment leg is denominated in a foreign currency, it must be additionally mapped to a risk position in the respective currency.

[Note: BCD Annex III Part 5 point 3]

- 13.5.4** **R**
- (1) Transactions with a linear risk profile with a debt instrument as the underlying instrument must be mapped to an interest rate *risk position* for the debt instrument and another interest rate *risk position* for the *payment leg*.
  - (2) Transactions with a linear risk profile that stipulate the exchange of payment against payment, including foreign exchange forwards, must be mapped to an interest rate *risk position* for each of the *payment legs*.
  - (3) If the underlying debt instrument is denominated in a *foreign currency*, the debt instrument must be mapped to a *risk position* in that *foreign currency*.
  - (4) If a *payment leg* is denominated in *foreign currency*, the *payment leg* must be again mapped to a *risk position* in that *foreign currency*.
  - (5) The *exposure* value to be assigned to a foreign exchange basis swap transaction is zero.
- [Note: BCD Annex III Part 5 point 4]

**Derivation of risk position: calculating the size of the risk position**

**13.5.5** **R** A firm must calculate the *risk position* of the transaction or instrument in column 1 of the table in ■ BIPRU 13.5.6 R in accordance with column 2 of that table.

**13.5.6** **R** This table belongs to ■ BIPRU 13.5.5 R.

Transaction or instrument	Calculation of size of <i>risk position</i>
Transaction with linear risk profile except for debt instruments.	The effective notional value (market price multiplied by quantity) of the underlying <i>financial instruments</i> (including <i>commodities</i> ) converted to the <i>firm's</i> domestic currency.
Debt instruments and <i>payment legs</i> .	The effective notional value of the outstanding gross payments (including the notional amount) converted to the <i>firm's base currency</i> , multiplied by the modified duration of the debt instrument, or <i>payment leg</i> , respectively.
Credit default swap	The notional value of the reference debt instrument multiplied by the remaining maturity of the credit default swap.
Nth to default credit default swap	The effective notional value of the reference debt instrument, multiplied by the modified duration of the nth to default derivative with respect to a change in the credit spread of the reference debt instrument.
Subject to BIPRU 13.5.9 R to BIPRU 13.5.10 R, <i>financial derivative instru-</i>	Equal to the delta equivalent effective notional value of the <i>financial in-</i>

Transaction or instrument	Calculation of size of <i>risk position</i>
<i>ment</i> with a non-linear risk profile, including <i>options</i> and swaptions except in the case of an underlying debt instrument.	<i>strument</i> that underlies the transaction.
Subject to BIPRU 13.5.9 R to BIPRU 13.5.10 R, <i>financial derivative instrument</i> with a non-linear risk profile, including <i>options</i> and swaptions, of which the underlying is a debt instrument or a <i>payment leg</i> .	Equal to the delta equivalent effective notional value of the <i>financial instrument</i> or <i>payment leg</i> multiplied by the modified duration of the debt instrument, or <i>payment leg</i> , respectively.

[Note: BCD Annex III Part 5 points 5 to 9 and 15 (part)]

**Derivation of risk position: effective notional value**

13.5.7

**R**

A firm may use the following formulae to determine the size and sign of a *risk position*:

(1) for all instruments other than debt instruments:

effective notional value, or delta equivalent

$$\text{notional value} = p_{\text{ref}}(V)/(p)$$

where:

- (a)  $P_{\text{ref}}$  = price of the underlying instrument, expressed in the reference currency;
- (b)  $V$  = value of the financial instrument (in the case of an option this is the option price; in the case of a transaction with a linear risk profile this is the value of the underlying instrument itself);
- (c)  $p$  = price of the underlying instrument, expressed in the same currency as  $V$ ;

(2) for debt instruments and the *payment legs* of all transactions:

effective notional value multiplied by the modified duration, or delta equivalent in notional value multiplied by the modified duration

$$(V)/(r)$$

where:

- (a)  $V$  = value of the financial instrument (in the case of an option this is the option price; in the case of a transaction with a linear risk profile this is the value of the underlying instrument itself or of the *payment leg*, respectively);
- (b)  $r$  = interest rate level.

(3) If  $V$  is denominated in a currency other than the reference currency, the derivative must be converted into the reference currency by multiplication with the relevant exchange rate.

[Note: BCD Annex III Part 5 point 11]

**Derivation of risk position: treatment of collateral**

13.5.8

**R**

For the determination of *risk positions*, a firm must treat collateral received from a counterparty like a claim on the counterparty under a derivative

contract (long position) that is due today, while collateral posted must be treated as an obligation to the counterparty (short position) that is due today.

[Note: BCD Annex III Part 5 point 10]

**Derivation of risk position: non-linear risks**

**13.5.9** **R** A firm must apply the CCR mark to market method to transactions with a non-linear risk profile or for *payment legs* and transactions with debt instruments as underlying if:

- (1) the firm does not have a CAD 1 model permission or a VaR model permission; or
- (2) where the firm does have a CAD 1 model permission or a VaR model permission but cannot determine the delta or the modified duration, respectively, with its CAD 1 model permission or VaR model permission.

[Note: BCD Annex III Part 5 point 19 (part)]

**13.5.10** **R** A firm must not recognise netting for the purpose of applying the CCR mark to market method to an exposure treated under **■ BIPRU 13.5.9 R** (that is, the exposure value must be determined as if there were a netting set that comprises just the individual transaction).

[Note: BCD Annex III Part 5 point 19 (part)]

**Hedging sets: assignment**

**13.5.11** **R** A firm must group the risk positions into hedging sets and, for each hedging set, compute the absolute value amount of the sum of the resulting risk positions. This sum is termed the net risk position and is represented by:

$$((i)(RPT_{ij}) - (i)(RPC_{ij}))$$

in the formulae set out in **■ BIPRU 13.5.24 R**.

[Note: BCD Annex III Part 5 point 12]

**Hedging sets: description**

**13.5.12** **R** For interest rate risk positions from money deposits received from the counterparty as collateral, from payment leg and from underlying debt instruments, to which according to the table in BIPRU 7.2.44R a capital charge of 1.60% or less applies, there are six hedging sets for each currency, as set out in the table in **■ BIPRU 13.5.13 R**. Hedging sets are defined by a combination of the criteria maturity and referenced interest rates.

[Note: BCD Annex III Part 5 point 13]

**Table: Hedging sets**

**13.5.13** **R** This table belongs to **■ BIPRU 13.5.12 R**:

	Government referenced interest rates	Non-government referenced interest rates
Maturity	<= 1 year	<= 1 year
Maturity	>1 <= 5 years	>1 <= 5 years
Maturity	> 5 years	> 5 years

[Note: BCD Annex III Part 5 Table 4]

**13.5.14** **R** For interest rate *risk positions* from underlying debt instruments or *payment legs* for which the interest rate is linked to a reference interest rate that represents a general market interest level, the remaining maturity is the length of the time interval up to the next re-adjustment of the interest rate. In all other cases, it is the remaining life of the underlying debt instrument, or in the case of a *payment leg* the remaining life of the transaction.

