Basel Committee
on Banking Supervision

Consultative Document

The Application of Basel II to Trading Activities and the Treatment of Double Default Effects

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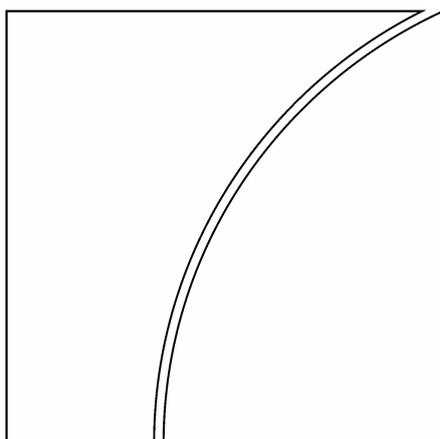
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Fax: +41 61 280 9100 and +41 61 280 8100

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The Application of Basel II to Trading Activities and the Treatment of Double Default Effect

Introduction

1.   The efforts of the Basel Committee on Banking Supervision (BCBS) to revise the standards governing the capital adequacy of internationally active banks achieved a critical milestone in the publication of an agreed text in June 2004. The ***International Convergence of Capital Measurement and Capital Standards: a Revised Framework***[1] describes a more comprehensive measure and minimum standard for capital adequacy that national supervisory authorities represented on the BCBS are now working to implement through domestic rule-making and adoption procedures.

2.   The "Basel II" framework, or Revised Framework, as the new standard is frequently called, seeks to improve on the existing rules by aligning regulatory capital requirements more closely to the underlying risks that banks face. In addition, the Revised Framework is intended to promote a more forward-looking approach to capital supervision, one that encourages banks to identify the risks they may face, today and in the future, and to develop or improve their ability to manage those risks. As a result, the Revised Framework is intended to be more flexible and better able to evolve with advances in markets and risk management practices.

3.   In releasing the Revised Framework last summer, the BCBS re-iterated its intention to maintain its active dialogue with the industry to ensure that the new framework keeps pace with, and can be applied to, ongoing developments in the financial services sector. Two areas that the BCBS identified where immediate work should be done concerned (1) finding a prudentially sound treatment under the Revised Framework for exposures to "double default," where the risk of both a borrower and a guarantor defaulting on the same obligation may be substantially lower than the risk of only one of the parties defaulting; and (2) applying the Revised Framework to certain exposures arising from trading activities.

4.   Given the interest of both banks and securities firms in the potential solutions to these particular issues, the BCBS has worked jointly with the International Organization of Securities Commissions (IOSCO) to consult with industry representatives and other supervisors on these matters. This paper describes a proposal to address five specific issues related to double default and trading activities prior to the implementation of the Revised Framework. These issues consist of the following:

- the treatment of counterparty credit risk for over-the-counter derivatives, repo-style and securities financing transactions; and the treatment of cross-product netting arrangements;

- the treatment of double-default effects for covered transactions, in relation with trading book, but also banking book, exposures;

- the short-term maturity adjustment, in the internal ratings-based approach;

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[1]   Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards: a Revised Framework* (Basel, June 2004), available online at http://www.bis.org/publ/bcbs107.htm. Hereafter, this is referred to as the "Revised Framework."

- improvements to the current trading book regime, especially with respect to the treatment of specific risk; and

- the design of a specific capital treatment for unsettled and failed transactions.

5.   While this work was undertaken jointly by working groups from the BCBS and IOSCO, the resulting proposal represents an effort by the BCBS to find prudential treatments for certain exposures held by banks under the new capital standards outlined in the Revised Framework. Consequently, this text frequently refers to rules for "banks," banking groups, and other firms subject to prudential banking regulations. The BCBS recognises that, in some cases, national authorities may decide to apply these rules not just to banks and banking groups, but also to investment firms or to combined groups of banks and investment firms. In such cases, national authorities may additionally wish to apply the treatments specified in this proposal to investment firms, to groups of investment firms, and to combined groups of banks and investment firms that are subject to prudential banking or securities regulation.

6.   The intent is to incorporate the proposals in the Revised Framework prior to its implementation in BCBS member jurisdictions. Due to the time constraints associated with national rulemaking processes and the adaptation of firms' information systems, the BCBS intends to release final rules in the summer 2005. Comments from the public on all aspects of the proposals are welcome by **27 May 2005** and should be addressed to both organisations at the following addresses:

Basel Committee on Banking Supervision   and   International Organization of Securities
Bank for International Settlements   Commissions
Centralbahnplatz 2   Oquendo 12
CH-4002 Basel   SP-28006 Madrid
Switzerland   Spain

Alternatively, comments may be sent by e-mail at **baselcommittee@bis.org** and **mail@oicv.iosco.org**.

7.   The BCBS and IOSCO wish to thank representatives of the industry for their cooperation with this work program.

Part 1: The treatment of counterparty credit risk and cross-product netting

I.   Introduction

8.   As part of the efforts to apply the Revised Framework to certain trading-related exposures, the BCBS and the IOSCO have discussed jointly with industry representatives the estimation of exposure at default (EAD) under the Revised Framework for transactions that expose an institution to counterparty credit risk (CCR). CCR generally refers to the bilateral credit risk of transactions with uncertain exposures that can vary over time with the movement of underlying market factors.

9.   The treatment of the counterparty credit risk (CCR) arising from over-the-counter (OTC) derivatives was set forth in an amendment to the 1988 Basel Accord[2]. The Revised Framework updates this treatment for OTC derivative transactions booked in either the trading book or in the banking book. It also advances treatments for the CCR of repo-style and other transactions. The existing treatment for OTC derivatives, known as the current exposure method (CEM), is based on the replacement cost (mark-to-market) of the transaction plus an add-on deemed to reflect the potential future exposure. The add-on is calculated by applying a weighting factor to the notional principal amount of the underlying book. The risk-sensitivity of this treatment now appears limited, especially with respect to the internal ratings-based (IRB) approach of the Revised Framework.

10.   Based on work conducted in conjunction with these discussions, supervisors propose to enhance this treatment for OTC derivative transactions and to introduce a new treatment for securities financing transactions (defined as repurchase agreements, securities lending and borrowing, and margin lending). This Consultative Document proposes three alternative methods for calculating the EAD or exposure amount for transactions involving CCR in the banking or trading books under the Revised Framework. The three methods consist of (1) an internal model method using the concept of expected positive exposure (EPE); (2) a standardised method; and (3) the existing CEM. The three methods are intended to represent different points along a continuum of sophistication in risk management practices and are structured to provide incentives for banks to improve their management of CCR by adopting more sophisticated practices. The purpose of this part of the Consultative Document is to advance this proposal and seek the industry's comment on all of its elements, including its implementation under the Revised Framework[3].

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[2]   Basel Committee on Banking Supervision, *Basel Capital Accord: Treatment of Potential Exposure for Off-Balance Sheet Items* (Basel, April 1995), available online at http://www.bis.org/publ/bcbs18.htm.

[3]   For reference, the following were used as background in developing the proposals in this paper:

   1.   ISDA-LIBA-TBMA, *Trading Book and Credit Risk Mitigation Capital Review*, 2004.

   2.   Eduardo Canabarro and Darrell Duffie, "Measuring and marking counterparty risk," in *Asset/Liability Management of Financial Institutions*, ed. Leo M. Tilman, Institutional Investor Books, 2003.

   3.   David Lamb and Evan Picoult, "Economic capital for counterparty credit risk," in *Economic Capital: A Practitioner Guide*, ed. Ashish Dev, Risk Books, 2004.

II. Common aspects of the three approaches to CCR

A. Characteristics of instruments subject to a CCR-related capital charge

11. Positions that give rise to CCR exposures share certain generic characteristics. They generate a credit exposure, which is defined as the cost of replacing the transaction if the counterparty defaults assuming there is no recovery of value. In addition, credit exposure depends on one or more underlying market factors. Instruments with CCR involve an exchange of payments or an exchange of a financial instrument against payment and are identified with an explicit counterparty for which a unique probability of default can be determined. The CCR for an individual position at any point in time is equal to the maximum of zero or replacement cost (market value) at that time; because CCR exposure is bilateral, it can exist for either counterparty over the life of the contract.

12. Other typical characteristics of transactions that involve CCR may include the use of collateral to mitigate risk; the use of legal netting or "rights of offset" contracts; and the use of re-margining agreements.

13. Because of these similar risk characteristics, products and related activities with CCR may be managed by financial service providers (such as banks and investment firms) using similar methods and processes. Therefore, they may merit similar capital requirements.

14. Based on these general characteristics, supervisors believe that the following types of products have comparable, generic CCR profiles and are subject to the proposals for computing EAD under the Revised Framework described in this Consultative Document: OTC derivatives, securities borrowing and lending transactions, repurchase and reverse repurchase transactions, securities margin lending transactions (including those executed in conjunction with prime brokerage activities[4]), and long settlement trades.[5] At this time, the proposed treatments are limited to the aforementioned products.

B. Measures of CCR: Expected Positive Exposure, Expected Exposure, and Potential Future Exposure

15. Banks use several measures to manage their exposure to CCR including potential future exposure (PFE), expected exposure (EE), and expected positive exposure (EPE). PFE is the maximum exposure estimated to occur on a future date at a high level of statistical confidence. Banks often use PFE when measuring CCR exposure against counterparty credit limits. EE is the probability-weighted average exposure estimated to exist on a future date. EPE is the time-weighted average of individual expected exposures estimated for given forecasting horizons (e.g. one year). Banks typically compute EPE, EE, and PFE using a common stochastic model.

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[4] While not defined in the Revised Framework, "prime brokerage" is generally regarded as a business activity that entails a number of investment management and clearing services that may include the execution of transactions with a single counterparty in multiple products under a prime brokerage or margin lending agreement. These proprietary agreements may establish a cross-product netting and cross-product collateralisation arrangement that bridges the individual transactions and their underlying contracts.

[5] Long settlement trades are transactions with a settlement lag of longer than five business days and should be treated as forward contracts up to the settlement date. The treatment of unsettled and failed trades is addressed in Part 5 of this Consultative Document.

16.   Through its interactions with industry experts, the BCBS and IOSCO find that EPE is generally viewed as the appropriate EAD measure to determine capital for CCR. By using EPE, transactions with CCR are given the same standing as loans with the goal of reducing the capital treatment's influence on a firm's decision to extend an on-balance sheet loan rather than engage in an economically equivalent transaction that involves exposure to CCR. Consistent with this determination, the internal model and standardised methods to estimating EAD employ the concept of EPE.

17.   To be consistent with the Revised Framework for credit risk, the EAD for instruments with CCR must be determined conservatively and conditionally on a "bad state" of the economy. To accomplish such conditioning in a practical, pragmatic, and conservative manner, the internal model and standardised methods proposed in this note scale EPE using multipliers, termed "alpha" and "beta", respectively. This proposal sets alpha at 1.4 for the internal model method and beta at 2.0 for the standardised method but provides supervisors with the flexibility to raise alpha in appropriate situations. Under the internal model method, the resulting risk weight may be adjusted to reflect the transaction's maturity.

C.   Relationship with the Revised Framework text on credit risk mitigation

18.   The Revised Framework on Credit Risk Mitigation (CRM) (paragraphs 109 to 210) for "Repo-style" and "Other Capital Markets Driven" transactions already advances treatments for estimating EAD for many of the instruments meeting the criteria identified in Section II.A above. In particular, the Revised Framework advances four alternative methods for measuring EAD for repo-style transactions (defined as securities lending and borrowing and repurchase and reverse repurchase agreements) and for "other capital markets transactions" (defined as margined OTC derivatives and securities margin lending). These methods are 1) the simple approach, 2) the comprehensive approach with supervisory haircuts, 3) the comprehensive approach with own estimates for haircuts, and 4) the VaR model approach, as specified in the Revised Framework. In the interest of conforming with established industry nomenclature, securities lending and borrowing, securities margin lending and repurchase and reverse re-purchase agreements are referred to collectively as securities financing transactions ("SFTs") for the purpose of this document.

