Appendix CA-2

Treatment of counterparty credit risk and cross-product netting

1. This Appendix identifies permissible methods for estimating the Exposure at Default (EAD) or the exposure amount for instruments with counterparty credit risk (CCR) in Module CA.[1] Banks may use the standardised method or the current exposure method.

I. Definitions and general terminology

2. This section defines terms that will be used throughout this text.

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 firm'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, 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 instrument and five 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.

[1] In this appendix, the terms "exposure at default" and "exposure amount" are used interchangeably to identify measures of exposure for credit risk.

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 CCR standardised 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 CCR standardised method.
- **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 that 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 one 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 one 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 one 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% or 99%) 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 one 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 one 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 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.

II. Scope of application

3. The methods for computing the exposure amount under the standardised approach for credit risk described in this Appendix are applicable to SFTs and OTC derivatives.

4. Such instruments generally exhibit the following abstract characteristics:

- The transactions generate a current exposure or market value.
- The transactions have an associated random future market value based on market variables.
- The transactions generate an exchange of payments or an exchange of a financial instrument (including commodities) against payment.
- The transactions are undertaken with an identified counterparty against which a unique probability of default can be determined[2]

5. Other common characteristics of the transactions to be covered may include the following:

- Collateral may be used to mitigate risk exposure and is inherent in the nature of some transactions.

[2] Transactions for which the probability of default is defined on a pooled basis are not included in this treatment of CCR

- Short-term financing may be a primary objective in that the transactions mostly consist of an exchange of one asset for another (cash or securities) for a relatively short period of time, usually for the business purpose of financing. The two sides of the transactions are not the result of separate decisions but form an indivisible whole to accomplish a defined objective.
- Netting may be used to mitigate the risk.
- Positions are frequently valued (most commonly on a daily basis), according to market variables.
- Re-margining may be employed.

6. An exposure value of zero for counterparty credit risk can be attributed to derivative contracts or SFTs that are outstanding with a central counterparty (e.g. a clearing house). This does not apply to counterparty credit risk exposures from derivative transactions and SFTs that have been rejected by the central counterparty. Furthermore, an exposure value of zero can be attributed to banks' credit risk exposures to central counterparties that result from the derivative transactions, SFTs or spot transactions that the bank has outstanding with the central counterparty. This exemption extends in particular to credit exposures from clearing deposits and from collateral posted with the central counterparty. A central counterparty is an entity that interposes itself between counterparties to contracts traded within one or more financial markets, becoming the legal counterparty such that it is the buyer to every seller and the seller to every buyer. In order to qualify for the above exemptions, the central counterparty CCR exposures with all participants in its arrangements must be fully collateralized on a daily basis, thereby providing protection for the central counterparty's CCR exposures. Assets held by a central counterparty as a custodian on the bank's behalf would not be subject to a capital requirement for counterparty credit risk exposure.

7. Under the methods identified in this Appendix, when a bank purchases credit derivative protection against a banking book exposure, or against a counterparty credit risk exposure, it will determine its capital requirement for the hedged exposure subject to the criteria and general rules for the recognition of credit derivatives, i.e. substitution or double default rules as appropriate. Where these rules apply, the exposure amount or EAD for counterparty credit risk from such instruments is zero.

8. The exposure amount or EAD for counterparty credit risk is zero for sold credit default swaps in the banking book where they are treated in the framework as a guarantee provided by the bank and subject to a credit risk charge for the full notional amount.

