



Appendix CA-2: Definitions and General Terminology - Treatment of Counterparty Credit Risk and Cross-product Netting

A. General Terms

- **Counterparty Credit Risk ('CCR')** is the risk that the counterparty to a transaction could default before the final settlement of the transaction's cash flows. An economic loss would occur if the transactions or portfolio of transactions with the counterparty has a positive economic value at the time of default. Unlike a bank's exposure to credit risk through a loan, where the exposure to credit risk is unilateral and only the lending bank faces the risk of loss, CCR creates a bilateral risk of loss; the market value of the transaction can be positive or negative to either counterparty to the transaction. The market value is uncertain and can vary over time with the movement of underlying market factors.

B. Transaction Types

- **Long Settlement Transactions** are transactions where a counterparty undertakes to deliver a security, a commodity, or a foreign exchange amount against cash, other financial instruments, 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 instrument and 5 business days after the date on which the bank enters into the transaction.
- **Securities Financing Transactions ('SFTs')** are transactions, such as repurchase agreements, reverse repurchase agreements, security lending and borrowing, and margin lending transactions; where the value of the transactions depends on market valuations and the transactions are often subject to margin agreements.
- **Margin Lending Transactions** are transactions in which a bank extends credit in connection with the purchase, sale, carrying or trading of securities. Margin lending transactions do not include other loans that happen to be secured by securities collateral. Generally, in margin lending transactions, the loan amount is collateralised by securities whose value is greater than the amount of the loan.



C. Netting Sets, Hedging Sets and Related Terms

- **Netting Set** is a group of transactions with a single counterparty, that are subject to a legally enforceable, bilateral netting arrangement and for which netting is recognised, for regulatory capital purposes under the provisions of the Module CA, and the credit risk mitigation techniques in Module CA, or the Cross-Product Netting Rules set forth in this Appendix. Each transaction that is not subject to a legally enforceable bilateral netting arrangement that is recognised for regulatory capital purposes, should be interpreted as its own netting set for the purpose of these rules.
- **Risk Position** is a risk number that is assigned to a transaction under the SA-CCR method (set out in this Appendix) using a regulatory algorithm.
- **Hedging Set** is a group of risk positions from the transactions within a single netting set for which only their balance is relevant for determining the exposure amount or EAD under the SA-CCR.
- **Margin Agreement** is a contractual agreement or provisions to an agreement under which one counterparty must supply collateral to a second counterparty when an exposure of the second counterparty to the first counterparty exceeds a specified level.
- **Margin Threshold** is the largest amount of an exposure that remains outstanding until one party has the right to call for collateral.
- **Margin Period of Risk** is the time period from the last exchange of collateral covering a netting set of transactions with a defaulting counterpart until that counterpart is closed out, and the resulting market risk is re-hedged.
- **Effective Maturity under the Internal Model Method** for a netting set with maturity greater than 1 year is the ratio of the sum of expected exposure over the life of the transactions in a netting set discounted at the risk-free rate of return, divided by the sum of expected exposure over 1 year in a netting set discounted at the risk-free rate. This effective maturity may be adjusted to reflect rollover risk by replacing expected exposure with effective expected exposure for forecasting horizons under 1 year. The formula is given later in section V.
- **Cross-product Netting** refers to the inclusion of transactions of different product categories within the same netting set pursuant to the Cross-product Netting Rules set out in this Appendix.
- **Current Market Value ("CMV")** refers to the net market value of the portfolio of transactions within the netting set with the counterparty. Both positive and negative market values are used in computing CMV.

D. Distributions

- **Distribution of Market Values** is the forecast of the probability distribution of net market values of transactions within a netting set for some future date (the forecasting horizon) given the realised market value of those transactions up to the present time.



- **Distribution of Exposures** is the forecast of the probability distribution of market values that is generated by setting forecast instances of negative net market values equal to zero (this takes account of the fact that, when the bank owes the counterparty money, the bank does not have an exposure to the counterparty).
- **Risk-Neutral Distribution** is a distribution of market values or exposures at a future time period, where the distribution is calculated using market implied values such as implied volatilities.
- **Actual Distribution** is a distribution of market values or exposures at a future time period, where the distribution is calculated using historic or realised values, such as volatilities calculated using past price or rate changes.