[Note: BCD Annex III Part 5 point 14]

**13.5.15** **R** There is one *hedging set* for each issuer of a reference debt instrument that underlies a credit default swap. Nth to default basket credit default swaps must be treated as follows:

- (1) the size of a *risk position* in a reference debt instrument in a basket underlying an nth to default credit default swap is the effective notional value of the reference debt instrument, multiplied by the modified duration of the nth to default derivative, with respect to a change in the credit spread of the reference debt instrument;
- (2) there is one *hedging set* for each reference debt instrument in a basket underlying a given nth to default credit default swap; *risk positions* from different nth to default credit default swaps must not be included in the same *hedging set*; and
- (3) the CCR multiplier applicable to each *hedging set* created for one of the reference debt instruments of an nth to default derivative is 0.3% for reference debt instruments that have a credit assessment from a recognised *ECAI* equivalent to *credit quality step* 1 to 3, and 0.6% for other debt instruments.

[Note: BCD Annex III Part 5 point 15]

**13.5.16** **R** Underlying financial instruments other than debt instruments must be assigned by a *firm* to the same respective *hedging sets* only if they are identical or similar instruments. In all other cases a *firm* must assign them to separate *hedging sets*.

[Note: BCD Annex III Part 5 point 17 (part)]

**13.5.17** **R**

- (1) The similarity of instruments for the purposes of **13.5.16 R** is established in accordance with (2) to (5).
- (2) For equities, similar instruments are those of the same issuer. An equity index is treated as a separate issuer.



- (3) For precious metals, similar instruments are those of the same metal. A precious metal index is treated as a separate precious metal.
- (4) For electric power, similar instruments are those delivery rights and obligations that refer to the same peak or off-peak load time interval within any 24 hour interval.
- (5) For *commodities*, similar instruments are those of the same *commodity*. A *commodity* index is treated as a separate *commodity*.  
[Note: BCD Annex III Part 5 point 17 (part)]

**Hedging sets: collateral**

- 13.5.18 **R**
- (1) For interest rate *risk positions* from money deposits that are posted with a counterparty as collateral when that counterparty does not have debt obligations of low *specific risk* outstanding and from underlying debt instruments, to which according to the table in **BIPRU 7.2.44 R** a capital charge of more than 1.60% applies, there is one *hedging set* for each issuer.
  - (2) When a *payment leg* emulates such a debt instrument, there is also one *hedging set* for each issuer of the reference debt instrument.
  - (3) A *firm* may assign *risk positions* that arise from debt instruments of a certain issuer, or from reference debt instruments of the same issuer that are emulated by *payment legs*, or that underlie a credit default swap, to the same *hedging set*.  
[Note: BCD Annex III Part 5 point 16]

- 13.5.19 **R**
- A *firm* that makes use of collateral to mitigate its CCR must have internal procedures to verify that, prior to recognising the effect of collateral in its calculations, the collateral meets the legal certainty standards set out in **BIPRU 5** modified, where relevant, by **BIPRU 4.10**.  
[Note: BCD Annex III Part 5 point 21]

**Hedging sets: netting**

- 13.5.20 **R**
- A *firm* must have internal procedures to verify that, prior to including a transaction in a *hedging set*, the transaction is covered by a legally enforceable netting contract that meets the requirements set out in **BIPRU 13.7**.  
[Note: BCD Annex III Part 5 point 20]

**Credit conversion factors : Table**

- 13.5.21 **R**
- A *firm* must apply the CCR multipliers for the different *hedging set* categories according to the Table in **BIPRU 13.5.22 R**.  
[Note: BCD Annex III Part 5 point 18]

- 13.5.22 **R**
- This table belongs to **BIPRU 13.5.21 R**.

<i>Hedging set categories</i>	<i>CCR Multiplier (CCRM)</i>	
(1)	Interest Rates	0.2%
(2)	Interest Rates for <i>risk positions</i> from a reference debt instrument that underlies a credit default swap and to which a capital charge of 1.60%, or less, applies under BIPRU 7.2.44 R.	0.3%
(3)	Interest Rates for <i>risk positions</i> from a debt instrument or reference debt instrument to which a capital charge of more than 1.60% applies under BIPRU 7.2.44 R.	0.6%
(4)	Exchange Rates	2.5%
(5)	Electric power	4.0%
(6)	Gold	5.0%
(7)	Equity	7.0%
(8)	Precious Metals (except gold)	8.5%
(9)	Other <i>commodities</i> (excluding precious metals and electricity power)	10.0%
(10)	Reference debt instruments of an nth to default derivative that have a credit assessment from a recognised <i>ECAI</i> equivalent to <i>credit quality step 1</i> to 3	0.3%
(11)	Reference debt instruments of an nth to default derivative that do not have a credit assessment from a recognised <i>ECAI</i> equivalent to <i>credit quality step 1</i> to 3	0.6%
(12)	Underlying instruments of <i>financial derivative instrument</i> that are not in any of the above categories.	10.0%

[Note: BCD Annex III Part 5 Table 5 and Part 5 point 15 (c)]

**13.5.23**



A firm must assign underlying instruments of *financial derivatives instruments* (in line 10 of the Table in ■ BIPRU 13.5.22 R) to separate individual *hedging sets* for each category of underlying instrument.

**Exposure value**

- 13.5.24** **R** A firm must calculate the exposure value separately for each netting set.  
 [Note: BCD Annex III Part 5 point 1, second sentence]
- 13.5.25** **R** A firm must determine the exposure value net of collateral, as follows:  

$$\text{exposure value} = \sum_j \max(\text{CMV} - \text{CMC}; 0) (\sum_i (\text{RPT}_{ij}) - \sum_l (\text{RPC}_{lj})) * \text{CCRM}_j$$
 where:  
 CMV = current market value of the portfolio of transactions within the netting set with a counterparty gross of collateral.  
 That is, where:  

$$\text{CMV} = \sum_i (\text{CMV}_i)$$
 where:  
 CMV<sub>i</sub> = the current market value of transaction i;  
 CMC = the current market value of the collateral assigned to the netting set.  
 That is, where: 
$$\text{CMC} = \sum_l (\text{CMC}_l)$$
 where  
 CMCl = the current market value of collateral l;  
 i = index designating transaction;  
 l = index designating collateral;  
 j = index designating hedging set category. These hedging sets correspond to risk factors for which risk positions of opposite sign can be offset to yield a net risk position on which the exposure measure is then based;  
 RPT<sub>ij</sub> = risk position from transaction i with respect to hedging set j;  
 RPC<sub>lj</sub> = risk position from collateral l with respect to hedging set j;  
 CCRM<sub>j</sub> = CCR Multiplier set out in the Table in BIPRU 13.5.22R with respect to the hedging set j;  
 = 1.4.  
 [Note: BCD Annex III Part 5 point 1 (part)]
- 13.5.26** **R** Collateral received from a counterparty has a positive sign; collateral posted to a counterparty has a negative sign.  
 [Note: BCD Annex III Part 5 point 1 (part)]
- 13.5.27** **R** A firm may only recognise collateral for this method if it is collateral that is eligible under ■ BIPRU 5.4.8 R and ■ BIPRU 14.2.12 G to ■ BIPRU 14.2.13 R.  
 [Note: BCD Annex III Part 5 point 1 (part)]
- 13.5.28** **G** A worked example showing a US Dollar (USD)-based firm, single counterparty, single netting set, Risk-positions R<sub>Pij</sub> by hedging sets j is set out in ■ BIPRU 13 Annex 1 G