9. Under the two methods identified in this Appendix, the exposure amount or EAD for a given counterparty is equal to the sum of the exposure amounts or EADs calculated for each netting set with that counterparty. "Outstanding EAD" for a given OTC derivative counterparty is defined as the greater of zero and the difference between the sum of EADs across all netting sets with the counterparty and the credit valuation adjustment (CVA) for that counterparty which has already been recognised by the bank as an incurred write-down (ie a CVA loss). This CVA loss is calculated without taking into account any offsetting debit valuation adjustments which have been deducted from capital under paragraph 27. RWAs for a given OTC derivative counterparty may be calculated as the applicable risk weight under the Standardised approach multiplied by the outstanding EAD of the counterparty. This reduction of EAD by incurred CVA losses does not apply to the determination of the CVA risk capital charge. Please note the incurred CVA loss deduced from exposures to determine outstanding EAD is the CVA loss gross of all debit value adjustments (DVA) which have been separately deducted from capital. To the extent DVA has not been separately deducted from a bank's capital, the incurred CVA loss used to determine outstanding EAD will be net of such DVA.

III. Cross-product netting rules[3]

10. Banks that receive approval to estimate their exposures to CCR using the internal model method may include within a netting set SFTs, or both SFTs and OTC derivatives subject to a legally valid form of bilateral netting that satisfies the following legal and operational criteria for a Cross-Product Netting Arrangement (as defined below). The bank must also have satisfied any prior approval or other procedural requirements that CBB determines to implement for purposes of recognising a Cross-Product Netting Arrangement.

Legal Criteria

11. The bank has executed a written, bilateral netting agreement with the counterparty that creates a single legal obligation, covering all included bilateral master agreements and transactions ("Cross-Product Netting Arrangement"), such that the bank would have either a claim to receive or obligation to pay only the net sum of the positive and negative (i) close- out values of any included individual master agreements and (ii) mark-to-market values of any included individual transactions (the "Cross-Product Net Amount"), in the event a counterparty fails to perform due to any of the following: default, bankruptcy, liquidation or similar circumstances.

12. The bank has written and reasoned legal opinions that conclude with a high degree of certainty that, in the event of a legal challenge, relevant courts or administrative authorities would find the firm's exposure under the Cross-Product Netting Arrangement to be the Cross-Product Net Amount under the laws of all relevant jurisdictions. In reaching this conclusion, legal opinions must address the validity and enforceability of the entire Cross- Product Netting Arrangement under its terms and the impact of the Cross-Product Netting Arrangement on the material provisions of any included bilateral master agreement.

[3] These Cross-Product Netting Rules apply specifically to netting across SFTs, or to netting across both SFTs and OTC derivatives, for purposes of regulatory capital computation under IMM. They do not revise or replace the rules that apply to recognition of netting within the OTC derivatives, repo-style transaction, and margin lending transaction product categories under the 1988 Accord, as amended, or in this Framework. The rules in the 1988 Accord and this Framework continue to apply for purposes of regulatory capital recognition of netting within product categories under IMM or other relevant methodology

- The laws of "all relevant jurisdictions" are: (i) the law of the jurisdiction in which the counterparty is chartered and, if the foreign branch of a counterparty is involved, then also under the law of the jurisdiction in which the branch is located, (ii) the law that governs the individual transactions, and (iii) the law that governs any contract or agreement necessary to effect the netting.

- A legal opinion must be generally recognised as such by the legal community in the firm's home country or a memorandum of law that addresses all relevant issues in a reasoned manner.

13. The bank has internal procedures to verify that, prior to including a transaction in netting set; the transaction is covered by legal opinions that meet the above criteria.

14. The bank undertakes to update legal opinions as necessary to ensure continuing enforceability of the Cross-Product Netting Arrangement in light of possible changes in relevant law.

15. The Cross-Product Netting Arrangement does not include a walkaway clause. A walkaway clause is a provision which permits a non-defaulting counterparty to make only limited payments, or no payment at all, to the estate of the defaulter, even if the defaulter is a net creditor.

16. Each included bilateral master agreement and transaction included in the Cross-Product Netting Arrangement satisfies applicable legal requirements for recognition of (i) bilateral netting of derivatives contracts in Appendix 3 of the 1988 Accord, as amended in April 1995, or (ii) credit risk mitigation techniques in Part 2, Section II.D of this framework.