19.   The internal model method to CCR advanced in this document is available for both SFTs and OTC derivatives. The internal model method allows an institution to determine its exposure to CCR on the basis of EPE or otherwise to adopt a more conservative measure based on peak exposure, subject to supervisory approval. For example, for repo-style transactions, the counterparty VaR model as described in paragraphs 178 to 181 of the Revised Framework could be used. As a result, when combined with the existing Revised Framework, the proposed internal model method provides a continuum of internal model capabilities for calculating EAD for CCR that ranges from the use of peak exposure to the EPE method described in this document.

20.   In light of the existence of the simple and supervisory haircut methods advanced for SFTs in the Revised Framework, the non-internal model methods proposed in this document are applicable only to OTC derivative transactions.

D.   Netting sets

21.   Consistent with the industry's general practice for computing exposures to CCR, it is proposed that banks estimate the EAD, and calculate the associated capital charge, on the basis of one or more defined bilateral "netting sets." A "netting set" is a group of transactions with a single counterparty that are subject to a legally enforceable bilateral netting

arrangement and permitted to be netted under the provisions of the 1988 Accord, as amended, the Revised Framework on credit risk mitigation techniques, or the Cross-Product Netting rules identified in this proposal.

E. Cross-product netting

22. Netting is an important risk management technique used to mitigate a firm's exposure to credit risk and to CCR. Under the provisions of the 1988 Accord, as amended, and the Revised Framework on credit risk mitigation techniques, bilateral netting is recognised for purposes of calculating capital requirements within certain product categories, namely OTC derivatives,[6] repo-style transactions,[7] and on-balance-sheet loans/deposits.[8] However, netting across these product categories is not recognised for regulatory capital purposes.

23. Paragraph 178 of the Revised Framework provides that banks may be permitted to use a VaR model approach for repo-style transactions and "other similar transactions (like prime brokerage) that meet the requirements for repo-style transactions." It was envisioned that the term "other similar transactions (like prime brokerage) that meet the requirements for repo-style transactions" would give national supervisors discretion to permit banks to net margin loans (secured by purchased securities) executed with a single counterparty under a legally enforceable master netting agreement. It was not intended for this paragraph to permit banks to net across different types of SFTs or to net SFTs against OTC derivatives that might be included in a prime brokerage agreement. Other provisions of the Revised Framework delineate the legal and operational requirements that must be met to net within the OTC derivative, repo-style, and margin loan categories, but not across these products.

24. This proposal clarifies this interpretation by amending paragraph 178 of the Revised Framework text as specified in paragraph 105 below.

25. During consultations, industry representatives have suggested that netting across product categories – such as netting among different types of SFTs or netting SFTs against OTC derivatives – be recognised for capital purposes. To this end, supervisors' consultations with industry representatives suggest that legal and operational practices are relatively consistent across different types of SFTs[9].

26. The results of the consultations also suggest that a particular cross-product netting arrangement that covers both OTC derivatives and SFTs with a counterparty could be tailored to achieve a degree of legal certainty on its enforceability. However, as a general

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[6] The 1988 Basel Capital Accord, as amended in 1994 and 1995, permits netting of OTC derivative transactions subject to a legally enforceable bilateral netting agreement for purposes of calculating the counterparty risk charge in the banking and trading books. See April 1995 amendment to 1988 Basel Capital Accord; Revised Framework paragraphs 186–187, 317, 704.

[7] The Revised Framework permits netting of repo-style transactions (which include repurchase/reverse repurchase transactions and securities lending/borrowing transactions) across the banking and trading books if they are subject to a legally enforceable bilateral netting agreement and satisfy certain other conditions. See Revised Framework, paragraphs 117, 118, 173, 174, 213, 293, 299, 705.

[8] The Revised Framework permits limited on-balance-sheet netting of loans and deposits subject to a legally enforceable bilateral netting or offsetting agreement. See Revised Framework, paragraphs 117, 118, 139, 188, 213, 335.

[9] See, in particular BCBS, *Trading Book Survey: A Summary of Responses,* (Basel, April 2005).

matter the legal enforceability of netting SFTs against OTC derivatives is not sufficiently certain at present to merit recognising the net exposure for regulatory capital purposes.

27.   Moreover, industry representatives have indicated that, as a general matter, netting among different types of SFTs for internal risk management is more common than netting between OTC derivatives and SFTs for internal risk management purposes. In this respect, the Revised Framework's "use test" under Pillar 1 and the supervisory review standards enumerated in Pillar 2 require greater consistency between risk management processes used for internal purposes and those used to meet regulatory capital requirements than is currently practiced with regard to the netting between OTC derivatives and SFTs.

28.   In accordance with these observations, the proposed Cross-Product Netting Rules provide for banks that use the internal model method to recognise netting arrangements for SFTs that satisfy the enumerated legal and operational criteria.

29.   The Cross-Product Netting Rules make recognition of netting arrangements between OTC derivatives and SFTs subject to a national supervisor's determination that the enumerated legal and operational criteria are widely met. As mentioned above, supervisors do not believe that these criteria are being fulfilled at this time. This determination will be made by a national supervisor when the practice of netting across OTC derivatives and SFTs has reached a sufficient level of legal certainty and usage in the industry as to merit its general recognition for purposes of capital computation.[10] It is recognised that the use of such cross-product master netting arrangements as a risk mitigation tool may increase as internal systems and legal regimes advance and business incentives change. Until such a determination is made, national supervisors will not recognise cross-product netting between OTC derivatives and SFTs in calculating the EAD for CCR exposures for capital purposes. That is, a "netting set" would be defined so that it is limited to only OTC derivatives or only SFTs that meet the requirements of the 1988 Accord, the Revised Framework, and, where appropriate, the Cross-Product Netting Rules set out in this proposal.

30.   Under the Cross-Product Netting Rules, to recognise cross-product netting for purposes of calculating capital requirements, the supervisory authority should be able to determine whether the bank has obtained a high degree of certainty on the legal enforceability of the cross-product netting arrangement under the laws of all relevant jurisdictions in the event of a counterparty's bankruptcy or insolvency by obtaining and updating, as necessary, written and reasoned legal opinions. It also would be important that the bank be able to demonstrate to the supervisory authority that the bank effectively integrates the risk-mitigating effects of cross-product netting into its risk management systems. These requirements would be added to those that already exist for the recognition of any master agreements and any collateralised transactions (such as repo-style transactions and securities margin lending) included in a cross-product netting arrangement. The Cross-Product Netting Rules address bilateral cross-product netting arrangements. Netting other than on a bilateral basis, such as netting across transactions entered by affiliates, including the regulated entity, under a cross-affiliate master netting agreement (known as cross-affiliate netting), is not recognised for the purposes of calculating capital requirements.

31.   Supervisors solicit comments on the scope and appropriateness of the proposed standards in the Cross-Product Netting Rules and on the degree to which the industry currently meets these requirements. Supervisors also solicit comments on whether the

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[10]   It is anticipated that this determination will be made in consultation among national supervisors.

Cross-Product Netting Rules should also address other arrangements that may be in use in the industry to accomplish cross-product netting.

III.   Summary of internal model method

A.   Overview of calculation of EAD

32.   The BCBS has articulated the principle that banks should be allowed to use the output of their "own estimates" developed through internal models in an advanced EAD approach.[11] To achieve that principle, the internal model method permits qualifying institutions to employ internal estimates of the EPE of defined netting sets of their counterparty exposures in computing the EAD for capital purposes under the Revised Framework.

33.   In general, internal models commonly used for CCR estimate a time profile of EE over each point in the future, which equals the average exposure, over possible future values of relevant market risk factors, such as interest rates, foreign exchange rates, etc. An example of the time profile of EE is the solid line in Figure 1 below[12]. The EPE of this profile, or the average of the EEs over a designated time interval, is depicted as the dotted line in Figure 1.

Figure 1
CCR Expected Exposure Profile
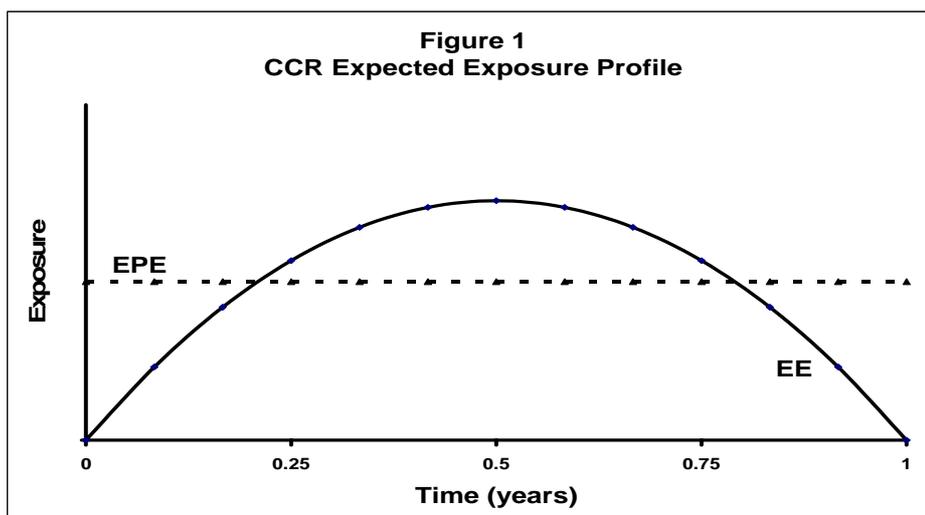
34.   The original principle for the use of "own estimates" advanced by the BCBS in 2001 was made only in the context of CCR on OTC derivatives. However, industry representatives have stressed the need for greater consistency in the treatment of OTC derivatives and that of SFTs.

35.   The industry suggests that the need for more consistent treatments is particularly critical if banks may make use of their own estimates to calculate EAD through an internal

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[11]   See, for example, paragraph 117 in *The Internal Ratings-Based Approach: Supporting Document to the New Basel Capital Accord* (Basel: January 2001), available online at http://www.bis.org/publ/bcbsca05.pdf.

[12]   The maturity of the profile illustrated (one year) is for illustrative purposes only since the actual profiles of individual transactions or netting sets of SFTs or OTC derivatives can be either shorter or longer than that depicted.

model method. Therefore, supervisors have explored the use of EPE computed using internal models for both OTC derivatives and SFTs under the Revised Framework.

36.　　Because SFTs tend to be relatively short-dated, they can pose problems in appropriately measuring EPE. When estimating a time profile of EE for a transaction or netting set that has CCR, an internal model only considers transactions that are currently on the firm's books. In the case of some SFT portfolios, the expected exposure might spike up rapidly in the first few days before dropping off sharply at maturity. However, the counterparty may be likely to enter into new SFT transactions, or existing transactions may be "rolled over." These transactions will generate new exposure over a given time horizon that is not reflected in the current time profile of EE.

37.　　Additional problems in adequately measuring exposure exist when short-term transactions are combined with long-term transactions so that EE is high initially, falls off for some time, and then rises again due to the long-term transactions. If the short-term transactions are rolled over, the decline in EE might understate the amount of CCR. These issues can apply to OTC derivatives netting sets as well, particularly netting sets containing a significant number of short-dated OTC derivatives contracts.

B.　　Effective EPE

38.　　To address the concern that EE and EPE may not capture rollover risk or may underestimate the exposures of both SFTs and OTC derivatives with short maturities, supervisors propose that EAD for CCR be set equal to a netting set's "Effective EPE" multiplied by a factor, termed alpha (α). Effective EPE is calculated using the time profile of estimated "Effective EE" for a netting set. "Effective EE" is defined recursively as

$$\text{Effective } EE_{t_k} = \max(\text{Effective } EE_{t_{k-1}}, EE_{t_k})$$

where exposure is measured at future dates $t_1, t_2, t_3, \ldots$ and Effective EE_{t_0} equals current exposure. In Figure 2 below, the time profile of Effective EE is the dashed line. Effective EPE is the average of Effective EE and is represented by the solid straight line in Figure 2.