E. Exposure Measures and Adjustments

- **Current Exposure** is the larger of zero, or the market value of a transaction or portfolio of transactions within a netting set with a counterparty that would be lost upon the default of the counterparty, assuming no recovery on the value of those transactions in bankruptcy. Current exposure is often also called replacement cost.
- **Peak Exposure** is a high percentile (typically 95 percent or 99 percent) of the distribution of exposures at any particular future date before the maturity date of the longest transaction in the netting set. A peak exposure value is typically generated for many future dates up until the longest maturity date of transactions in the netting set.
- **Expected Exposure** is the mean (average) of the distribution of exposures at any particular future date before the longest-maturity transaction in the netting set matures. An expected exposure value is typically generated for many future dates up until the longest maturity date of transactions in the netting set.
- **Effective Expected Exposure** at a specific date is the maximum expected exposure that occurs at that date or any prior date. Alternatively, it may be defined for a specific date as the greater of the expected exposure at that date, or the effective exposure at the previous date. In effect, the effective expected exposure is the expected exposure that is constrained to be non-decreasing over time.
- **Expected Positive Exposure ('EPE')** is the weighted average, over time, of expected exposures where the weights are the proportion that an individual expected exposure represents of the entire time interval. When calculating the minimum capital requirement, the average is taken over the first year or, if all the contracts in the netting set mature before 1 year, over the time period of the longest-maturity contract in the netting set.
- **Effective Expected Positive Exposure ('Effective EPE')** is the weighted average over time of effective expected exposure over the first year, or, if all the contracts in the netting set mature before 1 year, over the time period of the longest-maturity contract in the netting set where the weights are the proportion that an individual expected exposure represents of the entire time interval.



- **Credit Valuation Adjustment** is an adjustment to the mid-market valuation of the portfolio of trades with a counterparty. This adjustment reflects the market value of the credit risk due to any failure to perform on contractual agreements with a counterparty. This adjustment may reflect the market value of the credit risk of the counterparty or the market value of the credit risk of both the bank and the counterparty.
- **One-Sided Credit Valuation Adjustment** is a credit valuation adjustment that reflects the market value of the credit risk of the counterparty to the firm but does not reflect the market value of the credit risk of the bank to the counterparty.

F. CCR-related Risks

- **Rollover Risk** is the amount by which expected positive exposure is understated when future transactions with a counterpart are expected to be conducted on an ongoing basis, but the additional exposure generated by those future transactions is not included in the calculation of expected positive exposure.
- **General Wrong-way Risk** arises when the probability of default of counterparties is positively correlated with general market risk factors.
- **Specific Wrong-way Risk** arises when the exposure to a particular counterpart is positively correlated with the probability of default of the counterparty due to the nature of the transactions with the counterparty.



Appendix 2A: Treatment of Mark-to-market Counterparty Risk Losses (CVA Capital Charge)

CVA Risk Capital Charge

In addition to the default risk capital requirements for counterparty credit risk determined based on the SA for credit risk, a bank must add a capital charge to cover the risk of mark-to-market losses on the expected counterparty risk (such losses being known as credit value adjustments, CVA) to OTC sharia' compliant hedging instruments. The CVA capital charge is calculated in the manner set forth below depending on the bank's approved method of calculating capital charges for counterparty credit risk and specific interest rate risk. A bank is not required to include in this capital charge (i) transactions with a CCP, and (ii) SFT, unless the CBB determines that the bank's CVA loss exposures arising from SFT transactions are material.

Standardised CVA Risk Capital Charge

Banks must calculate a portfolio capital charge for the CVA. They may use either a simplified formula for unhedged CCR exposures as follows:

$$2.33 \times \text{counterparty weight (see table on next page)} \times \text{Exposure Amount} \times \text{Effective Maturity of OTC Sharia' compliant hedging instruments};$$

Or banks may use the full formula below for hedged shari'a compliant OTC :

$$K = 2.33 \cdot \sqrt{h} \cdot \sqrt{\left(\sum_i 0.5 \cdot w_i \cdot (M_i \cdot EAD_i^{\text{total}} - M_i^{\text{hedge}} B_i) - \sum_{ind} w_{ind} \cdot M_{ind} \cdot B_{ind} \right)^2 + \sum_i 0.75 \cdot w_i^2 \cdot (M_i \cdot EAD_i^{\text{total}} - M_i^{\text{hedge}} B_i)^2}$$

Where:

- h is the 1-year risk horizon (in units of a year), $h = 1$;
- w_i is the weight applicable to counterparty 'i'. Counterparty 'i' must be mapped to one of the seven weights w_i based on its external rating, as shown in the table of this paragraph below. When a counterparty does not have an external rating, the bank must, subject to supervisory approval, map the internal rating of the counterparty to one of the external ratings;
- EAD_i^{total} is the exposure at default of counterparty 'i' (summed across its netting sets), including the effect of collateral as per the existing IMM, SM or CEM rules as applicable to the calculation of counterparty risk capital charges for such counterparty by the bank. For non-IMM banks the exposure should be discounted by applying the factor $(1 - \exp(-0.05 \cdot M_i)) / (0.05 \cdot M_i)$. For IMM banks, no such discount should be applied as the discount factor is already included in M_i ;
- B_i is the notional of purchased single name CDS hedges (summed if more than one position) referencing counterparty 'i', and used to hedge CVA risk. This notional amount should be discounted by applying the factor $(1 - \exp(-0.05 \cdot M_i^{\text{hedge}})) / (0.05 \cdot M_i^{\text{hedge}})$;