## 13.6 CCR internal model method

### Introduction

- 13.6.1** **R** ■ BIPRU 13.6 sets out the *rules* relating to the *CCR internal model method*.
- 13.6.2** **R** A *firm* may only use the *CCR internal model method* if it has a *CCR internal model method permission*.
- 13.6.3** **G** ■ BIPRU 1.3 sets out the process for applying for a *CCR internal model method permission*.
- 13.6.4** **G** A *firm's CCR internal model method permission* will modify ■ BIPRU 13.6.2 R and will require the *firm* to use only the *CCR internal model method*, except to the extent that ■ BIPRU 13 permits the *firm* to combine the use of the *CCR internal model method* with one or more other methods.
- 13.6.5** **R**
- (1) A reference in the *Handbook* to a provision of the *CCR internal model method*, in relation to a *firm*:
    - (a) excludes any provision of the *CCR internal model method* set out in the *Handbook* which is not applied to that *firm* by its *CCR internal model method permission*;
    - (b) includes any additional provision contained in the *CCR internal model method permission*; and
    - (c) takes into account any other amendments made to the provisions in the *Handbook* relating to the *CCR internal model method* made by the *CCR internal model method permission*.
  - (2) To the extent that a *firm's CCR internal model method permission* does not allow it to use a particular approach in the *Handbook* relating to the *CCR internal model method*, the *Handbook* provision does not apply to the *firm*.

### Scope

- 13.6.6** **R** A *firm* may determine the *exposure value* for:
- (1) *financial derivative instruments*;
  - (2) *repurchase transactions*;

- (3) securities or commodities lending or borrowing transactions;
- (4) margin lending transactions; and
- (5) long settlement transactions

using the CCR internal model method.

[Note: BCD Annex III Part 2 point 2]

**13.6.7** **R** A firm may use the CCR internal model method to calculate the exposure value for:

- (1) the transactions in ■ BIPRU 13.6.6 R (1); or
- (2) the transactions in ■ BIPRU 13.6.6 R (2), ■ (3) and ■ (4); or
- (3) the transactions in ■ BIPRU 13.6.6 R (1) to ■ (4).

[Note: BCD Annex III Part 6 point 1 (part)]

**13.6.8** **R** In each of ■ BIPRU 13.6.7 R (1), ■ (2) and ■ (3), a firm may include long settlement transactions as well.

[Note: BCD Annex III Part 6 point 1 (part)]

#### Use of other models

**13.6.9** **G** Point 2 of Part 6 of Annex III of the *Banking Consolidation Directive* provides that a firm using the CCR internal model method may use a type of model other than the type set out in ■ BIPRU 13.6. If the appropriate regulator agrees to this the details of the model and the necessary calculations will be set out in the CCR internal model method permission, which will modify ■ BIPRU 13.6 to the extent necessary. The appropriate regulator would not expect to agree to such a request unless the firm was able to satisfy the appropriate regulator that the method was at least as conservative as the method set out in BIPRU 13.6 and in particular that, for every counterparty, any method was more conservative than alpha multiplied by effective EPE calculated according to the equation in ■ BIPRU 13.6.27 R.

[Note: BCD Annex III Part 6 point 2 (second sentence) and point 11]

#### Partial use

**13.6.10** **R** For all financial derivative instruments and for long settlement transactions which are outside the scope of a firm's CCR internal model method permission, a firm must use the CCR mark to market method or the CCR standardised method.

[Note: BCD Annex III Part 6 point 3 first sentence]

**13.6.11** **R** Under ■ BIPRU 13.6.10 R, combined use of the CCR mark to market method and the CCR standardised method is only permitted where one of the methods is used for the cases set out in ■ BIPRU 13.5.9 R to ■ BIPRU 13.5.10 R.

[Note: BCD Annex III Part 6 point 3 second sentence]

- 13.6.12** **R** Notwithstanding ■ BIPRU 13.3.10 R (Combined use), a *firm* may choose not to apply the *CCR internal model method* to *exposures* that are immaterial in size and risk.  
[Note: BCD Annex III Part 6 point 1 third sentence]
- 13.6.13** **R** If permitted by its *CCR internal model method permission*, and subject to its terms, a *firm* may carry out the implementation of the *CCR internal model method* sequentially across different transaction types; and during this period the *firm* may use the *CCR mark to market method* or the *CCR standardised method*.  
[Note: BCD Annex III Part 6 point 2]
- 13.6.14** **G** After the initial period following the granting of its *CCR internal model method permission*, as referred to in ■ BIPRU 13.6.13 R, a *firm* should extend the use of the *CCR internal model method* to cover any new business within a product category covered by its *CCR internal model method permission*. Subject to ■ BIPRU 13.6.10 R to ■ BIPRU 13.6.13 R, the *firm* should do so within a reasonable period of time. If the *firm* decides to exclude any business on, for example, the basis of materiality, it should document its reasons clearly.
- 13.6.15** **G** In principle, the use of different measures of *exposure* within the *CCR internal model method* is possible within the same product category, including on a permanent basis. The *appropriate regulator* may allow a *firm*, through the *CCR internal model method permission*, to use a more conservative measure of *exposure* that is less risk sensitive (for instance a measure based on conservative haircuts) for certain parts of the business if justified on a cost-benefit basis. However, a *firm* would still need to meet the use test for these more conservative measures and would need to demonstrate that the aggregation of *CCR exposures* that come from different approaches and have different degrees of conservatism makes sense and is used for its *CCR* management purposes.
- 13.6.16** **G** The *appropriate regulator* may, through the *CCR internal model method permission*, require a *firm* to apply a multiplier to the measures of *exposures* coming out of a less risk-sensitive approach to calculating *exposures* as referred to in ■ BIPRU 13.6.15 G where the *appropriate regulator* considers this to be appropriate due to the complexity of the business or the nature of the risks involved.
- 13.6.17** **R** **Use of CCR internal model method**  
.....  
Subject to ■ BIPRU 13.6.10 R to ■ BIPRU 13.6.16 G, a *firm* that has a *CCR internal model method permission* must not use the *CCR mark to market method* or the *CCR standardised method* for transactions within the scope of the *firm's CCR internal model method permission*.  
[Note: BCD Annex III Part 6 point 4 (part)]

**13.6.18** **G** A firm which wishes to revert to the CCR mark to market method or the CCR standardised method will need to request the appropriate regulator to revoke or vary its CCR internal model method permission.

[Note: BCD Annex III Part 6 point 4 (part)]

**13.6.19** **G** The appropriate regulator will not agree to a firm's request to revoke or vary its CCR internal model method permission except for demonstrated good cause.