17. The bank maintains all required documentation in its files.

Operational Criteria

18. The CBB authority is satisfied that the effects of a Cross-Product Netting Arrangement are factored into the firm's measurement of a counterparty's aggregate credit risk exposure and that the bank manages its counterparty credit risk on such basis.

19. Credit risk to each counterparty is aggregated to arrive at a single legal exposure across products covered by the Cross-Product Netting Arrangement. This aggregation must be factored into credit limit and economic capital processes.

IV. Standardised Method

20. The standardised method can be used only for OTC derivatives; SFTs are subject to the treatments set out under Chapter CA-4. The exposure amount (under the standardised approach for credit risk) or EAD is to be calculated separately for each netting set. It is determined as follows:

$$\textbf{exposure amount or EAD} = \beta \cdot \max\left(CMV - CMC; \sum_j \left| \sum_i RPT_{ij} - \sum_l RPC_{lj} CCF_j \right|\right)$$

Where:

CMV = Current market value of the portfolio of transactions within the netting set with a counterparty gross of collateral, i.e.

$CMV = \sum_i CMV_i$, **where** CMV_i is the current market value of transaction **i**.

CMC = Current market value of the collateral assigned to the netting set, i.e. $CMC = \sum CMC_l$, where CMC_l is the current market value of collateral l.

i = index designating transaction.

I = index designating transaction

j = index designating CBB's hedging sets. 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

RPT_{iJ} = Risk position from *transation* I with respect to hedging set j[9]

Pri_{ck} = Risk position from collateral I with respect to heeding set j.

CCF_j = CBB's credit conversion factor with respect to the heeding set j[10]

β = CBB's scaling parameter.

Collateral received from a counterparty has a positive sign; collateral posted to a counterparty has a negative sign.

Collateral that is recognised for the standardised approach is confined to the collateral that is eligible under CA-4.3.2 and CA-8.3.2 of this Framework for credit risk mitigation.

21. When an OTC derivative transaction with linear risk profile (e.g. a forward, a future or a swap agreement) stipulates the exchange of a financial instrument (e.g. a bond, an equity, or a commodity) for a payment, the payment part is referred to as the payment leg. Transactions that stipulate the exchange of payment against payment (e.g. an interest rate swap or a foreign exchange forward) consist of two payment legs. The payment legs consist of the contractually agreed gross payments, including the notional amount of the transaction. Banks may disregard the interest rate risk from payment legs with a remaining maturity of less than one year from the following calculations. Banks may treat transactions that consist of two payment legs that are denominated in the same currency (e.g. interest rate swaps) as a single aggregate transaction. The treatment for payment legs applies to the aggregate transaction.

22. Transactions with linear risk profiles that have equity (including equity indices), gold, other precious metals or other commodities as the underlying financial instruments are mapped to a risk position in the respective equity (or equity index) or commodity (including gold and the other precious metals) hedging set. The payment leg of these transactions is mapped to an interest rate risk position within the appropriate interest rate hedging set. If the payment leg is denominated in a foreign currency, the transaction is also mapped to a foreign exchange risk position in the respective currency.

23. Transactions with linear risk profiles that have a debt instrument (e.g. a bond or a loan) as the underlying instrument are mapped to an interest rate risk positions with one risk position for the debt instrument and another risk position for the payment leg. Transactions with linear risk profiles that stipulate the exchange of payment against payment (including foreign exchange forwards) are mapped to an interest rate risk position for each of the payment legs. If the underlying debt instrument is denominated in a foreign currency, the debt instrument is mapped to a foreign exchange risk position in the respective currency. If a payment leg is denominated in a foreign currency, the payment leg is also mapped to a foreign exchange risk position in this currency[4]. The exposure amount or EAD assigned to a foreign exchange basis swap transactions is zero.

24. For all but debt instruments, the size of a risk position from a transaction with linear risk profile is the effective notional value (market price multiplied by quantity) of the underlying financial instruments (including commodities) converted to the firm's domestic currency.