Figure 2
CCR Effective EE Profile & Effective EPE
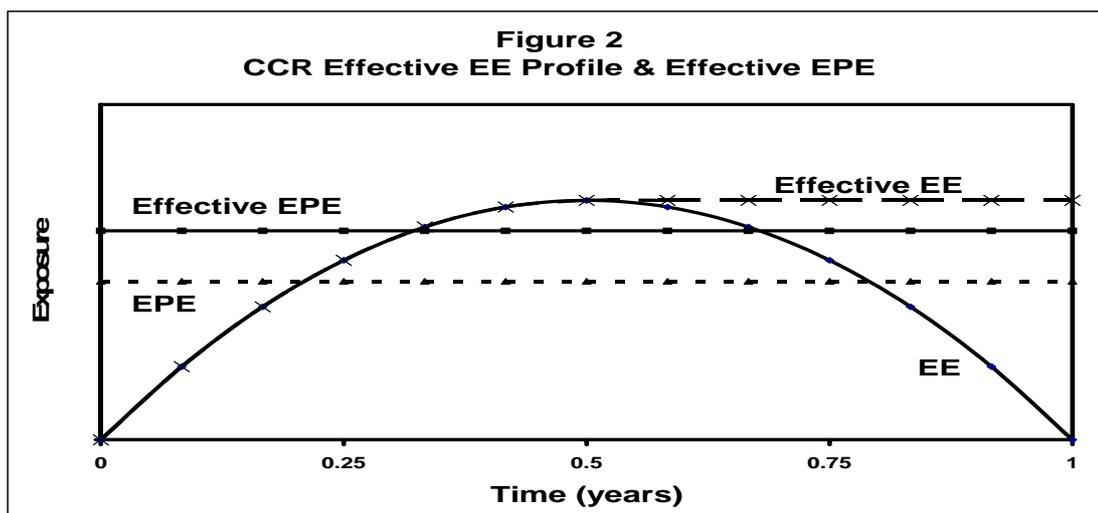
39.   Under the internal model method, a measure that is more conservative than Effective EPE for every counterparty (i.e. a measure based on peak exposure) can be used in place of Effective EPE in equation (1) with prior approval of the supervisor[13] (e.g. for repo-style transactions, the counterparty VaR model as described in paragraphs 178 to 181 of the Revised Framework).

40.   While banks currently do not use Effective EPE for internal risk management purposes or in economic capital models, it can easily be derived from a counterparty's EE profile, which would form the basis for any standard EPE calculation. Discussions with industry representatives established that it was a pragmatic way of addressing the roll-over of short-dated transactions and of differentiating counterparties with more volatile EE time profiles from those with relative stable profiles.

41.   Effective EPE will always lie somewhere between EPE and peak EE. For upward sloping EE profiles, Effective EPE will equal EPE. For downward sloping profiles, Effective EPE will equal peak EE. In general, the earlier that EE peaks, the closer Effective EPE will be to peak EE; the later EE peaks, the closer effective EPE will be to EPE. Supervisors request comment on the use of effective EPE to address these two sets of concerns regarding rollover risk.

C.   Time horizon

42.   Consistent with the Revised Framework's requirement for the use of a one-year probability of default (PD) time horizon, Effective EPE is to be measured as the average of Effective EE over one year. If all contracts in the netting set mature before one year, Effective EPE is the average of Effective EE until all contracts in the netting set mature. For example, if the longest-maturity contract in the netting set matures in six months, Effective EPE would be the average of Effective EE over six months.

D.   The alpha multiplier

43.   The alpha multiplier provides a means of conditioning internal estimates of EPE on a "bad state" of the economy consistent with the determination of credit risk under the Revised Framework. In addition, it acts to adjust internal EPE estimates for both (1) correlations of exposures across counterparties exposed to common risk factors and (2) the potential lack of granularity across a firm's counterparty exposures. The alpha multiplier is also viewed as a method to offset model error or estimation error.

44.   Feedback from the industry based on its own analysis and supervisors' simulations suggest that alphas may range from approximately 1.1 for large global dealer portfolios to more than 2.5 for new users of derivatives with concentrated exposures and little or no current exposure in their book. Supervisors propose to require institutions to use a supervisory specified alpha factor of 1.4, with the ability to estimate an alpha that is specific to the firm's own portfolio, subject to supervisory approval and a floor. To estimate α, a bank would compute the ratio of (a) economic capital for counterparty credit risk from a joint simulation[14] of market and credit risk factors to (b) economic capital when counterparty

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[13]   Such conservatism would be determined during supervisory approval for the use of EPE and would be subject to periodic validation.

[14]   A joint simulation of market and credit risk factors incorporates the uncertainty of counterparty exposure, the correlation between counterparty exposures, and the correlation between counterparty exposure and default.

exposures are a constant amount equal to EPE. A firm-specific alpha would be subject to a supervisory floor of 1.2.

E.   Risk-neutral vs. actual distributions

45.   EEs can be calculated based on either the risk-neutral distribution of a risk factor or the actual distribution of a risk factor. The choice of one distribution versus the other can affect the value of EE but will not necessarily lead to a higher EE. The distinction often made is that the risk-neutral distribution must be used for pricing trades, while the actual distribution must be used for risk measurement and economic capital.

46.   The calculation of Effective EPE has elements of both pricing (in the calculation of M, for instance) and simulation. Ideally, the calculation would require the use of the actual distribution where exposures are being simulated and risk-neutral distributions where pricing is being done. However, it is difficult to justify the added complexity of using two different distributions.

47.   Industry practice does not indicate that one single approach has gained favour. For this reason, supervisors are not requiring any particular distribution be used. Supervisors solicit comments on whether the rules text should specify the use of risk-neutral or actual distributions.

F.   Maturity adjustment

48.   Like corporate loan exposures with maturity greater than one year, counterparty exposure on netting sets with maturity greater than one year is susceptible to changes in economic value that stem from deterioration in the counterparty's creditworthiness short of default. Supervisors believe that an effective maturity parameter (M) can reflect the impact of these changes on capital and that the existing maturity adjustment formula in the Revised Framework is appropriate for counterparty credit exposures.

49.   However, the formula used to compute M for netting sets with maturity greater than one year must be different than that employed in the Revised Framework to reflect how counterparty credit exposures change over time. The proposed approach provides such a formula based on a weighted average of expected exposures over the life of the transactions relative to their one year exposures. As in the Revised Framework, M is capped at five years.

50.   For netting sets where all transactions have an original maturity less than one year and meet certain operational requirements, the treatment of short-maturity transactions discussed in Part 3 of this Consultative Document applies. This treatment will apply the existing formula for M in paragraph 320 of the Revised Framework.

G.   Margin agreements

51.   If the netting set is subject to a margin agreement and the internal model captures the effects of margining when estimating EE, the model's EE measure may be used directly to calculate EAD as discussed above. If the internal model does not fully capture the effects of margining, a method is proposed that will provide some benefit, in the form of a smaller EAD, for margined counterparties. Although this "shortcut" method will be permitted, supervisors would expect banks that make extensive use of margining to develop the modelling capacity to measure the impact of margining on EE; see paragraph 129 of this text. In either case, to recognise a margin agreement in the measure of exposure to CCR from a netting set, the margin agreement must meet the requirements for recognition of

collateralised transactions in paragraphs 117, 118, 123, 124, 125 and 126 of the Revised Framework.

H.   Loss given default

52.   To the extent that a bank recognises collateral in EAD via current exposure, a bank would not be permitted to recognise the benefits in its estimates of LGD. As a result, the bank would be required to use an LGD of an uncollateralised facility.

I.   Supervisory approval

53.   Qualifying institutions may use internal models to estimate the EAD of their CCR exposures subject to supervisory approval. This approval requires that institutions meet certain model validation and operational requirements. These requirements as well other elements of the internal model method are identified in Part 1 of the proposed rule.

IV.   Summary of non-internal model methods: Current Exposure and Standardised Methods

A.   The Current Exposure Method

54.   Supervisors have also explored alternative methods for computing capital requirements for CCR that would apply to those institutions that do not qualify for the use of internal models. Given the multiple capital treatments available for SFTs in the Revised Framework, supervisors have focused only on the treatment of OTC derivatives. The existing Current Exposure Method (CEM) incorporated in the 1988 Accord and the Revised Framework (paragraphs 186, 187 and 317) takes the form of the following equation:

Counterparty Capital Charge = [(RC + add-on) – adjusted collateral] * Risk Weight * 8%

> Where:
>
> RC = max{0, Current Replacement Cost}
>
> Add-on = the estimated amount of potential future exposure calculated under the 1988 Accord using the notional amount of the contract and a specified credit conversion factor.
>
> Adjusted collateral is calculated as specified in paragraphs 147 to 172 of the Revised Framework.
>
> [(RC + add-on) – adjusted collateral] = Exposure at Default (EAD)

55.   Under the existing CEM, where a legally enforceable bilateral netting contract is in place to create an identifiable netting set, RC is the larger of zero or the net replacement cost across all OTC derivative contracts in the netting set and the add-on is defined as A_{net} as calculated under the 1988 Accord.[15]

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[15] Specifically, $A_{net} = 0.4*A_{gross} + 0.6*NGR*A_{gross}$ where A_{gross} is the gross add-on for the netting set and NGR = (net current replacement cost) / (gross replacement cost). References herein to a legally enforceable bilateral

56.   Supervisors propose retaining the CEM for credit risk arising from exposures to OTC derivatives.

B.   The Standardised Method

57.   Supervisors are also proposing the use of a standardised method for banks that do not qualify to estimate the EPE associated with OTC derivatives but that would like to adopt a more risk-sensitive method than the current exposure method (CEM) set out in the 1988 Basel Accord, as amended in 1995.[16]

58.   The standardised method is designed to capture certain key features of the internal model method for CCR. At the same time, it seeks to provide a simple and workable supervisory algorithm. This results in a number of simplifying assumptions. For example, risk positions are derived with reference to short-term changes in valuation parameters (modified duration for debt instruments, delta concept for options), and it is assumed that the positions that are open under a short-term forecasting horizon of, for example, one day remain open and unchanged throughout the forecasting horizon. Given this assumption, the risk-reducing effect of margining is not recognised. There is likewise no recognition of diversification effects.

59.   The exposure amount represents the product of

(i)   the larger of the net current market value or a "supervisory EPE," times

(ii)   a scaling factor, termed beta.

60.   The first factor captures two key features of the internal models method: (a) for netting sets that are deep in the money, the EPE is almost entirely determined by the current market value of the netting set; and (b) for netting sets that are at the money, the current market value is not relevant, and CCR is driven only by the potential change in the value of the transactions. None of these features is mirrored in the CEM. By summing the current exposure with the add-ons, the CEM essentially assumes that the netting set is at the money and deep in the money at the same time. Furthermore, the CEM derives the replacement cost implicitly at the level of the individual transactions, not at the portfolio level: the replacement cost under the CEM is the sum of the replacement cost of all transactions in the netting set with a positive value. In contrast, the current market value under the standardised method for CCR is the larger of the sum of the market values (positive or negative) of all transactions in the netting set or zero.

61.   The second factor, beta, serves two purposes. First, it serves the same purpose as the alpha scaling factor used in the internal models method. As such, it implicitly conditions the exposure amount or EAD on a "bad" state of the economy, addresses stochastic dependency of market values of exposures across counterparties, and addresses estimation and modelling error. Second, it seeks to compensate for the fact that the first factor may at times be lower than the effective EPE under the internal models method. This concern is relevant for netting sets that are narrowly focused on certain risk areas, e.g. netting sets that

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netting contract refer to a netting contract for OTC derivatives that satisfies relevant requirements of the 1988 Accord, as amended, and the Revised Framework.

[16]   As a reminder, supervisors are not developing standardised approaches for exposures to SFTs, given that the Revised Framework already provides four options for assessing the minimum capital requirements to such transactions.

consist of interest swaps that are mostly denominated in the same currency. Unless the netting set is very deep in the money, the effective EPE will exceed both the net current market value and the "supervisory EPE," as the latter is calibrated to transactions that are at the money. Furthermore, by way of simplification, the "supervisory EPE" does not allow for basis risk, and the price risk from options is reflected only by their deltas. For these reasons, beta is set considerably higher than alpha. However, some allowance has also been made for the non-recognition of diversification under the standardised method which tends to make the first factor larger than effective EPE. Supervisors will discuss and review the calibration of beta with the industry during consultations.

