

Chapter 13

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

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.

Transaction or instrument	Calculation of size of <i>risk position</i>
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 except in the case of an underlying debt instrument.	Equal to the delta equivalent effective notional value of the <i>financial instrument</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_{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 ■ BIPRU 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

R

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:

$$\text{exposure value} = \sum_j \max(\text{CMV} - \text{CMC}; 0) (\text{RPT}_{ij} - \text{RPC}_{ij}) * \text{CCRM}_j$$
 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_i = 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_{ij} = *risk position* from transaction *i* with respect to *hedging set j*;
 RPC_{lj} = *risk position* from collateral *l* with respect to *hedging set j*;
 CCRM_j = 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_{Pij} by hedging sets *j* is set out in ■ BIPRU 13 Annex 1 G