- B_{ind} is the full notional of one or more index CDS of purchased protection, used to hedge CVA risk. This notional amount should be discounted by applying the factor $(1 - \exp(-0.05 * M_{ind})) / (0.05 * M_{ind})$;
- w_{ind} is the weight applicable to index hedges. The bank must map indices to one of the seven weights w_i based on the average spread of index 'ind';
- M_i is the effective maturity of the transactions with counterparty 'i'. For IMM banks, M_i is to be calculated as per Appendix CA-2, paragraph 38. For non IMM banks, M_i is the notional weighted average maturity as referred to in CA-5.3.46(c). However, for this purpose, M_i should not be capped at 5 years;
- M_i^{hedge} is the maturity of the hedge instrument with notional B_i (the quantities M_i^{hedge} , B_i are to be summed if these are several positions); and
- M_{ind} is the maturity of the index hedge 'ind'. In case of more than one index hedge position, it is the notional weighted average maturity.

For any counterparty that is also a constituent of an index on which a CDS is used for hedging counterparty credit risk, the notional amount attributable to that single name (as per its reference entity weight) may, with supervisory approval, be subtracted from the index CDS notional amount and treated as a single name hedge (B_i) of the individual counterparty with maturity based on the maturity of the index.

The weights are given in this table, and are based on the external rating of the counterparty¹. As mentioned in the 'full formula' approach, the bank should map an internal rating of the counterparty to an external rating below. Where a bank is using the 'simplified formula', it should use a 1 percent weight if the counterparty is unrated.

Rating	Weight w_i
AAA	0.7%
AA	0.7%
A	0.8%
BBB	1.0%
BB	2.0%
B	3.0%
CCC	10.0%

¹ The notations follow the methodology used by one institution, Standard & Poor's. The use of Standard & Poor's credit ratings is an example only; those of some other approved external credit assessment institutions could be used on an equivalent basis. The ratings used throughout this document, therefore, do not express any preferences or determinations on external assessment institutions by the CBB.



Calculation of the Aggregate CCR and CVA Risk Capital Charges

This Paragraph deals with the aggregation of the default risk capital charge and the CVA risk capital charge for potential mark-to-market losses. Note that outstanding EAD referred to in the default risk capital charges below is net of incurred CVA losses according to paragraph 9 in Appendix CA-2. In this Paragraph, 'IMM capital charge' refers to the default risk capital charge for CCR based on the RWAs obtained when multiplying the outstanding EAD of each counterparty under the IMM approach by the applicable credit risk weight (under the SA), and summing across counterparties. Equally, 'CEM capital charge' or 'SM capital charge' refer to the default risk capital charges where outstanding EADs for all counterparties in the portfolio are determined based on CEM or SM, respectively.

A. Banks With IMM Approval and Without Specific Risk VaR Approval for Bonds

The total CCR capital charge for such a bank is determined as the sum of the following components:

- i. The higher of (a) the IMM capital charge based on current parameter calibrations for EAD and (b) the IMM capital charge based on stressed parameter calibrations for EAD; and
- ii. The standardised CVA risk capital charge determined by Paragraph 52.

B. All other banks

The total CCR capital charge for such banks is determined as the sum of the following two components:

- i. The sum over all counterparties of the CEM or SM based capital charge (depending on the bank's CCR approach) with EADs determined by Paragraphs 43 or 20 respectively; and
- ii. The standardised CVA risk capital charge determined by Paragraph 52.



If the ECAI is Standard and Poor's, Moody's or Fitch, the ratings are to be mapped to the relevant credit rating grades as shown in Table 1 and 2 below.

Table 1: Recognised short-term ratings and equivalent credit rating grades

Credit rating grade	Standard and Poor's	Moody's	Fitch
1	A1	P1	F1
2	A2	P2	F2
3	A3	P3	F3
4	All other ratings	All other ratings	All other ratings

Table 2: Recognised long-term ratings and equivalent credit rating grades

Credit rating grade	Standard and Poor's	Moody's	Fitch
1	AAA	Aaa	AAA
2	AA+	Aa1	AA+
3	AA	Aa2	AA
4	AA-	Aa3	AA-
5	A+	A1	A+
6	A	A2	A
7	A-	A3	A-
8	BBB+	Baa1	BBB+
9	BBB	Baa2	BBB
10	BBB-	Baa3	BBB-
11	All other ratings	All other ratings	All other ratings