62.   The recognition of hedging within netting sets is another key conceptual difference between the standardised and internal models methods for CCR on one hand and the current exposure method on the other. Under the CEM, the size of the netting effect does not depend on whether positions are hedged. Instead, it depends on what portion of the transactions is in the money: when no transaction within a netting set is out of the money, no netting is recognised (the "net to gross ratio" equals one). The recognition of netting increases with the extent to which out-of-the-money transactions are present in a netting set.

63.   The limitations of the CEM in this respect may be most easily seen from the following hypothetical example. Suppose a bank enters an OTC derivative transaction and an offsetting, but otherwise identical, OTC transaction with the same counterparty. Both transactions are made at the same time, i.e. the market value of one transaction will have the opposite sign of the market value of the other transaction at any same point in time. Both transactions are subject to a netting agreement that is recognised for regulatory minimum capital purposes. The CEM will generate a positive exposure amount. In comparison, both the internal modelling method and the standardised method for CCR will deliver the economically correct exposure amount of zero.

64.   Under the standardised method, the supervisory EPE is determined using a mapping technique that is commonly employed in market risk modelling (except in the case of full revaluation approaches). The OTC derivative transactions are mapped to risk positions that represent certain key drivers of potential change in value. For example, a foreign exchange swap is mapped to a foreign exchange risk position and one interest rate risk position in each of the currencies involved.

65.   Risk positions of the same category (e.g. the same currency) that arise from transactions within the same netting set form a so-called hedging set. Within each hedging set, hedging is fully recognised, i.e. only the net amount of all risk positions within a hedging set is relevant for the exposure amount or EAD.

66.   A key simplification within the standardised method is that the risk positions are defined as "delta equivalent" positions. In other words, the method assumes that the positions that are open under a forecasting horizon of, say, one day remain open and unchanged throughout.

67.   In principle, the hedging sets are designed to capture general market risk. With respect to interest rate risk, there is no differentiation of the categories by the issuer of any underlying debt instrument. However, there is a differentiation with regard to the type of reference rate used – those based on sovereign-issued instruments versus those based on non-sovereign-issued instruments. With respect to equities, price changes across issuers appear too different to permit netting at a national equity index level. Therefore, netting will be recognised only at the level of individual issuers.

68.   Interest derivatives, foreign exchange derivatives and the payment leg of equity and commodity derivatives are subject to interest rate risk. The sensitivity to interest rate changes

differs, of course, with the remaining maturity of the payments due. For floating rate notes and floating rate legs of interest swaps, the time to the next adjustment of the interest rate to the reference rate takes the place of the remaining maturity.

69.   Risk positions that reflect long positions arising from transactions with linear risk profiles carry a positive sign, while short positions carry a negative sign. Positions with non-linear risk profiles would be represented by their delta-equivalent notional values. As a result, institutions using the standardised method must be capable of deriving such delta equivalent notional values. For this purpose, the standardised method relies pragmatically on the instrument models that are recognised under the rules on market risk, i.e. on the instrument models recognised by supervisors under the standardised approach for market risk or on instrument models that form part of recognised internal models for market risk.

70.   The use of delta-equivalent notional values for options implies that sold options enter the calculation of the risk positions. This is notable difference compared to the CEM, which includes only purchased options. Here the CEM again adopts a transaction-by-transaction perspective instead of considering the netting set as a portfolio. At the level of the individual transactions, it is correct to say that sold options will not generate exposure to counterparty credit risk as they imply only potential net liabilities to the bank, if we disregard any outstanding option premiums. Yet from a portfolio perspective it is clear that a reduction of the price of a sold option will, all else equal, increase the current market value of the netting set and may thus lead to counterparty credit risk.

71.   With the use of modified duration and delta, the standardised method will capture simple directional risk, but not basis risk. To allow for this fact, some limitation on the recognition of offsets for positions of opposite sign is needed. A simple way of achieving this for interest rates is to narrow the time bands covered within a hedging set. Given that netting will be recognised only on a counterparty-by-counterparty and netting-set-by-netting-set basis, the level of detail of the rules in the 1996 Market Risk Amendment is not needed here, although a similar methodology is used. No disallowance factors will be used for the standardised method.

72.   The standardised method follows the internal models method with regard to netting within the constraints given by the algorithm. With respect to the current market value, full credit for netting is given as only the balance of the positive and negative market values across the transactions in the netting set is relevant for the exposure amount or EAD. With respect to the supervisory EPE component of the algorithm, full credit is given within hedging sets, as only the balance of risk positions of opposite signs are relevant for the exposure amount or EAD.

73.   Specifically, the EAD or exposure amount is to be computed as follows under the standardised method:

$$\text{EAD or exposure amount} = \beta \cdot \max(CMV; \sum_{j} \left| \sum_{i} RP_{ij} \right| \times CCF_{j})$$

where:

      CMV   = current market value of the portfolio of transactions within the netting set with the counterparty.

      i   = index designating transaction.

      j   = index designating supervisory 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 measure is then based.

RP_{ij} = Risk position from transaction i with respect to hedging set j [17].

CCF_j = Supervisory credit conversion factor with respect to the hedging set j [18].

β = Supervisory scaling parameter.

74.   The exposure amount or EAD for a counterparty is the sum of the exposure amounts or EADs across netting sets with that counterparty.

75.   The calibration of the CCFs has been made assuming at-the-money forwards or swaps and given a forecasting horizon of one year. The forecasting horizon of one year is chosen to conform to the internal ratings-based (IRB) to credit risk under the Revised Framework, which requires the use of a one-year probability of default (PD) time horizon.

76.   Table 1 presents an illustrated example of the standardised method. A US dollar-based firm is assumed to have five transactions with a counterparty that can be treated on a net basis under the rules set forth in this Consultative Document. In order to use the standardised method, the bank will need to (1) map the transactions into separate legs; (2) calculate the effective notional of the transaction; (3) calculate the modified duration of each leg of a transaction; and (4) calculate the current market value of the transactions.

77.   The table shows the five transactions: two US dollar interest rate swaps; a foreign exchange swap; a cross-currency swap; and a total return swap on the DAX. In the table, each leg of these transactions is broken out separately so that there are a total of ten row entries, with the receiver and payer legs entered separately. For each interest rate leg, the effective notional and the modified duration are multiplied to determine the risk position to be placed in the table for each hedging set.

78.   For the first transaction (an interest rate swap), the receiver leg has a modified duration of 8 years and effective notional of $80 million. This results in 640 (8 x 80) being placed as the risk position in the hedging set for US interest rate risk, with a maturity greater than five years, based on the modified duration of 8 years. The payer leg of this transaction has the same effective notional of $80 million and a modified duration of -0.25. This leg results in -20 (-0.25 x 80) being placed in the hedging set for US interest rate risk, with a maturity less than one year, based on the modified duration of -0.25. A similar mapping is performed for the other four transactions.

79.   The risk positions within a hedging set are then summed. The hedging set for US dollar interest rate risk with a maturity below one year has a value of 5, which is equal to the sum of the entries of -20, 37.5, and -12.5. This is shown in the row labelled, "sum of risk positions RP_{ij} by hedging set j". Some of these are negative, and some are positive. The next row shows the absolute value of these sums for each hedging set. Each hedging set has an associated credit conversion factor (shown in the row labelled, "credit conversion factors") that are used to multiply the absolute value of the sum of the risk positions within a netting

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[17]   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.

[18]   Calibration has been made assuming at the money forwards or swaps and given a forecasting horizon of one year.

set (shown in the last full column of the large table). These values are then summed to arrive at an amount equivalent to an "at-the-money" expected positive exposure value of 26.7975.

80.   The larger of the current market value (2) or the "at-the-money" expected positive exposure (26.7975), multiplied by a beta of 2 is the exposure at default (EAD) for this netting set. In this example, the EAD is 53.595.

Table 1
US Dollar (USD)-based firm, single counterparty, single netting set

Risk-positions RPij by hedging sets j

i	Transaction type			Effective notional	Modified duration	CMV	Interest rate risk hedging sets					FX risk hedging sets		Equity risk
							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 in EUR	payer leg	150	not applicable									-150
Sum of risk positions Rpij by hedging set j							5	-1160	18.75	1920	-420	310	-60	-150
Absolute amount |sum of Rpij| of risk positions by hedging set j							5	1160	18.75	1920	420	310	60	150
Credit conversion factors CCFj by hedging set j							0.20%	0.20%	0.20%	0.20%	0.20%	2.50%	2.50%	7%
CCFj x |sum of RPij|: 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 (CCFj x |sum of Rpij|)	26.7975
CMV: sum of current market values CMVi of the transactions	1.000
Max(CMV, sum of (CCFj x |sum of Rpij|))	26.7975
Beta:	2.0000
EAD	53.595

V. Pillar 2

81.   Banks are expected to employ sound practices in managing all aspects of their CCR exposures, regardless of the methods used to compute their minimum capital requirements. The management of CCR and the use of the new standardised and internal model methods raise some of the same concerns that the Revised Framework incorporates through Pillar 2. For example, allowing banks to estimate EPE would raise many of the same issues that the Revised Framework already addresses regarding the estimation of the drivers of credit risk associated with loans, such as PD, LGD, EAD, etc. Likewise, many of the sound practices for controlling exposures to counterparty risk are found already in the Revised Framework's principles regarding the management of credit risk mitigation techniques.

82.   Consequently, beyond the operational requirements related to the use of the CEM, the standardised method, or the internal model method set out in Pillar 1, the supervisory review process in Pillar 2 is intended both to ensure that banks have adequate capital to support their CCR exposures and to encourage banks to develop and use sound risk management techniques in monitoring and managing their CCR risks.

A.   Existing versus new risks introduced by the use of EPE

83.   The Revised Framework for CCR advises supervisors to review firms' policies and systems for managing collateral and netting arrangements (via contracts, meetings, visits, reporting). They may wish to provide incentives for banks to enhance their practices and should take appropriate supervisory action when policies, procedures and systems are not adequate. In addition to strengthening capital requirements, supervisors may ask banks to strengthen risk management, apply internal limits, strengthen the level of reserves and provisions, improve internal controls, etc. Most of these aspects have already been addressed in the Revised Framework (see in particular the Revised Framework, paragraphs 725–760 in Pillar 2); this proposal makes only incremental additions to those requirements to reflect the new methods introduced for CCR.

B.   Specific issues related to CCR to be addressed under supervisory review

84.   Supervisors may wish to evaluate the adequacy of a firm's capital relative to its exposures to CCR in at least two sets of circumstances:

- For risks that are not fully captured under Pillar 1 (e.g. concentration risk, weak systems and controls, other factors external to the firms, etc.), additional capital may be required;

- To address potential roll-over risk and the longer term horizon of capital planning, firms' internal capital adequacy assessment processes must incorporate comparisons of EPE measures of their portfolios against the results of stress tests of exposure over the life of all contracts in each netting set.

85.   For situations in which banks do not comply fully with the minimum standards and disclosure requirements of the internal/more advanced methods in Pillars 1 and 2, and these aspects are not covered under a multiplier, additional capital may be necessary.

VI. Pillar 3

86. Similar to the considerations raised above regarding Pillar 2, allowing banks to rely on an internal model to estimate effective EPE raises concerns regarding disclosures similar to those already addressed in Pillar 3 of the Revised Framework related to the use of other internal estimates of drivers of risk. Consequently, supervisors believe that any proposed additions to Pillar 3 to enhance disclosures regarding counterparty credit risk should be determined after reviewing the requirements of Part 4, Section II.D, subsections 1 and 2 of the Revised Framework.

87. For some banks the total credit exposures from derivatives, on a nominal basis, rivals the exposure in the loan portfolio. The proposed rules text outlines potential quantitative disclosures that might enhance marketplace participants' understanding of a firm's exposure to counterparty credit risk associated with various derivative instruments and transactions after consideration of the requirements in the Revised Framework.

VII. Rules text: Proposed treatment for determining the exposure amount or EAD for counterparty credit risk

A. Pillar 1

88. This rule identifies permissible methods for estimating the Exposure at Default (EAD) or the exposure amount for instruments with counterparty credit risk (CCR) under the Revised Framework. Three methods are available. Banks may seek supervisory approval to make use of (1) an internal modelling method or (2) a standardised method; banks that do not qualify or do not seek to use the first two methods must apply (3) the existing current exposure method.

1. Definitions and general terminology

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

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.

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, at a settlement date that is contractually specified as more than five business days after the date on which the transaction is concluded.