25. For debt instruments and the payment legs of all transactions, the size of the risk position is the effective notional value of the outstanding gross payments (including the notional amount) converted to the firm's domestic currency, multiplied by the modified duration of the debt instrument or payment leg, respectively.

26. The size of a risk position from a credit default swap is the notional value of the reference debt instrument multiplied by the remaining maturity of the credit default swap.

27. The size of a risk position from an OTC derivative with non-linear risk profile (including options and swaptions) is equal to the delta equivalent effective notional value of the financial instrument that underlies the transaction, except in the case of an underlying debt instrument.

28. For OTC derivative with non-linear risk profiles (including options and swaptions), for which the underlying is a debt instrument or a payment leg, the size of the risk position is equal to the delta equivalent effective notional value of the financial instrument or payment leg multiplied by the modified duration of the debt instrument or payment leg.

29. Banks may use the following formulas to determine the size and sign of a risk position:

(a) For all but debt instruments:

effective notional value, or delta equivalent notional value =

$$p_{ref} \frac{\partial V}{\partial p}$$

where

p_{ref} price of the underlying instrument, expressed in the reference currency

[4] E.g. a short-term FX forward with one leg denominated in the firm's domestic currency will be mapped into three risk positions: 1. an FX risk position, 2. a foreign currency interest rate risk position, 3. a domestic currency risk position.

V value of the financial instrument (in the case of an option: option price; in the case of a transaction with a linear risk profile: value of the underlying instrument itself)

p price of the underlying instrument, expressed in the same currency as V

(b) 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

$$\frac{\partial V}{\partial r}$$

Where:

V value of the financial instrument (in the case of an option: option price; in the case of a transaction with a linear risk profile: value of the underlying instrument itself or of the payment leg, respectively)

r interest level

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.

30. The risk positions are to be grouped into hedging sets. For each hedging set, the absolute value amount of the sum of the resulting risk positions is computed. This sum is termed the "net risk position" and is represented as

$$\left| \sum_i RPT_{ij} - \sum_l RPC_{lj} \right|$$

in the formulas in paragraph 20 of this Appendix.

31. Interest rate positions arising from debt instruments of low specific risk are to be mapped into one of six hedging sets for each represented currency. A debt instrument is classified as being of low specific risk when it is subject to a 1.6 percent or lower capital charge under the revised rules for specific risk in the standardised approach to market risk (CA-9.2.3). Interest rate positions arising from the payment legs are to be assigned to the same hedging sets as interest rate risk positions from debt instruments of low specific risk. Interest rate positions arising from money deposits received from the counterparty as collateral are also to be assigned to the same hedging sets as interest rate risk positions from debt instruments of low specific risk. The six hedging sets per currency are defined by a combination of two criteria:

(i)The nature of the referenced interest rate — either a sovereign (government) rate or some other rate.

(ii)The remaining maturity or rate-adjustment frequency — less than one year, between one and five years, or longer than five years.

Table 1

Hedging Sets for Interest Rate Risk Positions Per Currency

Remaining maturity or rate-adjustment frequency	Sovereign-referenced interest rates	Non-sovereign-referenced interest rates
One year or less	X	X
Over one year to five years	X	X
Over five years	X	X

32. For underlying debt instruments (e.g. floating rate notes) or payment legs (e.g. floating rate legs of interest swaps) for which the interest rate is linked to a reference interest rate that represents a general market interest level (e.g. government bond yield, money market rate, swap rate), the rate-adjustment frequency is the length of the time interval up to the next re-adjustment of the reference interest rate. Otherwise, the remaining maturity is the remaining life of the underlying debt instrument, or, in the case of a payment leg, the remaining life of the transaction.