[Note: BCD Annex III Part 6 point 4 (part)]

**13.6.20** **R** If a firm ceases to comply with the requirements set out in ■ BIPRU 13.6, it must either present to the appropriate regulator a plan for a timely return to compliance or demonstrate that the effect of non-compliance is immaterial.

[Note: BCD Annex III Part 6 point 4 (part)]

**13.6.21** **G** If a firm ceases to comply with the requirements set out in ■ BIPRU 13.6, the appropriate regulator may revoke the CCR internal model method permission or take other appropriate supervisory action.

[Note: BCD Annex III Part 6 point 4 (part)]

**Exposure value**

**13.6.22** **R** (1) A firm must measure the exposure value at the level of the netting set.

(2) The model must specify the forecasting distribution for changes in the market value of the netting set attributable to changes in market variables, such as interest rates, foreign exchange rates.

(3) The model must then compute the exposure value for the netting set at each future date given the changes in the market variables.

(4) For margined counterparties, the model may also capture future collateral movements.

[Note: BCD Annex III Part 6 point 5]

**13.6.23** **R** A firm may include eligible financial collateral as defined in ■ BIPRU 5.4.8 R (Eligible collateral under financial collateral comprehensive method) and ■ BIPRU 14.2.15 R to ■ BIPRU 14.2.17 R in its forecasting distributions for changes in the market value of the netting set, if the quantitative, qualitative and data requirements for the CCR internal model method are met for the collateral.

[Note: BCD Annex III Part 6 point 6]

**13.6.24** **R** A firm must calculate the exposure value as the product of alpha ( $\alpha$ ), as set out in ■ BIPRU 13.6.31 R, times effective EPE:

*Exposure value = effective EPE*

[Note: BCD Annex III Part 6 point 7 first part]

**Effective EPE**

**13.6.25 R** A firm must compute *effective EPE* by estimating *expected exposure (EEt)* as the average *exposure* at future date *t*, where the average is taken across possible future values of relevant *market risk* factors. The model estimates *EE* at a series of future dates *t1, t2, t3, etc.*

[Note: BCD Annex III Part 6 point 7 third part]

**13.6.26 R** A firm must compute *effective EE* recursively as:

$$\text{Effective } EE_t = \max(\text{effective } EE_{t-1}; EE_t)$$

where:

the current date is denoted as *t0* and *Effective EEt0* equals *current exposure*.

[Note: BCD Annex III Part 6 point 8]

**13.6.27 R** For the purposes of ■ BIPRU 13.6.25 R :

- (1) *effective EPE* is the average *effective EE* during the first year of future *exposure*;
- (2) if all contracts in the *netting set* mature within less than one year, *effective EPE* is the average of *effective EE* until all contracts in the *netting set* mature.

[Note: BCD Annex III Part 6 point 9, first part]

**13.6.28 R** A firm must compute *effective EPE* as a weighted average of *effective EE*:

$$\text{Effective EPE} = \sum_{k=1}^{\min(1 \text{ year}; \text{maturity})} (\text{Effective } EE_{t_k}) * (t_k)$$

where:

the weights  $t_k = t_k - t_{k-1}$  allow for the case when future *exposure* is calculated at dates that are not equally spaced over time.

[Note: BCD Annex III Part 6 point 9, second part]

**13.6.29 R** A firm must calculate *EE* or *peak exposure* measures based on a *distribution of exposures* that accounts for the possible non-normality of the *distribution of exposures*.

[Note: BCD Annex III Part 6 point 10]

**13.6.30 R** [deleted]



**Alpha**

- 13.6.31** **R** For the purposes of **■ BIPRU 13.6.24 R**, alpha ( $\alpha$ ) is 1.4 or any higher amount specified in the *firm's CCR internal model method permission*.  
 [Note: BCD Annex III Part 6 point 7 second part]
- 13.6.32** **G** If the *appropriate regulator* does specify an alpha greater than 1.4, the reasons will be set out in the *firm's CCR internal model method permission*.
- 13.6.33** **R** If a *firm's CCR internal model method permission* permits it, the *firm* may use its own estimates of  $\alpha$ , subject to a floor of 1.2, where  $\alpha$  must equal the ratio of internal capital from a full simulation of *CCR exposure* across counterparties (numerator) and internal capital based on *EPE* (denominator).  
 [Note: BCD Annex III Part 6 point 12 (part)]
- 13.6.34** **R** For the purposes of **■ BIPRU 13.6.33 R**:
- (1) in the denominator, *EPE* must be used as if it were a fixed outstanding amount;
  - (2) a *firm* must be able to demonstrate that its internal estimates of capture in the numerator material sources of stochastic dependency of *distribution of market values* of transactions or of portfolios of transactions across counterparties;
  - (3) internal estimates of  $\alpha$  must take account of the granularity of portfolios.
- [Note: BCD Annex III Part 6 point 12 (part)]
- 13.6.35** **R** A *firm* must ensure that the numerator and denominator of  $\alpha$  are computed in a consistent fashion with respect to the modelling methodology, parameter specifications and portfolio composition. The approach used must be based on the *firm's* internal capital approach, be well-documented and be subject to independent validation. In addition, a *firm* must review their estimates on at least a quarterly basis, and more frequently when the composition of the portfolio varies over time. A *firm* must also assess the model risk.  
 [Note: BCD Annex III Part 6 point 13]
- 13.6.35A** **R** Where appropriate, volatilities and correlations of *market risk* factors used in the joint simulation of *market risk* and credit risk must be conditioned on the credit risk factor to reflect potential increases in volatility or correlation in an economic downturn.  
 [Note: BCD Annex III Part 6 point 14]
- 13.6.36** **G** In reviewing its estimate of  $\alpha$ , a *firm* may not need to perform a full recalculation each quarter if it can demonstrate by other means that the estimate would not be materially different. A full recalculation should however be performed at least annually. If there is a structural change in the *firm's* portfolio that is likely to have the effect that the existing estimate of

will be inappropriate, the *firm* should also recalculate it. A *firm* should have procedures in place to identify any such structural changes.

### Maturity adjustment

- 13.6.37 **G** A *firm* using the *IRB approach* for *risk weighting* of *exposures* arising from a *CCR internal model method* should also apply a different maturity adjustment as set out in ■ BIPRU 4.4.67 R ■ BIPRU 4.4.70 R.

### Margin agreement

- 13.6.38 **R** If the *netting set* is subject to a *margin agreement*, a *firm* must use one of the following *EPE* measures:
- (1) *effective EPE* without taking into account the *margin agreement*;
  - (2) the *margin threshold*, if positive, under the *margin agreement* plus an add-on that reflects the potential increase in *exposure* over the *margin period of risk*:
    - (a) the add-on is computed as the expected increase in the *netting set's exposure* beginning from a *current exposure* of zero over the *margin period of risk*;
    - (b) a floor of five business days for *netting sets* consisting only of repo-style transactions subject to daily remargining and daily mark-to-market, and ten business days for all other *netting sets* is imposed on the *margin period of risk* used for this purpose.
  - (3) if the model captures the effects of margining when estimating *EE*, the model's *EE* measure may be used directly in the equation in ■ BIPRU 13.6.28 R (Computation of effective *EE*), unless the *firm's CCR internal model method permission* does not apply this provision or does not permit that use.