- **Securities Financing Transactions (SFTs)** are transactions such as repurchase agreements, reverse repurchase agreements, security lending and borrowing, and margin lending, where the value of the transactions depends on market valuations and the transactions are often subject to margin agreements.

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 1988 Accord, as amended, the Revised Framework text on credit risk mitigation techniques, or the Cross-Product Netting Rules set forth in this rule.

- **Risk Position** is a risk number that is assigned to a transaction under the CCR standardised method (set out in this rule) 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 Exposure at Default 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** 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. Graphically, it is the area under the expected exposure curve discounted by the risk-free rate over the longest maturity transaction in the netting set divided by the area under the expected exposure curve up until one year discounted by the risk-free rate.

- **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 text.

- **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.

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.

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 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 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.

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.

2.   Scope of application

90.   The methods for computing the exposure amount under the Standardised Approach for credit risk or EAD under the internal ratings-based (IRB) approach to credit risk described in this document are applicable to SFTs and OTC derivatives.

91.   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[19].

92.   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.

- 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.

- Remargining may be employed.

93.   Exclusions: derivative contracts traded on exchanges where the clearinghouse serves as the counterparty to the transactions and where the contracts require daily receipt and payment of cash. This variation margin may be excluded from the CCR capital calculation.

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

3. Cross-product netting rules

94. Banks that receive approval to estimate their exposures to CCR using the internal models method may include within a netting set SFTs 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).

95. Such qualifying banks may include within a netting set both OTC derivatives and SFTs subject to a legally valid form of bilateral netting that satisfies the following legal and operational criteria for a Cross-Product Netting Arrangement, subject, however, to a supervisory determination that bilateral netting across both derivatives and SFTs has reached a sufficient level of legal certainty and usage in the industry as to merit its recognition for purposes of computing minimum capital requirements. The bank must also have satisfied any prior approval or other procedural requirements that its national supervisor determines to implement for purposes of recognising a Cross-Product Netting Arrangement that covers both derivatives and SFTs.

Legal Criteria[20]

96. 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.

97. 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.

- 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.

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

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[20] These legal requirements apply to all netting agreements recognised for regulatory capital purposes, and not just to cross-product netting agreements.

99.   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.

100.   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.

101.   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 Annex 3 of the 1988 Basel Capital Accord, as amended in April 1995, and (ii) credit risk mitigation techniques in Part 2, Section II.D of the Revised Framework.

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

Operational Criteria

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

104.   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.

Related Provisions

105.   In Paragraph 178 of the Revised Framework, the following sentence will be added after the second sentence that ends with the words, "counterparty-by-counterparty basis":

> "At the discretion of the national supervisor, firms also are eligible to use the VaR models approach for margin loans (secured by purchased securities), if the margin loans are covered under a bilateral master netting agreement that meets the requirements of paragraphs 173 and 174 (i.e. replacing all references in these paragraphs to "repo-style transactions" or "transactions" with references to "margin loans")."

4.   Approval to adopt an internal modelling method to estimate EAD

106.   A bank that wishes to adopt an internal modelling method to measure CCR for regulatory capital purposes must seek approval from its supervisor. The internal modelling method is available both for banks that adopt the internal ratings-based approach to credit risk and for banks for which the standardised approach to credit risk applies to all of their credit risk exposures. The bank must meet all of the requirements given in Section A.5 of this part and must apply the method to all of its exposures that are subject to counterparty credit risk, except for long settlement transactions.

107.   A bank may also choose to adopt an internal modelling method to measure CCR for regulatory capital purposes for its exposures to only OTC derivatives, to only SFTs, or to both, subject to the appropriate recognition of netting specified above. The bank must apply the method to all relevant exposures within that category, except for those that are immaterial in size and risk.

108.   For all OTC derivative transactions and for all long settlement transactions for which a bank has not received approval from its supervisor to use the internal models method, the bank may seek approval to use the standardised method or must use the current exposure method (CEM). Combined use of the CEM and standardised method is permitted within a group, but not within a single legal entity.

109.   Exposures for CCR arising from long settlement transactions can be determined using any of the three methods identified in this Consultative Document regardless of the methods chosen for treating OTC derivatives and SFTs.

110.   After adoption of the internal modelling method, the bank must comply with the above requirements on a permanent basis. Only under exceptional circumstances can a bank revert to either the current exposure or standardised methods for all or part of its exposure. The bank must demonstrate that reversion to a less sophisticated method does not lead to an arbitrage of the regulatory capital rules.

5.   Internal Modelling Method: measuring exposure and minimum requirements

5.1   Exposure amount or EAD under the internal model method

111.   CCR exposure is measured at the level of the netting set as defined in Sections A.1 and A.3 of this part. A qualifying internal model for measuring counterparty credit exposure 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, etc. The model then computes the firm's CCR exposure for the netting set at each future date given the changes in the market variables. For margined counterparties, the model may also capture future collateral movements. Banks may include eligible financial collateral as defined in paragraph 146 of the Revised Framework in their forecasting distributions for changes in the market value of the netting set.

112.   To the extent that a bank recognises collateral in EAD via current exposure, a bank would not be permitted to recognise the benefits in its estimates of LGD. As a result, the bank would be required to use an LGD of an otherwise similar uncollateralised facility. In other words, the bank would be required to use an LGD that does not include collateral that is already included in EAD.

113.   Although the following text describes an internal model as a simulation model, no particular form of model is required. Analytical models are acceptable so long as they are subject to supervisory review, meet all of the requirements set forth in this section and are applied to all material exposures subject to a CCR-related capital charge as noted above, with the exception of long settlement transactions, which are treated separately, and with the exception of those exposures that are immaterial in size and risk.

114.   Expected exposure or peak exposure measures should be calculated based on a distribution of exposures that accounts for the possible non-normality of the distribution of exposures, including the existence of leptokurtosis ("fat tails"), where appropriate.

115.   When using an internal model, EAD is calculated as the product of alpha times Effective EPE, as specified below:

$$EAD = \alpha \times Effective\ EPE \qquad (1)$$

116.   Effective EPE ("Expected Positive Exposure") is computed by estimating expected exposure (EE_t) as the average exposure at future date t, where the average is taken across possible future values of relevant market risk factors, such as interest rates, foreign

exchange rates, etc. The internal model estimates *EE* at a series of future dates t_1, t_2, t_3…[21] Specifically, "Effective EE" is computed recursively as

$$\text{Effective } EE_{t_k} = \max(\text{Effective } EE_{t_{k-1}}, EE_{t_k}) \qquad (2)$$

where the current date is denoted as t_0 and Effective EE_{t_0} equals current exposure.

117.   In this regard, "Effective EPE" is the average Effective *EE* during the first year of future exposure. If all contracts in the netting set mature before one year, EPE is the average of expected exposure until all contracts in the netting set mature. Effective EPE is computed as a weighted average of Effective EE:

$$\text{Effective } EPE = \sum_{k=1}^{\min(1 year, maturity)} \text{Effective } EE_{t_k} \times \Delta t_k \qquad (3)$$

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

118.   In order to meet the use test criteria defined in Section A.4 of this part, a measure that is more conservative than Effective EPE for every counterparty (i.e. a measure based on peak exposure) can be used in place of Effective EPE in equation (1) with prior approval of the supervisor. A VaR model for counterparty exposures on repo-style transactions as described in paragraphs 178–181 of the Revised Framework is one example of such a model.

119.   Alpha (α) is set equal to 1.4.

120.   When a bank purchases credit derivative protection against a banking book exposure, it may, if approved by supervisors, compute its capital requirement for the hedged asset based upon the rules for double default recognition. It does not need an additional counterparty credit risk charge in this case.

121.   Supervisors have the discretion to require a higher alpha based on a firm's CCR exposures. Factors that may require a higher alpha include the low granularity of counterparties; particularly high exposures to general wrong-way risk; particularly high correlation of market values across counterparties; and other institution-specific characteristics of CCR exposures.

5.2   Own estimates for alpha

122.   Banks may seek approval from their supervisors to compute internal estimates of α subject to a floor of 1.2, where α equals the ratio of economic capital from a full simulation of counterparty exposure across counterparties (numerator) and economic capital based on EPE (denominator), assuming they meet certain operating requirements. Eligible banks must meet all the operating requirements for internal estimates of EPE and must demonstrate that their internal estimates of α capture in the numerator the material sources of stochastic dependency of distributions of market values of transactions or of portfolios of transactions

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[21]   In theory, the expectations should be taken with respect to the actual probability distribution of future exposure and not the risk-neutral one. Supervisors recognise that practical considerations may make it more feasible to use the risk-neutral one. As a result, supervisors will not mandate which kind of forecasting distribution to employ.

across counterparties (e.g. the correlation of defaults across counterparties and between market risk and default).

123.   In the denominator, EPE must be used as if it were a fixed outstanding loan amount.

124.   To this end, banks must ensure that the numerator and denominator of α 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 economic capital approach, be well-documented and be subject to independent validation. In addition, banks must review their estimates on at least a quarterly basis, and more frequently when the composition of the portfolio varies over time.

125.   In addition, estimates of α should be conditioned on a "bad state" of the economy (e.g. correlation assumptions, used in the calculation of the numerator, of defaults across counterparties and between market risk and default should be based on a "bad state" of the economy). The bank should assess the potential model or estimation error in its estimates of α (e.g. uncertainty around the distribution of market values conditional on a "bad" state of the economy and the sensitivity of the bank's estimate of α to the assumptions underlying its economic capital model). Internal estimates of α should take account of the granularity of exposures.

5.3   Maturity

126.   If the original maturity of the longest-dated contract contained in the set is greater than one year, the formula for effective maturity (M) in paragraph 320 of the Revised Framework is replaced with the following:

$$M = \frac{\sum\limits_{k=1}^{maturity} EE_k \times \Delta t_k \times df_k}{\sum\limits_{k=1}^{1year} EE_k \times \Delta t_k \times df_k}$$

where df_k is the risk-free discount factor for future time period t_k and the remaining symbols are defined above. Similar to the treatment under corporate exposures, M has a cap of five years[22].

127.   For netting sets in which all contracts have an original maturity of less than one year, the formula for effective maturity (M) in paragraph 320 of the Revised Framework is unchanged and a floor of one year applies, with the exception of short-term exposures as described in paragraphs 321–323 of the Revised Framework.

5.4   Margin agreements

128.   If the netting set is subject to a margin agreement and the internal model captures the effects of margining when estimating EE, the model's EE measure may be used directly in equation (2). Such models are noticeably more complicated than models of EPE for unmargined counterparties. As such, they are subject to a higher degree of supervisory scrutiny before they are approved, as discussed below.

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[22]   Conceptually, M equals the effective credit duration of the counterparty exposure. A bank that uses an internal model to calculate a one-sided credit valuation adjustment (CVA) can use the effective credit duration estimated by such a model in place of the above formula with prior approval of its supervisor.

129.   A bank that can model EPE without margin agreements but cannot achieve the higher level of modelling sophistication to model EPE with margin agreements can use the following method for margined counterparties. The method is a simple and conservative approximation to Effective EPE and sets Effective EPE for a margined counterparty equal to the lesser of:

•   The threshold, if positive, under the margin agreement plus an add-on that reflects the potential increase in exposure over the margin period of risk. The add-on is computed as the expected increase in the netting set's exposure beginning from current exposure of zero over the margin period of risk.[23] A supervisory floor of two weeks is imposed on the margin period of risk used for this purpose;

•   Effective EPE without a margin agreement.

5.5   Model validation

130.   Because counterparty exposures are driven by movements in market variables, the validation of an EPE model is similar to the validation of a Value-at-Risk (VaR) model that is used to measure market risk. Therefore, in principle, the standards of the Market Risk Amendment[24] for the use of VaR models should be carried over to EPE models. However, an EPE model has additional elements that require validation:

•   Interest rates, foreign exchange rates, equity prices, commodities, and other market risk factors must be forecast over long time horizons for measuring counterparty exposure. The performance of the forecasting model for market risk factors must be validated over a long time horizon. In contrast, VaR for market risk is measured over a short time horizon (typically, one to ten days).