33. There is one hedging set for each issuer of a reference debt instrument that underlies a credit default swap.

34. There is one hedging set for each issuer of a debt instrument of high specific risk, i.e. debt instruments to which a capital charge of more than 1.60 percent applies under the standardised measurement method for interest rate risk following Section CA-9.2 of the CBB Rulebook. The same applies to money deposits that are posted with counterparty as collateral when that counterparty does not have debt obligations of low specific risk outstanding. When a payment leg emulates a debt instrument of high specific risk (e.g. in the case of a total return swap with one leg that emulates a bond), there is also one hedging set for each issuer of the reference debt instrument. Banks 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.

35. Underlying financial instruments other than debt instruments (equities, precious metals, commodities, other instruments), are assigned to the same respective hedging sets only if they are identical or similar instruments. The similarity of instruments is established as follows:

- For equities, similar instruments are those of the same issuer. An equity index is treated as a separate issuer.
- For precious metals, similar instruments are those of the same metal. A precious metal index is treated as a separate precious metal.
- For commodities, similar instruments are those of the same commodity. A commodity index is treated as a separate commodity.
- For electric power, delivery rights and obligations that refer to the same peak or off-peak load time interval within any 24 hour interval are similar instruments.

36. The credit conversion factor that is applied to a net risk position from a hedging set depends on the CBB's hedging set category as given in paragraphs 37 to 39 of this Appendix.

37. The credit conversion factors for underlying financial instruments other than debt instruments and for foreign exchange rates are given in Table 2.

Table 2

Exchange Rates	Gold	Equity	Precious Metals (except gold)	Electric Power	Other Commodities (excluding precious metals)
2.5%	5.0%	7.0%	8.5%	4%	10.0%

38. The credit conversion factor for risk positions from debt instruments are as follows:

- 0.6 percent for risk positions from a debt instrument or reference debt instrument of high specific risk.
- 0.3 percent for risk position from a reference debt instrument that underlies a credit default swap and that is of low specific risk.
- 0.2 percent otherwise.

39. Underlying instruments of OTC derivatives that are not in any of the categories above are assigned to separate individual hedging sets for each category of underlying instrument. A credit conversion factor of 10 percent is applied to the notional equivalent amount.

40. There may be transactions with a non-linear risk profile for which the bank cannot determine the delta with a model that the CBB has approved for the purposes for determining the minimum capital requirements for market risk (instrument models approved for the purposes of the standardised approach for market risk, or instrument models approved as part of the firm's admission to the internal modelling approach for market risk).

41. In the case of payment legs and transactions with debt instruments as underlying, there may be transactions for which the bank cannot determine the modified duration with such a model. For these transactions, the CBB will determine the size of the risk positions and the applicable credit conversion factors conservatively. Alternatively, CBB may require the use of the current exposure method. Netting will not be recognised: in other words, the exposure amount or EAD is to be determined as if there were a netting set that comprises just the individual transaction.

42. The CBB's scaling parameter β (beta) is set at 1.4.

V. Current Exposure Method

43. Banks may use the current exposure method as identified in paragraphs CA-4.3.30 and CA-4.3.31 of the CBB Rulebook. The current exposure method is to be applied to OTC derivatives only; SFTs are subject to the treatments set out under Chapter CA-4.

44. Under the Current Exposure Method, banks must calculate the current replacement cost by marking contracts to market, thus capturing the current exposure without any need for estimation, and then adding a factor (the "add-on") to reflect the potential future exposure over the remaining life of the contract. It has been agreed that, in order to calculate the credit equivalent amount of these instruments under this current exposure method, a bank would sum:

- The total replacement cost (obtained by "marking to market") of all its contracts with positive value; and
- An amount for potential future credit exposure calculated on the basis of the total notional principal amount of its book, split by residual maturity as follows:

	Interest Rates	FX and Gold	Equities	Precious Metals Except Gold	Other Commodities
One year or less	0.0%	1.0%	6.0%	7.0%	10.0%
Over one year to five years	0.5%	5.0%	8.0%	7.0%	12.0%
Over five years	1.5%	7.5%	10.0%	8.0%	15.0%

Notes:

1. For contracts with multiple exchanges of principal, the factors are to be multiplied by the number of remaining payments in the contract.