[Note: BCD Annex III Part 6 point 15]

- 13.6.39 **G** Where the effects of margining are captured by the model itself, the *appropriate regulator* does not prescribe any floors for the *margin period of risk* but will challenge a *firm* that looks to use periods shorter than 5 days for *repurchase agreements* or *reverse repurchase agreements* or 10 days for *financial derivative instruments*.

### Operational requirements: General

- 13.6.40 **R** A *firm's EPE* model must meet the operational requirements set out in ■ BIPRU 13.6.41 R to ■ BIPRU 13.6.66 R.

[Note: BCD Annex III Part 6 point 16]

### Operational requirements: CCR control

- 13.6.41 **R** (1) The *firm* must have a control unit that is responsible for the design and implementation of its *CCR management system*, including the initial and on-going validation of the model.

- (2) This unit must control input data integrity and produce and analyse reports on the output of the *firm's* risk measurement model, including an evaluation of the relationship between measures of risk exposure and credit and trading limits.
- (3) This unit must be:
- (a) independent from units responsible for originating, renewing or trading exposures and free from undue influence;
  - (b) it must be adequately staffed; and
  - (c) it must report directly to the senior management of the *firm*.
- (4) The work of this unit must be closely integrated into the day-to-day credit risk management process of the *firm*; its output must, accordingly, be an integral part of the process of planning, monitoring and controlling the *firm's* credit and overall risk profile.
- [Note: BCD Annex III Part 6 point 17]
- 13.6.42** **R** (1) A *firm* must have CCR management policies, processes and systems that are conceptually sound and implemented with integrity.
- (2) A sound CCR management framework must include the identification, measurement, management, approval and internal reporting of CCR.
- [Note: BCD Annex III Part 6 point 18]
- 13.6.43** **R** (1) A *firm's* risk management policies must take account of *market risk*, *liquidity risk*, and legal and *operational risk* that can be associated with CCR.
- (2) The *firm* must not undertake business with a counterparty without assessing its creditworthiness and must take due account of settlement and pre-settlement credit risk.
- (3) These risks must be managed as comprehensively as practicable at the counterparty level (aggregating CCR exposures with other credit exposures) and at the *firm-wide* level.
- [Note: BCD Annex III Part 6 point 19]
- 13.6.44** **R** A *firm's* governing body and senior management must be actively involved in the CCR control process and must regard this as an essential aspect of the business to which significant resources need to be devoted. Senior management must be aware of the limitations and assumptions of the model used and the impact these can have on the reliability of the output. Senior management must also consider the uncertainties of the market environment and operational issues and be aware of how these are reflected in the model.
- [Note: BCD Annex III Part 6 point 20]
- 13.6.45** **R** A *firm* must ensure that the daily reports prepared on its exposures to CCR are reviewed by a level of management with sufficient seniority and

authority to enforce both reductions of positions taken by individual credit managers or traders and reductions in the *firm's* overall *CCR exposure*.

[Note: BCD Annex III Part 6 point 21]

**13.6.46** **R**

- (1) A *firm's* CCR management system must be used in conjunction with internal credit and trading limits.
- (2) A *firm* must ensure that its credit and trading limits are related to its risk measurement model in a manner that is:
  - (a) consistent over time; and
  - (b) well understood by credit managers, traders and senior management.

[Note: BCD Annex III Part 6 point 22]

**13.6.47** **R**

- (1) A *firm's* measurement of CCR must include measuring daily and intra-day usage of credit lines.
- (2) The *firm* must measure *current exposure* gross and net of collateral.
- (3) At portfolio and counterparty level, the *firm* must calculate and monitor *peak exposure* or potential future *exposure* (PFE) at the confidence interval chosen by the *firm*.
- (4) The *firm* must take account of large or concentrated positions, including by groups of related counterparties, by industry, by market, etc.

[Note: BCD Annex III Part 6 point 23]

**13.6.48** **R**

- (1) A *firm* must have a routine and rigorous program of stress testing in place as a supplement to the CCR analysis based on the day-to-day output of the *firm's* risk measurement model.
- (2) The results of this stress testing must be reviewed periodically by senior management and must be reflected in the CCR policies and limits set by management and the *governing body*.
- (3) Where stress tests reveal particular vulnerability to a given set of circumstances, prompt steps must be taken to manage those risks appropriately.

[Note: BCD Annex III Part 6 point 24]

**13.6.49** **R**

- (1) A *firm* must have a routine in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the CCR management system.
- (2) The *firm's* CCR management system must be well documented and must provide an explanation of the empirical techniques used to measure CCR.

[Note: BCD Annex III Part 6 point 25]

- 13.6.50** **R** A firm must conduct an independent review of the CCR management system regularly through its own internal auditing process. This review must include both the activities of the business units referred to in **■ BIPRU 13.6.41 R** and of the independent CCR control unit. A review of the overall CCR management process must take place at regular intervals and must specifically address, at a minimum:
- (1) the adequacy of the documentation of the CCR management system and process;
  - (2) the organisation of the CCR control unit;
  - (3) the integration of CCR measures into daily risk management;
  - (4) the approval process for risk pricing models and valuation systems used by front and back-office personnel;
  - (5) the validation of any significant change in the CCR measurement process;
  - (6) the scope of CCR captured by the risk measurement model;
  - (7) the integrity of the management information system;
  - (8) the accuracy and completeness of CCR data;
  - (9) the verification of the consistency, timeliness and reliability of data sources used to run models, including the independence of such data sources;
  - (10) the accuracy and appropriateness of volatility and correlation assumptions;
  - (11) the accuracy of valuation and risk transformation calculations; and
  - (12) the verification of the model's accuracy through frequent back-testing.
- [Note: BCD Annex III Part 6 point 26]

### Operational requirements: Use test

- 13.6.51** **R** The *distribution of exposures* generated by the model used to calculate *effective EPE* must be closely integrated into the day-to-day CCR management process of the firm. The model's output must accordingly play an essential role in the credit approval, CCR management, internal capital allocation, and corporate governance of the firm.

[Note: BCD Annex III Part 6 point 27]

- 13.6.52** **R** A firm must have a track record in the use of models that generate a *distribution of exposures* to CCR. Thus, the firm must be able to demonstrate that it has been using a model to calculate the *distribution of exposures* upon which the *EPE* calculation is based that meets, broadly, the minimum requirements set out in **■ BIPRU 13.6** for at least one year prior to the date of its CCR internal model method permission.