•   The pricing models used to calculate counterparty exposure for a given scenario of future shocks to market risk factors must be tested as part of the model validation process. These pricing models may be different from those used to calculate VaR over a short horizon. Pricing models for options must account for the nonlinearity of option value with respect to market risk factors.

•   An EPE model must capture transaction-specific information in order to aggregate exposures at the level of the netting set. Banks must verify that transactions are assigned to the appropriate netting set within the model.

•   An EPE model must also include transaction-specific information in order 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 unmargined exposure the bank 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 Revised Framework's rules for collateral.

131.   Static, historical backtesting on representative counterparty portfolios must be part of the model validation process. At regular intervals as directed by its supervisor, a bank

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[23]   In other words, the add-on equals EE at the end of the margin period of risk assuming current exposure of zero. Since no roll-off of transactions would be occurring as part of this EE calculation, there would be no difference between EE and Effective EE.

[24]   Basel Committee, *Amendment to the Capital Accord to Incorporate Market Risk* (Basel, January 1996), Part B, "Use of internal models to measure market risks," available online at http://www.bis.org/publ/bcbs24.pdf.

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 bank is exposed.

132.   Starting at a particular historical date, the backtest would use the internal model to forecast each portfolio's probability distribution of exposure at various time horizons. Using historical data on movements in market risk factors, the backtest then computes the actual exposures that would have occurred on each portfolio at each time horizon assuming no change in the portfolio's composition. These realised exposures would then be compared with the model's forecast distribution at various time horizons. The above must be repeated for several historical dates covering a wide range of market conditions (e.g. rising rates, falling rates, quiet markets, volatile markets). Significant differences between the realised exposures and the model's forecast distribution could indicate a problem with the model or the underlying data that the supervisor would require the bank to correct. Under such circumstances, supervisors may require additional capital.

133.   Under the internal models method, a measure that is more conservative than Effective EPE (i.e. a measure based on peak rather than average exposure) for every counterparty may be used in place of Effective EPE in equation (1) with the prior approval of the supervisor. One example for repo-style transactions is a VaR model for counterparty exposures as described in paragraphs 178–181 of the Revised Framework. The degree of relative conservatism will be assessed upon initial supervisory approval and subject to periodic validation.

134.   Paragraph 180 from the Revised Framework regarding backtesting requirements is deleted.

135.   Banks using an EPE model or a VaR model (as described in paragraphs 178-181 of the Revised Framework) must meet the above validation requirements.

5.6   Operational requirements

136.   In order to be eligible to adopt an internal model for estimating EPE arising from CCR for regulatory capital purposes, a bank must meet the following operational requirements. These include meeting the requirements related to the qualifying standards on CCR Management, a use test, stress testing, identification of wrong-way risk, and internal controls.

Qualifying standards on CCR Management

137.   The bank must satisfy its supervisor that, in addition to meeting the operational requirements identified in paragraphs 138-157 below, it adheres to sound practices for CCR management, including those specified in paragraphs 189-205 below (Pillar 2).

Use test

138.   The distribution of exposures generated by the internal model used to calculate effective EPE must be closely integrated into the day-to-day CCR management process of the bank. For example, the bank could use the peak exposure from the distributions for counterparty credit limits or expected positive exposure for its internal allocation of capital. The internal model's output must accordingly play an essential role in the credit approval, counterparty credit risk management, internal capital allocations, and corporate governance of banks that seek approval to apply such models for capital adequacy purposes. Models

and estimates designed and implemented exclusively to qualify for the internal models method are not acceptable.

139.   A bank must have a credible track record in the use of internal models that generate a distribution of exposures to CCR. Thus, the bank must demonstrate that it has been using an internal model to calculate the distributions of exposures upon which the EPE calculation is based that meets broadly the minimum requirements for at least one year prior to supervisory approval.

140.   The internal model used to generate the distribution of exposures must be part of a counterparty risk management framework that includes the identification, measurement, management, approval and internal reporting of counterparty risk.[25] This framework must include the measurement of usage of credit lines (aggregating counterparty exposures with other credit exposures) and economic capital allocation. In addition to EPE (a measure of future exposure), a bank must measure and manage current exposures. The bank must measure current exposure gross and net of collateral held. The use test is satisfied if a bank uses other counterparty risk measures, such as peak exposure or potential future exposure (PFE), based on the distribution of exposures generated by the same model to compute EPE.

141.   A Bank must be able to estimate EE daily, unless it demonstrates to its supervisor that its exposures to CCR warrant some less frequent calculation. It must also compute EE along the time profile on a daily basis for the first ten days, on a weekly basis out to one year, and on a monthly basis up until five years. Beyond five years, banks must compute EE along the time profile in a manner that is consistent with the materiality and composition of the exposure.

142.   Exposure must be measured out to the life of all contracts in the netting set (not just to the one year horizon), monitored and controlled. The bank must have procedures in place to identify and control the risks for counterparties where exposure rises beyond the one-year horizon. Moreover, the forecasted increase in exposure must be an input into the firm's internal economic capital model.

Stress testing

143.   A bank must have in place sound stress testing processes for use in the assessment of capital adequacy. As part of its stress testing program, a bank must measure its solvency target over the life of all contracts in each netting set. These stress measures must be compared against the measure of EPE and considered by the bank as part of its internal capital adequacy assessment process. 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 assessment of the firm's ability to withstand such changes. Examples of scenarios that could be used are (i) economic or industry downturns; (ii) market-place events; or (iii) liquidity conditions.

144.   The bank must stress test its gross and net (net of collateral) counterparty exposures, including jointly stressing market and credit risk factors. Stress tests of counterparty risk must consider concentration risk (to a single counterparty or groups of counterparties), correlation risk across market and credit risk (for example, a counterparty for

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[25] This section draws heavily on the Counterparty Risk Management Policy Group's paper, *Improving Counterparty Risk Management Practices* (June 1999); a copy can be found online at http://www.mfainfo.org/washington/derivatives/Improving%20Counterparty%20risk.pdf.

which a large market move would result in a large exposure, a material deterioration in credit quality, or both), and the risk that liquidating the counterparty's positions could move the market. Such stress tests must also consider the impact on the firm's own positions of such market moves and integrate that impact in its assessment of counterparty risk.

Wrong-way risk

145.   Banks must be aware of exposures that give rise to a greater degree of general wrong-way risk.

146.   A bank is said to be exposed to "specific wrong-way risk" if future exposure to a specific counterparty is expected to be high when the counterparty's probability of default is also high. For example, a company writing put options on its own stock creates wrong-way exposures for the buyer that is specific to the counterparty. A bank must have procedures in place to identify, monitor and control cases of specific wrong way risk, beginning at the inception of a trade and continuing through the life of the trade.

Integrity of Modelling Process

147.   Other operational requirements focus on the internal controls needed to ensure the integrity of model inputs; specifically, the requirements address the transaction data, historical market data, frequency of calculation, and valuation models used in measuring EPE.

148.   The internal model must reflect transaction terms and specifications in a timely, complete, and conservative fashion. Such terms include, but are not limited to, contract notional amounts, maturity, reference assets, collateral thresholds, margining arrangements, netting arrangements, etc. The terms and specifications must reside in a secure database that is subject to formal and periodic audit. The process for recognising netting arrangements must require signoff by legal staff to verify the legal enforceability of netting and be input into the database by an independent unit. The transmission of transaction terms and specifications data to the internal model must also be subject to internal audit and formal reconciliation processes must be in place between the internal 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.

149.   The internal model must employ current market data to compute current exposures. When using historical data to estimate volatility and correlations, at least three years of historical data must be used and must be updated quarterly or more frequently if market conditions warrant. The data should cover a full range of economic conditions, such as a full business cycle. A unit independent from the business unit must validate the price supplied by the business unit. The data must be acquired independently of the lines of business, must be fed into the internal model in a timely and complete fashion, and maintained in a secure database subject to formal and periodic audit. Banks must also have a well-developed data integrity process to scrub the data of erroneous and/or anomalous observations. To the extent that the internal model relies on proxy market data, internal policies must identify suitable proxies and the bank must demonstrate empirically that the proxy provides a conservative representation of the underlying risk under adverse market conditions.

150.   The EPE model (and modifications made to it) must be subject to an internal model validation process. The process must be clearly articulated in firms' policies and procedures. The validation process must specify the kind of testing needed to ensure model integrity and identify conditions under which assumptions are violated and may result in an understatement of EPE. The validation process must include a review of the

comprehensiveness of the EPE model, for example such as whether the EPE model covers all products that have a material contribution to counterparty risk exposures.

151. The use of an internal model to estimate EPE, and hence the EAD, of positions subject to a CCR capital charge will be conditional upon the explicit approval of the firm's supervisory authority. Home and host country supervisory authorities of banks that carry out material trading activities in multiple jurisdictions will work co-operatively to ensure an efficient approval process.

152. In the Revised Framework and in prior documents, the BCBS has issued guidance regarding the use of internal models to estimate certain parameters of risk and determine minimum capital charges against those risks. Supervisors will require that banks seeking to make use of internal models to estimate EPE meet similar requirements regarding, for example, the integrity of the risk management system, the skills of staff that will rely on such measures in operational areas and in control functions, the accuracy of models, and the rigour of internal controls over relevant internal processes. As an example, banks seeking to make use of an internal model to estimate EPE must demonstrate that they meet the BCBS's general criteria for banks seeking to make use of internal models to assess market risk exposures, but in the context of assessing counterparty credit risk.[26]

153. The Pillar 2 framework developed in the Revised Framework provides general background and specific guidance to cover counterparty credit risks that may not be fully covered by the Pillar 1 process.

154. No particular form of model is required to qualify to make use of an internal model. Although this text describes an internal model as a simulation model, other forms of models, including analytic models, are acceptable subject to supervisory approval and review. Banks that seek recognition for the use of an internal model that is not based on simulations must demonstrate to their supervisors that the model meets all operational requirements.

155. Banks that wish to rely on a counterparty VaR model as their internal model must also meet these operational requirements.

156. For a bank that qualifies to net transactions, the bank 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 applicable requirements of the 1988 Accord, as amended, the Revised Framework text on credit risk mitigation techniques, or the Cross-Product Netting Rules set forth in this rule.

157. For a bank that makes use of collateral to mitigate its CCR, the bank must have internal procedures to verify that, prior to recognising the effect of collateral in its calculations, the collateral meets the appropriate legal certainty standards as set out in Part 2, Section II.D of the Revised Framework.

6.   Standardised Method

158. Subject to supervisory approval, banks may use the standardised method to CCR. The standardised method can be used only for OTC derivatives; SFTs are subject the treatments set out in the Revised Framework. The exposure amount (under the standardised

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[26] Basel Committee, *Amendment to the Capital Accord to Incorporate Market Risk* (Basel, January 1996), Part B.1., "General Criteria," p. 38–39, found online at http://www.bis.org/publ/bcbs24.pdf.

approach for credit risk) or EAD is to be calculated separately for each netting set. It is determined gross of collateral, as follows:

159.   exposure amount or EAD = $\beta \cdot \max(CMV; \sum_{j} \left| \sum_{i} RP_{ij} \right| \times CCF_{j})$

where:

CMV   =   current market value of the portfolio of transactions within the netting set with the counterparty, i.e. $CMV = \sum_{i} CMV_{i}$, where CMV_{i} is the current market value of transaction i.

i   =   index designating transaction.

j   =   index designating supervisory 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 measure is then based.

RP_{ij} =   Risk position from transaction i with respect to hedging set j [27].

CCF_{j} =   Supervisory credit conversion factor with respect to the hedging set j [28].

β =   Supervisory scaling parameter.

160.   The exposure amount or EAD for a counterparty is the sum of the exposure amounts or EADs across netting sets with that counterparty.

161.   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.

162.   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.

163.   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

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[27]   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.

[28]   Calibration has been made assuming at the money forwards or swaps and given a forecasting horizon of one year.

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. [29] The exposure amount or EAD assigned to a foreign exchange basis swap transactions is zero.

164.   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 time quantity) of the underlying financial instruments (including commodities) converted to the firm's domestic currency.

165.   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.

166.   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.

167.   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.

168.   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. For any other options, the sensitivity of the value of the option to interest rates (the "rho") is to be reflected as an interest rate position only if this sensitivity is material for the bank's counterparty credit risk arising from OTC derivatives.