2. 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, the residual maturity would be set equal to the time until the next reset date. In the case of interest rate contracts with remaining maturities of more than one year that meet the above criteria, the add-on factor is subject to a floor of 0.5%.

3. Forwards, swaps, purchased options and similar derivative contracts not covered by any of the columns of this matrix are to be treated as "other commodities".

4. No potential future credit exposure would be calculated for single currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.

45. Add-ons should be based on effective rather than apparent notional amounts. In the event that the stated notional amount is leveraged or enhanced by the structure of the transaction, banks must use the effective notional amount when determining potential future exposure.

46. Banks can obtain capital relief for collateral as defined in CA-4.3.2 and CA-8.3.2 of this Framework. The methodology for the recognition of eligible collateral follows that of the applicable approach for credit risk.

47. The counterparty credit risk exposure amount or EAD for single name credit derivative transactions in the trading book will be calculated using the potential future exposure add-on factors set out in paragraph CA-8.3.5 of the CBB Rulebook.

48. To determine capital requirements for hedged banking book exposures, the treatment for credit derivatives in this Framework applies to qualifying credit derivative instruments.

49. Where a credit derivative is an nth-to-default transaction (such as a first-to-default transaction), the treatment specified in paragraph CA-8.3.6 of the CBB Rulebook applies.

Bilateral netting

50(i). Careful consideration has been given to the issue of bilateral netting, i.e. weighting the net rather than the gross claims with the same counterparties arising out of the full range of forwards, swaps, options and similar derivative contracts.[5] The CBB is concerned that if a liquidator of a failed counterparty has (or may have) the right to unbundle netted contracts, demanding performance on those contracts favourable to the failed counterparty and defaulting on unfavourable contracts, there is no reduction in counterparty risk.

50(ii). Accordingly, for capital adequacy purposes:

(a) Banks may net transactions subject to novation under which any obligation between a bank and its counterparty to deliver a given currency on a given value date is automatically amalgamated with all other obligations for the same currency and value date, legally substituting one single amount for the previous gross obligations.
(b) Banks may also net transactions subject to any legally valid form of bilateral netting not covered in (a), including other forms of novation.
(c) In both cases (a) and (b), a bank will need to satisfy its national supervisor that it has:[6]

(i) A netting contract or agreement with the counterparty which creates a single legal obligation, covering all included transactions, such that the bank would have either a claim to receive or obligation to pay only the net sum of the positive and negative mark-to-market values of included individual transactions in the event a counterparty fails to perform due to any of the following: default, bankruptcy, liquidation or similar circumstances;

(ii) Written and reasoned legal opinions that, in the event of a legal challenge, the relevant courts and administrative authorities would find the bank's exposure to be such a net amount under:

- The law of the jurisdiction in which the counterparty is chartered and, if the foreign branch of a counterparty is involved, then also under the law of the jurisdiction in which the branch is located;
- The law that governs the individual transactions; and
- The law that governs any contract or agreement necessary to effect the netting.

[5] Payments netting, which is designed to reduce the operational costs of daily settlements, will not be recognised in the capital framework since the counterparty's gross obligations are not in any way affected.
[6] In cases where an agreement as described in 50(ii) (a) has been recognised prior to July 1994, the supervisor will determine whether any additional steps are necessary to satisfy itself that the agreement meets the requirements set out below.

The national supervisor, after consultation when necessary with other relevant supervisors, must be satisfied that the netting is enforceable under the laws of each of the relevant jurisdictions;[7]

(iii) Procedures in place to ensure that the legal characteristics of netting arrangements are kept under review in the light of possible changes in relevant law.