[Note: BCD Annex III Part 6 point 28]

13.6.53 **R**

- (1) A *firm* must ensure that the model used to generate a *distribution of exposures* to CCR is part of a CCR management framework that includes the identification, measurement, management, approval and internal reporting of CCR. This framework must include the measurement of usage of credit lines (aggregating CCR *exposures* with other credit *exposures*) and internal capital allocation.
  - (2) In addition to *EPE*, a *firm* must measure and manage *current exposures*.
  - (3) Where appropriate, the *firm* must measure *current exposure* gross and net of collateral.
  - (4) The use test is satisfied if a *firm* uses other CCR measures, such as *peak exposure* or PFE (see ■ BIPRU 13.6.47 R), based on the *distribution of exposures* generated by the same model to compute *EPE*.
- [Note: BCD Annex III Part 6 point 29]

13.6.54 **R**

A *firm* must have the systems capability to estimate *EE* daily if necessary, unless it is able to demonstrate to the *appropriate regulator* that its *exposures* to CCR warrant less frequent calculation. The *firm* must compute *EE* along a time profile of forecasting horizons that adequately reflects the time structure of future cash flows and maturity of the contracts and in a manner that is consistent with the materiality and composition of the *exposures*.

[Note: BCD Annex III Part 6 point 30]

13.6.55 **R**

- (1) *Exposure* must be measured, monitored and controlled over the life of all contracts in the *netting set* (not just to the one year horizon).
  - (2) A *firm* must have procedures in place to identify and control the risks for counterparties where the *exposure* rises beyond the one-year horizon.
  - (3) A *firm* must input the forecast increase in *exposure* into the *firm's* internal capital model.
- [Note: BCD Annex III Part 6 point 31]

**Operational requirements: Stress testing**

13.6.56 **R**

- (1) A *firm* must have in place sound stress testing processes for use in the assessment of capital adequacy for CCR.
  - (2) These stress measures must be compared with the measure of *EPE* and considered by the *firm* as part of the process set out in ■ GENPRU 1.2.42 R.
  - (3) Stress testing must also involve identifying possible events or future changes in economic conditions that could have unfavourable effects on a *firm's* credit *exposures* and an assessment of the *firm's* ability to withstand such changes.
- [Note: BCD Annex III Part 6 point 32]

- 13.6.57 **R**
- (1) A firm must stress test its CCR exposures, including jointly stressing market risk and credit risk factors.
  - (2) In its stress tests of CCR, a firm must consider concentration risk (to a single counterparty or groups of counterparties), correlation risk across market risk and credit risk, and the risk that liquidating the counterparty's positions could move the market.
  - (3) In its stress tests a firm must also consider the impact on its own positions of such market moves and integrate that impact in its assessment of CCR.
- [Note: BCD Annex III Part 6 point 33]

### Operational requirements: Wrong-way risk

- 13.6.58 **R**
- A firm must give due consideration to exposures that give rise to a significant degree of general wrong-way risk.
- [Note: BCD Annex III Part 6 point 34]

- 13.6.59 **R**
- A firm must have procedures in place to identify, monitor and control cases of specific wrong-way risk, beginning at the inception of a transaction and continuing through the life of the transaction.
- [Note: BCD Annex III Part 6 point 35]

### Operational requirements: Integrity of modelling process

- 13.6.60 **R**
- A firm must ensure that:
- (1) the model reflects transaction terms and specifications in a timely, complete, and conservative fashion;
  - (2) such terms include at least:
    - (a) contract notional amounts;
    - (b) maturity;
    - (c) reference assets;
    - (d) margining arrangements; and
    - (e) netting arrangements;
  - (3) the terms and specifications are maintained in a database that is subject to formal and periodic audit;
  - (4) the process for recognising netting arrangements requires:
    - (a) signoff by legal staff to verify the legal enforceability of netting and
    - (b) input into the database by an independent unit;
  - (5) the transmission of transaction terms and specifications data to the model is also subject to internal audit; and
  - (6) formal reconciliation processes are in place between the model and source data systems to verify on an ongoing basis that transaction

terms and specifications are being reflected in *EPE* correctly or at least conservatively.

[Note: BCD Annex III Part 6 point 36]

13.6.61

**R**

A *firm* must ensure that:

- (1) the model employs current market data to compute *current exposures*;
- (2) when using historical data to estimate volatility and correlations, at least three years of historical data are used and updated quarterly or more frequently if market conditions warrant;
- (3) the data covers a full range of economic conditions, such as a full business cycle;
- (4) a unit independent from the business unit validates the price supplied by the business unit;
- (5) the data is acquired independently of the lines of business, fed into the model in a timely and complete fashion, and maintained in a database subject to formal and periodic audit;
- (6) it has a well-developed data integrity process to clean the data of erroneous and/or anomalous observations; and
- (7) to the extent that the model relies on proxy market data, including for new products where three years of historical data may not be available, internal policies identify suitable proxies and the *firm* demonstrates empirically that the proxy provides a conservative representation of the underlying risk under adverse market conditions.

[Note: BCD Annex III Part 6 point 37]

13.6.62

**R**

If the model includes the effect of collateral on changes in the market value of the *netting set*, a *firm* must have adequate historical data to model the volatility of the collateral.

13.6.63

**R**

A *firm* must ensure that the model is subject to a validation process which:

- (1) is clearly articulated in *firms'* policies and procedures;
- (2) specifies the kind of testing needed to ensure model integrity
- (3) identifies conditions under which assumptions are violated and may result in an understatement of *EPE*; and
- (4) includes a review of the comprehensiveness of the model.

[Note: BCD Annex III Part 6 point 38]



**13.6.64** **R** A firm must monitor the appropriate risks and have processes in place to adjust its estimation of *EPE* when those risks become significant. This includes the following:

- (1) the firm must identify and manage its exposures to *specific wrong-way risk*;
- (2) for exposures with a rising risk profile after one year, the firm must compare on a regular basis the estimate of *EPE* over one year with *EPE* over the life of the exposure; and
- (3) for exposures with a residual maturity below one year, the firm must compare on a regular basis the replacement cost (*current exposure*) and the realised exposure profile, and/or store data that would allow such a comparison.

[Note: BCD Annex III Part 6 point 39]

**13.6.65** **R** A firm must have internal procedures to verify that, prior to including a transaction in a *netting set*, the transaction is covered by a legally enforceable netting contract that meets the requirements set out in ■ BIPRU 13.7.

[Note: BCD Annex III Part 6 point 40]

**13.6.66** **R** A firm that makes use of collateral to mitigate its CCR must have internal procedures to verify that, prior to recognising the effect of collateral in its calculations, the collateral meets the legal certainty standards set out in ■ BIPRU 5 as modified, where relevant, by ■ BIPRU 4.10.

[Note: BCD Annex III Part 6 point 41]

### Validation requirements

**13.6.67** **R**

- (1) A firm's CCR internal model method model must meet the validation requirements in (2) to (8).
- (2) The qualitative validation requirements set out in ■ BIPRU 7.10 must be met.
- (3) Interest rates, foreign currency rates, equity prices, commodities, and other market risk factors must be forecast over long time horizons for measuring CCR exposure. The performance of the forecasting model for market risk factors must be validated over a long time horizon.
- (4) The pricing models used to calculate CCR exposure for a given scenario of future shocks to market risk factors must be tested as part of the CCR internal model method model validation process. Pricing models for options must account for the nonlinearity of option value with respect to market risk factors.
- (5) The CCR internal model method model must capture transaction-specific information in order to aggregate exposures at the level of the netting set. A firm must verify that transactions are assigned to the appropriate netting set within the model.