169.   The sign of a risk position is positive for a long position (the bank is to receive the underlying financial instrument or payment from the counterparty). The sign of a risk position is negative for a short position (the bank is to transfer the underlying financial instrument or to make payment to the counterparty).

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

$$\left| \sum_i RP_{ij} \right|$$

in the formulas in paragraphs 159 above.

171.   Interest rate positions arising from debt instruments of low specific risk are to be mapped into one of six hedging sets for each represented foreign 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

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[29]   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.

market risk (paragraph 306 of this document). Interest rate positions arising from the payment legs are to the 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 2

Hedging Sets for Interest Rate Risk Positions Per Currency

Remaining maturity or rate-adjustment frequency	Sovereign-referenced interest rates	Non–sovereign-referenced interest rates
Less than one year	X	X
One to five years	X	X
Greater than five years	X	X

172.   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.

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

174.   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 paragraph 306 of this document. 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.

175.   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 index.

176.   The credit conversion factor that is applied to a net risk position from a hedging set depends on the supervisory hedging set category as given in paragraphs 177 to 180 below.

177.   The credit conversion factors (CCF_{1y}) are set as follows in Table 3.

Table 3

Interest Rates	Exchange Rates	Gold	Equity	Precious Metals (except gold)	Other Commodities (excluding precious metals)
0.2%	2.5%	5.0%	7.0%	8.5%	11.0%

178.   The credit conversion factor is 0.6 percent for risk positions from a debt instrument or reference debt instrument of high specific risk.

179.   The credit conversion factor is 0.3 percent for risk position from a reference debt instrument that underlies a credit default swap and that is of low specific risk.

180.   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 financial instrument. A credit conversion factor of 11 percent is applied to the notional equivalent amount.

181.   For transactions with a non-linear risk profile for which the bank cannot determine the delta or, in the case of debt instruments or payment legs as underlying, the modified duration with an instrument model that the supervisor 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). In such cases, the supervisor will determine the size of the risk positions and the applicable credit conversion factors conservatively. Alternatively, supervisors 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 transaction at hand.

182.   The supervisory scaling parameter β (beta) is set at 2.0.

7.   *Current Exposure Method*

183.   Banks that do not have approval to apply the internal models method or the standardised method must make use of the current exposure method. The current exposure method is to be applied to OTC derivatives only; SFTs are subject to the treatments set out in the Revised Framework.

184.   The credit conversion factors used to calculate add-ons are as prescribed in the 1988 Accord, as amended in April 1995.[30] These credit conversion factors under the current exposure method remain set as follows in Table 4:

Table 4

	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%

185. Where the credit derivative is an nth-to-default transaction (such as a first-to-default transaction), the treatment specified in paragraph 708 of the Revised Framework applies.

186.   As indicated in the Revised Framework, the counterparty credit risk exposure amount or EAD for single name credit derivative transactions in the trading book will be calculated using the following potential future exposure add-on factors as appears in Table 5 below:

Table 5

	Protection buyer	Protection seller
Total Return Swap		
"qualifying" reference obligation	5%	5%
"Non-qualifying" reference obligation	10%	10%
Credit Default Swap		
"qualifying" reference obligation	5%	5%**
"Non-qualifying" reference obligation	10%	10%**

Add-on factors will not reflect differences in residual maturity.

The definition of "qualifying" is the same as for the "qualifying" category for the treatment of specific risk under the standardised measurement method in the Market Risk Amendment.

** The protection seller of a credit default swap shall only be subject to the add-on factor where it is subject to closeout upon the insolvency of the protection buyer while the underlying is still solvent. The add-on must then be capped to the amount of unpaid premiums.

187.   To determine capital requirements for hedged banking book exposures, the treatment for guarantees applies to qualifying credit derivative instruments.

188.   Sections VII.B and VII.C below discuss the key principles of supervisory review and market discipline relevant to CCR.

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[30] Basel Committee on Banking Supervision, *Basel Capital Accord: Treatment of Potential Exposure for Off-Balance Sheet Items.*

B. The Second Pillar – Supervisory Review Process

189.   This section discusses the key principles of supervisory review, risk management guidance, and supervisory transparency and accountability produced by the BCBS with respect to CCR.

190.   Banks using any of the methods prescribed in this rule are expected to employ sound practices in managing all aspects of their CCR exposures as identified in supervisory guidance advanced by international supervisors and both home and host supervisors.

191.   As CCR represents a form of credit risk, this would include meeting the Revised Framework's standards regarding their approaches to stress testing,[31] "residual risks" associated with credit risk mitigation techniques,[32] and credit concentrations.[33]

192.   The bank must have an independent control unit that is responsible for the design and implementation of the firm's CCR management system, including the initial and on-going validation of the internal model. 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. This unit must be independent from business credit and trading units; it must be adequately staffed; it must report directly to senior management of the firm. The work of this unit should be closely integrated into the day-to-day credit risk management process of the firm. Its output should accordingly be an integral part of the process of planning, monitoring and controlling the firm's credit and overall risk profile.

193.   The bank must have counterparty credit risk management policies, processes and systems that are conceptually sound and implemented with integrity relative to the sophistication and complexity of a firm's holdings of exposures that give rise to CCR. A sound counterparty credit risk management framework shall include the identification, measurement, management, approval and internal reporting of CCR.

194.   The bank's risk management policies must take account of the market, liquidity, legal and operational risks that can be associated with CCR. The bank must not undertake business with a counterparty without assessing its creditworthiness and must take due account of settlement and pre-settlement credit risk. These risks must be managed as comprehensively as practicable at the counterparty level (aggregating counterparty exposures with other credit exposures) and at the firm-wide level.

195.   The board of directors 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. Where the bank is using an internal model for CCR, 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. They should also consider the uncertainties of the market environment (e.g. timing of realisation of collateral) and operational issues (e.g. pricing feed irregularities) and be aware of how these are reflected in the model.

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[31] As specified, for example, in the existing Revised Framework on the supervisory review of stress testing (paragraph 765).

[32] As specified, for example, in the existing Revised Framework regarding supervisory review of residual risk (paragraphs 767–769).

[33] As specified, for example, in the existing Revised Framework regarding supervisory review of credit concentration risk (paragraphs 770–777).

196.   In this regard, the daily reports prepared on a firm's exposures to CCR must be 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.

197.   The bank's CCR management system must be used in conjunction with internal credit and trading limits. In this regard, credit and trading limits must be related to the firm's risk measurement model in a manner that is consistent over time and that is well understood by credit managers, traders and senior management.

198.   The measurement of CCR must include measuring daily and intra-day usage of credit lines and economic capital allocation. The bank must measure current exposure gross and net of collateral held. At the portfolio and counterparty level, the bank must calculate and monitor peak exposure or potential future exposure (PFE) at the confidence interval chosen by the firm. Banks must take account of large or concentrated positions, including by groups of related counterparties, by industry, by market, etc.

199.   The bank 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. 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 board of directors. Where stress tests reveal particular vulnerability to a given set of circumstances, prompt steps must be taken to manage those risks appropriately (e.g. by hedging against that outcome, or reducing the size of the firm's exposures).

200.   The bank 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. The firm's CCR management system must be well documented, for example, through a risk management manual that describes the basic principles of the risk management system and that provides an explanation of the empirical techniques used to measure CCR.

201.   The bank 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 credit and trading units and of the independent CCR control unit. A review of the overall CCR management process must take place at regular intervals (ideally not less than once a year) and must specifically address, at a minimum:

•   the adequacy of the documentation of the CCR management system and process;

•   the organisation of the CCR control unit;

•   the integration of CCR measures into daily risk management;

•   the approval process for risk pricing models and valuation systems used by front and back-office personnel;

•   the validation of any significant change in the CCR measurement process;

•   the scope of counterparty credit risks captured by the risk measurement model;

•   the integrity of the management information system;

•   the accuracy and completeness of CCR data;

•   the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;

•   the accuracy and appropriateness of volatility and correlation assumptions;

- the accuracy of valuation and risk transformation calculations;

- the verification of the model's accuracy through frequent back-testing.

202.   A bank that receives approval to use an internal model to estimate its EAD for CCR exposures must monitor the appropriate risks and have processes to adjust its estimation of EPE when those risks become significant. This includes the following:

- Banks must identify and manage their exposures to specific wrong-way risk.

- For exposures with a rising risk profile after one year, such banks must compare on a regular basis the estimate of EPE over one year with EPE over the life of the exposure.

- For exposures with a short-term maturity (below one year), banks must compare on a regular basis the replacement cost (current exposure) and the realised exposure profile, and/or store data that allow such a comparisons.

203.   When assessing an internal model used to estimate EPE, and especially for banks that receive approval to estimate the value of the alpha factor, supervisors must review the characteristics of the firm's portfolio of exposures that give rise to CCR. In particular, supervisors must consider the following characteristics, namely:

- the diversification of the portfolio (number of risk factors the portfolio is exposed to);

- the correlation of default across counterparties; and

- the number and granularity of counterparty exposures.

204.   Supervisors will take appropriate action where the firm's estimates of EPE or alpha do not adequately reflect its exposure to CCR. Such action might include directing the bank to revise its estimates; directing the bank to apply a higher estimate of EPE or alpha; or disallowing a bank from recognising internal estimates of EAD for regulatory capital purposes.

205.   For banks that make use of the standardised method, supervisors should review the bank's evaluation of the risks contained in the transactions that give rise to CCR and the bank's assessment of whether the standardised method captures those risks appropriately and satisfactorily. If the standardised method does not capture the risk inherent in the bank's relevant transactions (as could be the case with structured, more complex OTC derivatives), supervisors may require the bank to apply the CEM on a transaction-by-transaction basis (i.e. no netting will be recognised).

C.   The Third Pillar – Market Discipline

206.   Credit exposures from derivatives intermediation activities have grown rapidly over the past several years. While derivatives intermediaries face a number of risks, such as market, liquidity, legal and operational, CCR is in many cases the most significant. For some of the banks most active in the SFT and OTC derivatives market, the total credit exposures from these transactions, on a nominal basis, can rival that of the exposure in their loan portfolios. As a result, public disclosure of such exposures plays an important role in advancing market discipline. The objectives of the following disclosure requirements are consistent with the principles identified in Pillar 3 and are supplemental to those contained in the Revised Framework.

207.   The following Table 6 identifies recommended general disclosures for CCR and OTC derivative instruments.

Table 6

General disclosure for CCR-related exposures

Qualitative Disclosures	(a)	The general qualitative disclosure requirement (paragraph 824 and 825) with respect to derivatives and CCR, including: • Discussion of methodology used to assign economic capital and credit limits for counterparty credit exposures; • Discussion of policies for securing collateral and establishing credit reserves; • Discussion of policies with respect to wrong-way risk exposures; • Discussion of the impact of the amount of collateral the bank would have to have to provide given a credit rating downgrade.
Quantitative Disclosures	(b)	Gross positive fair value of contracts, netting benefits, netted current credit exposure, collateral held, net derivatives credit exposure,[34] potential future credit exposure, and notional value of credit derivative hedges. Current and potential future exposure further broken down by types of credit exposure.[35]
	(c)	Credit derivative transactions that create exposures to CCR (notional value), segregated between use for the institution's own credit portfolio, as well as in its intermediation activities, including the distribution of the credit derivatives products used[36], broken down further by protection bought and sold within each product group.
	(d)	The estimate of alpha if the bank has received supervisory approval to estimate alpha.

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[34] *Net credit exposure* is the credit exposure on derivatives transactions after considering both the benefits from legally enforceable netting agreements and collateral arrangements. The notional amount of credit derivative hedges alerts market participants to an additional source of credit risk mitigation.

[35] This might be interest rate contracts, FX contracts, equity contracts, credit derivatives, and commodity/other contracts.

[36] This might be Credit Default Swaps, Total Return Swaps, Credit options, and other.