50(iii). Contracts containing walkaway clauses will not be eligible for netting for the purpose of calculating capital requirements pursuant to this Framework. A walkaway clause is a provision which permits a non-defaulting counterparty to make only limited payments, or no payment at all, to the estate of a defaulter, even if the defaulter is a net creditor.

50(iv). Credit exposure on bilaterally netted forward transactions will be calculated as the sum of the net mark-to-market replacement cost, if positive, plus an add-on based on the notional underlying principal. The add-on for netted transactions (ANet) will equal the weighted average of the gross add-on (AGross)[8] and the gross add-on adjusted by the ratio of net current replacement cost to gross current replacement cost (NGR). This is expressed through the following formula:

$$ANet=0.4*AGross+0.6*NGR*AGross$$

where :

NGR=level of net replacement cost/level of gross replacement cost for transactions subject to legally enforceable netting agreements[9]

50(v). The scale of the gross add-ons to apply in this formula will be the same as those for non-netted transactions as set out in paragraphs 45 to 50 of this Annex. The CBB will continue to review the scale of add-ons to make sure they are appropriate. For purposes of calculating potential future credit exposure to a netting counterparty for forward foreign exchange contracts and other similar contracts in which notional principal is equivalent to cash flows, notional principal is defined as the net receipts falling due on each value date in each currency. The reason for this is that offsetting contracts in the same currency maturing on the same date will have lower potential future exposure as well as lower current exposure.

Risk weighting

50(vi). Once the bank has calculated the credit equivalent amounts they are to be weighted according to the category of counterparty in the same way as in the main framework, including concessionary weighting in respect of exposures backed by eligible guarantees and collateral. The CBB will keep a close eye on the credit quality of participants in these markets and reserves the right to raise the weights if average credit quality deteriorates or if loss experience increases.

[7] Thus, if any of these supervisors is dissatisfied about enforceability under its laws, the netting contract or agreement will not meet this condition and neither counterparty could obtain supervisory benefit.

[8] A Gross equals the sum of individual add-on amounts (calculated by multiplying the notional principal amount by the appropriate add-on factors set out in paragraph 45 of this Annex) of all transactions subject to legally enforceable netting agreements with one counterparty.

[9] National authorities may permit a choice of calculating the NGR on a counterparty by counterparty or on an aggregate basis for all transactions subject to legally enforceable netting agreements. If supervisors permit a choice of methods, the method chosen by an institution is to be used consistently. Under the aggregate approach, net negative current exposures to individual counterparties cannot be used to offset net positive current exposures to others, i.e. for each counterparty the net current exposure used in calculating the NGR is the maximum of the net replacement cost or zero. Note that under the aggregate approach, the NGR is to be applied individually to each legally enforceable netting agreement so that the credit equivalent amount will be assigned to the appropriate counterparty risk weight category.

Treatment of mark-to-market counterparty risk losses (CVA capital charge)

- CVA Risk Capital Charge

51. In addition to the default risk capital requirements for counterparty credit risk determined based on the standardised approach 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 derivatives. 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 central counterparty (CCP); and (ii) securities financing transactions (SFT), unless the CBB determines that the bank's CVA loss exposures arising from SFT transactions are material.

Standardised CVA Risk Capital Charge

52. 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 x counterparty weight (see table on next page) x Exposure Amount x Effective Maturity of OTC Derivative;

Or banks may use the full formula below for hedged OTC derivatives:

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

Where

- h is the one-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 $(1-\exp(-0.05*M_i))/(0.05*M_i)$. 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 $(1-\exp(-0.05*M_i^{hedge}))/(0.05*M_i^{hedge})$.

- 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 wi based on the average spread of index 'ind'.

- M_i is the effective maturity of the transactions with counterparty 'i'. For IMMbanks, 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.

- Mi^{hedge} is the maturity of the hedge instrument with notional Bi (the quantities Mi^{hedge}. B_i are to be summed if these are several positions).

- 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 counterparty[10]. 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% 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%

[10] 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

53. 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 Standardised approach), 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.

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.