- (6) The *CCR internal model method* model must also include transaction-specific information to capture the effects of margining. It must take into account both the current amount of margin and margin that would be passed between counterparties in the future. Such a model must account for the nature of *margin agreements* (unilateral or bilateral), the frequency of margin calls, the *margin period of risk*, the minimum threshold of unmarginated *exposure* the *firm* is willing to accept, and the minimum transfer amount. Such a model must either model the mark-to-market change in the value of collateral posted or apply the *rules* set out in ■ BIPRU 5 as modified, where relevant, by ■ BIPRU 4.10.
- (7) Static, historical backtesting on representative counterparty portfolios must be part of the *CCR internal model method* model validation process. At regular intervals, a *firm* must conduct such backtesting on a number of representative counterparty portfolios (actual or hypothetical). These representative portfolios must be chosen based on their sensitivity to the material risk factors and correlations to which the *firm* is exposed.
- (8) If backtesting indicates that the *CCR internal model method* model is not sufficiently accurate, a *firm* must increase the *credit risk capital component* and, where ■ BIPRU 13 is applied for the purposes of ■ BIPRU 14, the *counterparty risk capital component* by an amount which is conservatively estimated to compensate for the inaccuracy of the model.

[Note: BCD Annex III Part 6 point 42 (part)]

**13.6.68**

**G**

If backtesting indicates that the *CCR internal model method* model is not sufficiently accurate, the *appropriate regulator* may revoke a *firm's CCR internal model method permission* or take appropriate measures to ensure that the model is improved promptly. Measures taken by the *appropriate regulator* may include the use of its *own-initiative power* to require the *firm* to hold more *capital resources*.

[Note: BCD Annex III Part 6 point 42 (part)]



## 13.7 Contractual netting

### Scope

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- 13.7.1 **R** ■ BIPRU 13.7 applies for the purpose of:
- (1) the *CCR mark to market method*;
  - (2) the *CCR standardised method*;
  - (3) if the *firm* has a *CCR internal model method permission*, the *CCR internal model method*.

### Types of netting recognised

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- 13.7.2 **R** For the purpose of ■ BIPRU 13.7:
- (1) counterparty means any entity (including natural *persons*) that has the power to conclude a contractual netting agreement; and
  - (2) *contractual cross product netting agreement* means a written bilateral agreement between a *firm* and a counterparty which creates a single legal obligation covering all included bilateral master agreements and transactions belonging to different product categories.

[Note: BCD Annex III Part 7 point (a) (part)]

- 13.7.3 **R** *Contractual cross product netting agreements* do not cover netting other than on a bilateral basis.

[Note: BCD Annex III Part 7 point (a) (part)]

- 13.7.4 **R** For the purposes of *cross product netting*, the following are considered different product categories:

- (1) *repurchase transactions, reverse repurchase transactions, securities or commodities lending or borrowing transactions*;
- (2) *margin lending transactions*; and
- (3) *financial derivative instruments*.

[Note: BCD Annex III Part 7 point (a) (part)]

13.7.5

**R**

A *firm* may recognise as risk-reducing the following types of contractual netting:

- (1) bilateral contracts for novation between a *firm* and its counterparty under which mutual claims and obligations are automatically amalgamated in such a way that this novation fixes one single net amount each time novation applies and thus creates a legally binding, single new contract extinguishing former contracts;
- (2) other bilateral agreements between a *firm* and its counterparty; and
- (3) a *firm* that has a *CCR internal model method permission* may recognise *Contractual cross product netting agreements* for transactions falling within the scope of its *CCR internal model method permission*; netting across transactions entered by members of a *group* is not recognised for the purposes of calculating capital requirements.

[Note: BCD Annex III Part 7 point (a) (part)]

### Conditions for recognition

13.7.6

**R**

A *firm* may treat contractual netting as risk-reducing only under the following conditions:

- (1) the *firm* must have a contractual netting agreement with its counterparty which creates a single legal obligation, covering all included transactions, such that, in the event of a counterparty's failure to perform owing to default, bankruptcy, liquidation or any other similar circumstance, the *firm* would have a claim to receive or an obligation to pay only the net sum of the positive and negative mark-to-market values of included individual transactions;
- (2) the *firm* must be in a position to provide to the *appropriate regulator*, if requested, written and reasoned legal opinions to the effect that, in the event of a legal challenge, the relevant courts and administrative authorities would, in the cases described under (1), find that the *firm's* claims and obligations would be limited to the net sum, as described in (1), under:
  - (a) the law of the jurisdiction in which the counterparty is incorporated and, if a foreign *branch* of an *undertaking* is involved, also under the law of the jurisdiction in which the *branch* is located;
  - (b) the law that governs the individual transactions included; and
  - (c) the law that governs any contract or agreement necessary to effect the contractual netting;
- (3) the *firm* must have procedures in place to ensure that the legal validity of its contractual netting is kept under review in the light of possible changes in the relevant laws;
- (4) the *firm* must maintain all required documentation in its files;
- (5) the effects of netting must be factored into the *firm's* measurement of each counterparty's aggregate credit risk *exposure* and the *firm* must manage its *CCR* on such a basis; and

- (6) the *firm* must aggregate credit risk to each counterparty to arrive at a single legal *exposure* across transactions; this aggregation must be factored into credit limit purposes and internal capital purposes.

[Note: BCD Annex III Part 7 point (b) (part)]

**13.7.7** **R** If any of the *competent authorities* concerned is not satisfied that the contractual netting is legally valid under the law of each of the relevant jurisdictions, the *firm* must not treat the contractual netting agreement as risk-reducing.

[Note: BCD Annex III Part 7 point (b) (part)]

**13.7.8** **R** A legal opinion required under **■ BIPRU 13.7.6 R (2)** may be in the form of a reasoned legal opinion drawn up by type of contractual netting.

[Note: BCD Annex III Part 7 point (b) (part)]

**13.7.9** **R** A *firm* must not recognise as risk-reducing any contract containing a provision which permits a non-defaulting counterparty to make limited payments only, or no payments at all, to the estate of the defaulter, even if the defaulter is a net creditor (a "walkaway" clause).

[Note: BCD Annex III Part 7 point (b) (part)]

**13.7.10** **R** In addition to the requirements in **■ BIPRU 13.7.2 R** to **■ BIPRU 13.7.9 R**, for *contractual cross product netting agreements* the following criteria must be met:

- (1) the net sum referred to in **■ BIPRU 13.7.6 R (1)** must be the net sum of the positive and negative close out values of any included individual bilateral master agreement and of the positive and negative mark-to-market value of the individual transactions (the Cross-Product Net Amount);
- (2) the written and reasoned legal opinions referred to in **■ BIPRU 13.7.6 R (2)** must address the validity and enforceability of the entire *contractual cross product netting agreement* under its terms and the impact of the netting arrangement on the material provisions of any included individual bilateral master agreement; a legal opinion must be generally recognised as such by the legal community in the *United Kingdom* or a memorandum of law that addresses all relevant issues in a reasoned manner;
- (3) the *firm* must have procedures in place under **■ BIPRU 13.7.6 R (3)** to verify that any transaction which is to be included in a *netting set* is covered by a legal opinion; and
- (4) taking into account the *contractual cross product netting agreement*, the *firm* must continue to comply with the requirements for the recognition of bilateral netting and the requirements of **■ BIPRU 4.10** and **■ BIPRU 5** for the recognition of *credit risk mitigation*, as applicable, with respect to each included individual bilateral master agreement and transaction.

[Note: BCD Annex III Part 7 point (b) (part)]

**Effects of recognition**

13.7.11

**R**

For the purposes of the *CCR mark to market method*, the *CCR standardised method* and the *CCR internal model method* a firm must recognise netting as set out in ■ BIPRU 13.3 and ■ BIPRU 13.6.

[Note: BCD Annex III Part 7 point (b) (part)]



## 13.8 Securities financing transactions

### Purpose

13.8.1 **G** ■ BIPRU 13.8 summarises the treatment for *securities financing transactions*.

### Calculation of exposure value for SFTs

13.8.2 **R** Subject to ■ BIPRU 13.8.3 R, in respect of a *securities financing transaction*, if a *firm*:

- (1) has a *CCR internal model method permission* which covers the transaction; or
- (2) has a *master netting agreement internal models approach permission* which covers the transaction;

then the *firm* must use the *CCR internal model method approach* or the *master netting agreement internal models approach*, as applicable, to calculate the *exposure value* for that transaction unless an exception in ■ BIPRU 13 or ■ BIPRU 5 allows the *firm* to use another method.

[Note: BCD Article 78(2), second sentence, in respect of *SFTs*]

13.8.3 **R** If a *firm* has a *CCR internal model method permission* and a *master netting agreement internal models approach permission*, and both cover a *securities financing transaction*, then the *firm* may choose which of those approaches it wishes to use to calculate the *exposure value* for that transaction.

13.8.4 **R** Where ■ BIPRU 13.8.2 R does not apply, a *firm* must use one of the following approaches to determine the *exposure value* of a *securities financing transaction*, as appropriate:

- (1) if the transaction is covered by a master netting agreement which satisfies the requirements for recognition set out in ■ BIPRU 5.6.1 R to ■ BIPRU 5.6.3 R, a *firm* may calculate the *exposure value* under the master netting agreement method set out in ■ BIPRU 5.6.5 R to ■ BIPRU 5.6.11 R (Calculation of the fully adjusted exposure value: the supervisory volatility adjustments approach and the own estimates of volatility adjustments approach);
- (2) otherwise, a *firm* must calculate the *exposure value* of the transaction as its on-balance sheet value.

**13.8.5** **G** A firm calculating risk weighted exposure amounts under the standardised approach to credit risk will not be eligible to use the approach in ■ BIPRU 13.8.4 R (1) if it is using the *financial collateral simple method* to determine the effects of *credit risk mitigation*, as set out in ■ BIPRU 5.4.16 R.

**13.8.6** **G** If a firm calculates the exposure value of a securities financing transaction as its on-balance sheet value, in accordance with ■ BIPRU 13.8.4 R (2), it may recognise the effects of financial collateral in the same way as for its other exposures, for example by using either the *financial collateral simple method* or the *financial collateral comprehensive method*. However firms should note that the *financial collateral simple method* is not available:

(1) to a firm using the *IRB approach* (■ BIPRU 5.4.16 R); or

(2) for securities financing transactions in the trading book (■ BIPRU 14.2.11 R).

### **Exposure to a central counterparty**

**13.8.7** **R** Notwithstanding ■ BIPRU 13.8.2 R, a firm must determine the exposure value of a credit risk exposure outstanding with a central counterparty in accordance with ■ BIPRU 13.8.8 R, provided that the central counterparty's counterparty credit risk exposures with all participants in its arrangements are fully collateralised on a daily basis.

[Note: BCD Article 78(4) in respect of SFTs]

**13.8.8** **R** A firm may attribute an exposure value of zero for CCR to a securities financing transaction or to any other exposures in respect of that transaction (but excluding an exposure arising from collateral held to mitigate losses in the event of the default of other participants in the central counterparty's arrangements) which is outstanding with a central counterparty and has not been rejected by the central counterparty.

[Note: BCD Annex III Part 2 point 6 in respect of SFTs]



							Interest rate risk hedging sets					FX risk hedging sets	Equit risk	
i	Transaction type			Effective notional	Modified duration	CMV	USD non-gov M<1	USD non-gov M>5	EUR non-gov M<1	EUR non-gov M>5	JPY non-gov M>5	EUR/USD	JPY/USD	DAX
			\$ million	years	\$ million	effective notional x modified duration	effective notional x modified duration	effective notional x modified duration	effective notional x modified duration	effective notional x modified duration	effective notional (+ = long, - = short)	effective notional (+ = long, - = short)	effective notional (+ = long, - = short)	
1	USD	IR swap	receiver leg	80	8	-6		640						
1	USD	IR swap	payer leg	80	-0.25		-20							
2	USD	IR swap	receiver leg	300	0.125		37.5							
2	USD	IR swap	payer leg	300	-6	2		-1800						
3	EUR	FX swap	receiver leg	100	15	0				1500	100			
3	USD	FX swap	payer leg	100	-0.125		-12.5							
4	EUR	cross ccy swap	receiver leg	60	7	1				420	60			
4	JPY	cross ccy swap	payer leg	60	-7					-420		-60		
5	DAX	Total return swap in EUR	receiver leg	150	0.125	4			18.75		150			
5	DAX	Total return swap	payer leg	150	not applicable								-150	

# BIPRU 13 : The calculation of counterparty risk exposure values for financial derivatives,...

	Interest rate risk hedging sets					FX risk hedging sets		Equit risk
in EUR								
Sum of risk positions RPT <sub>ij</sub> by hedging set <sub>j</sub>	5	-	18.75	1920	-420	310	-60	-150
		1160						
Absolute amount  sum of RPT <sub>ij</sub>   of risk positions by hedging set <sub>j</sub>	5	1160	18.75	1920	420	310	60	150
Credit conversion factors CCF <sub>j</sub> by hedging set <sub>j</sub>	0.20%	0.20%	0.20%	0.20%	0.20%	250%	250%	7%
CCF <sub>j</sub> x  sum of RPT <sub>ij</sub>  : CCF-weighted absolute amounts of risk positions by hedging set	0.0100	2.3200	0.0375	3.8400	0.8400	7.7500	1.5000	10.5000
Sum of (CCF <sub>j</sub> x  sum of RPT <sub>ij</sub>  )								26.7975
CMV: sum of <i>current market values</i> CMV <sub>i</sub> of the transactions								1.000
Max(CMV, sum of (CCF <sub>j</sub> x  sum of RPT <sub>ij</sub>  ))								26.7975
Beta:								1.4000
EAD								37.5165