Part 2: The treatment of double default

I. Introduction

208.   In the Revised Framework, the recognition of the additional protection afforded by having credit protection in place is recognised in the current proposals through a substitution approach. This means that, in the standardised approach, a bank may substitute the risk weight of the protection provider for that of the obligor, whereas, in the IRB approaches the PD or LGD of the obligor are revised, subject in both instances to the derived risk weight being no lower than that of a comparable direct exposure to the protection provider. Under these conditions the maximal capital benefit that might be obtained through obtaining a hedge is equivalent to the reduction in the capital requirement through replacing the exposure to the original obligor with one to the protection provider. The current proposals do not, therefore, fully reflect the additional benefit obtained from the presence of credit protection, i.e. both the underlying exposure and the protection provider must default for a loss to be incurred (double default), and a bank might recover from both the obligor and the protection provider, in case of default (double recovery). The BCBS has, therefore, developed, jointly with the IOSCO, a framework to reflect the additional comfort generally given by the presence of a protection provider.

209.   The BCBS has developed proposals in the areas of double default and double recovery that do not front-run the practices currently in use in the industry, rather that seek to reflect best practice. It should be noted that in developing a framework there is a necessary trade-off between rigour and tractability, and the guiding principles for the BCBS have been:

- economic substance,

- supervisability,

- consistency with the asymptotic single risk factor (ASRF) model, and

- simplicity.

210.   In considering how a more risk-sensitive framework might be developed in the area of double default, the BCBS is also aware that it must guard against developing proposals that move ahead of current practice in the industry. The survey undertaken as part of the Trading Book Review and subsequent targeted questioning where this was appropriate have allowed the BCBS to gauge the current treatment adopted by banks in these areas and develop the proposals accordingly[37].

211.   Having considered the diversity of practices in the industry in the area of the recognition of double default effects for the purposes of economic capital, the BCBS has developed proposals that are consistent with those underpinning the asymptotic single-risk factor (ASRF) framework used in the IRB approaches to credit risk in the Revised Framework. The framework for double default will not, however, be available within the standardised approach to credit risk due to there being particular problems with determining the credit quality of unrated obligors and the relevant correlations with protection providers. It should also be noted that the proposals are applicable to exposures in both banking and trading book.

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[37]   See BCBS, *Trading Book Survey: A Summary of Responses* (Basel, April 2005).

212.   Recognition of double default effects for dilution risk is incorporated in the framework. Although dilution risk may not be material in a number of cases, the BCBS believes that it is important in order to ensure consistency of treatment with the IRB approaches as presented both in the current proposals and in the context of the proposals for double default.

213.   Double recovery will not be recognised, as:

• there is considerable doubt as to whether double recovery may ever be achieved in practice, bearing in mind the contractual, legal, and practical obstacles, e.g. the unattractiveness of buying a defaulted bond issued by the obligor in order to deliver it to the administrators of the protection provider and thus establish a (defaulted) claim on the protection provider;

• it is difficult to prescribe conditions on obligor, protection provider, and form of protection that could give sufficient certainty of the prospect of double recovery in the event of double default; and

• there is little evidence that, in the event of double default, banks currently delineate recoveries between underlying obligor and protection provider.

214.   It must be noted that under no circumstances are double default effects to be recognised where there is any aspect of the protection having already been incorporated through:

• an adjusted PD or LGD to reflect the substitution approach; or

• the internal/external rating (as might be the case for some structured finance transactions).

This Consultative Document also provides an interpretation of paragraph 301 of the Revised Framework as regards the appropriate LGD to be used in the IRB approaches for exposures subject to the double default and substitution treatments.

215.   The terms "guarantor" and "protection provider" are used interchangeably in this part of the Consultative Document.

II.   Proposed scope and operational requirements

216.   This section sets out proposals for the scope of application (hereafter "the scope") of the double default framework in the IRB approaches, i.e. how to define the circumstances in which the capital requirement for a credit exposure which has been hedged by the purchase of credit protection may be reduced in recognition of double default effects. The BCBS has considered restricting scope along the following dimensions:

• protection providers;

• obligors; and

• the form of protection (e.g. guarantees, credit derivatives, insurance contracts).

217.   "Wrong-way risk" is defined here as the existence of a high correlation in the creditworthiness of a protection provider and the obligor of the underlying exposure due to their performance being dependent on common economic factors. The BCBS has sought to develop operational requirements for the double default framework that minimise the

possibility of this risk being present between protection providers and the obligors of the underlying exposures.

A.   Protection providers

218.   The BCBS considers it as important that protection providers are of high credit quality and sufficiently transparent. The overarching minimum operational requirements from the current proposals therefore imply, amongst other things, restricting recognition to protection provided by highly rated (i.e. having an internal rating equivalent to at least A-) entities. Regulation equivalent to the Revised Framework or alternatively an external investment-grade rating is required to ensure transparency.

219.   Recognition is also restricted to transactions in which the protection provider is a financial firm, with appropriate expertise in this area. The rationale behind these considerations is that the very existence of a credit risk transfer transaction usually creates additional, idiosyncratic correlation between protection provider and obligor, as the protection provider has a credit exposure to the obligor. Moreover, if providing credit protection is not part of the normal business of the protection provider, the existence of the transaction may also be further evidence of an economic or legal link between protection provider and obligor, and therefore of wrong-way risk. One way, consistent with the IRB philosophy, of ensuring that this additional correlation is not substantial or material, is to require that it be diversified away, i.e. that the protection provider be a firm whose business is the management of a diversified portfolio of credit risk, in other words a financial firm. The restriction of protection providers to this set of protection providers, with "financial firm" suitably defined (see paragraph 307b of the proposed rules), means that there is no need to distinguish between types of credit risk transfer, other than on grounds of legal enforceability.

220.   The only other protection providers that have been considered are sovereigns (and their equivalents). The BCBS believes, however, that these should be excluded in their entirety. The consequences of sovereign default for the ability of corporate obligors to meet their obligations are unclear and potentially severe, and therefore the BCBS believes that it is not in a position to arrive at a prudent calibration for these protection providers.

B.   Obligors

221.   To be eligible for the double default framework, the underlying obligation must be:

•   a corporate exposure as defined in paragraphs 218 to 228 of the Revised Framework;[38] or

•   a loan extended to a small business and classified as a retail exposure according to paragraph 231 of the Revised Framework.[39]

222.   Exposures to the following types of obligors are excluded from the double default framework:

•   financial firms;

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[38] All subclasses of specialised lending are excluded if the slotting approach (paragraphs 275 to 282 of the Revised Framework) has been adopted for calculation of risk weights for such exposures.

[39] In this case, risk-weighted assets have to be calculated according to paragraph 232 of this Consultative Document.

- members of the same group as the protection provider; and

- suppliers of goods or services to the protection provider.

In all of these cases, the BCBS has decided that the risk of the presence of material wrong-way risk as defined in paragraph 217 of this Consultative Document on account of common dependence on the same economic factors is too great for it to be prudent to recognise a double default benefit.

C.   Forms of protection

223.   Only guarantees and credit derivatives meeting the minimum operational requirements in paragraphs 189 to 193 of the Revised Framework as well as additional requirements set out in this paper are eligible. This includes protection provided through the use of single-name unfunded credit derivatives and single-name guarantees as well as n^{th}-to-default basket products subject to the conditions outlined in the operational requirements of the Revised Framework.

224.   No recognition for double default will be granted to:

- multiple-name credit derivatives (other than n^{th}-to-default basket products deemed eligible as above) or multiple-name guarantees or index-based products (the BCBS considers that the level of basis risk inherent in these products may be unacceptably high);

- synthetic securitisations and other tranched products that would fall within the scope of the securitisation framework, and covered bonds to the extent such instruments are externally rated; and

- funded credit derivatives. Exposures hedged by credit linked notes, to the extent of their cash funding, will be treated as collateralised transactions[40].

D.   Dilution risk

225.   On scope, the range of eligible protection providers for dilution risk will be revised, however, to exclude under the double default framework the sellers of purchased receivables and parties connected to them given the high likelihood of wrong-way risk being present. On operational requirements, the same conditions that permit recognition of mitigation techniques for dilution risk in the current proposals will need to be met for the recognition to be extended to the double default framework, and the calibration will be the same as that to be used for the general double default framework.

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[40]   In accordance with paragraph 194 of the Revised Framework.

III. Calculation of capital requirements

A. Theoretical framework[41]

226.   The FRB White Paper[42] on this topic outlined a theoretical framework for assessing capital requirements for hedged exposures that is consistent with the ASRF model that the Revised Framework uses to derive capital requirements for unhedged banking-book exposures. Based on this framework, the BCBS has developed a simplified formula for calculation of the capital requirement for a hedged transaction.

227.   For any transaction where a bank wishes to apply the double default framework, the bank will have to report a PD, LGD, and EAD for the unhedged exposure to the underlying obligor (although the LGD and EAD parameters will be set by supervisors for banks using the foundation IRB approach), as it would for unprotected exposures under the IRB approaches. In addition, it will have to report a PD for the guarantor and a separate EAD_g defined as the amount of the underlying exposure that is hedged, as well as the LGD associated with the hedged facility. For consistency with the substitution approach, for the LGD of the hedged facility, the bank should use the LGD of a comparable direct exposure to the guarantor (i.e. consistent with paragraph 301 of the Revised Framework, the LGD associated with an unhedged facility to the guarantor or the unhedged facility to the obligor, depending upon whether in the event both the guarantor and obligor default during the life of the hedged transaction available evidence and the structure of the guarantee indicate that the amount recovered would depend on the financial condition of the guarantor or obligor, respectively). There may be no consideration of double recovery in the LGD estimate.

B. Correlation parameters

228.   Extension of the ASRF framework to hedged exposures requires the parameterisation of three correlation factors: ρ_{os}, ρ_{gs} and ρ_{og}. The parameter ρ_{os}, which reflects the sensitivity of an obligor to the systematic risk factor, is already calibrated within the Revised Framework. The parameter ρ_{gs}, which reflects the sensitivity of a guarantor of an exposure subject to the double default treatment to systematic risk, and the pairwise correlation ρ_{og} are calibrated as set out below.

229.   Based on empirical analyses, the BCBS has determined that the following values are to be used in the double default framework:

$$\rho_{gs} = 0.7; \quad \rho_{og} = 0.6$$

The parameter chosen for ρ_{gs} corresponds to the median value observed in empirical studies; that chosen for ρ_{og} has been set at a higher percentile as a prudent safeguard against the presence of wrong-way risk.

230.   The correlation parameter ρ_{gs} used for guarantors is significantly higher than the correlation set in the Revised Framework for a direct exposure to the same counterparty

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[41]   More detailed technical workings of the derivation of the formulae for capital requirements are in Annex 1.

[42]   Erik Heitfield/Norah Barger, *Treatment of Double-Default and Double-Recovery Effects for Hedged Exposures under Pillar I of the Proposed New Basel Capital Accord*, A White Paper by the staff of the Board of Governors of the Federal Reserve System in support of the forthcoming Advance Notice of Proposed Rulemaking, June 2003.

(ρ_{os}). The reason for this is that the correlations set in the Revised Framework apply to claims on all corporates, banks, and sovereigns in a diversified portfolio, and on average are appropriate for claims on these obligors. However, only a subset of these entities are eligible as guarantors under the double default framework, and banks that rely on credit protection will acquire a concentration of exposure to this subset. For this small and non-representative sample, a higher correlation parameter is deemed to be appropriate.

C.   Calculation of risk-weighted assets

231.   Based on these parameters, the BCBS has developed a simplified formula for the calculation of capital requirements for exposures subject to the double default treatment (K_{DD}). For such exposures, capital requirements are calculated by multiplying a capital requirement (K_U) similar to that for unhedged exposures by an adjustment factor:

$$K_{DD} = K_U \cdot \left(0.15 + 270 \cdot PD_g \right)$$

The base requirement K_U is calculated using the normal formula for corporate exposures from paragraphs 272 and 273 of the Revised Framework, but with some changes to the input parameters. For consistency with the substitution approach, the LGD of a comparable direct exposure to the guarantor is used. (Recall that the floor in the substitution approach is the "risk weight of a comparable direct exposure to the guarantor" and so depends on the PD of the guarantor and the LGD of such an exposure.) The maturity adjustment is based on the minimum of the PDs of the guarantor and the obligor; the exemption from the one-year maturity floor does not apply.

232.   In the case that the underlying obligation is a loan to a small business qualifying as a retail exposure, the capital requirement K_U in the above formula must be calculated according to the risk-weight function for *corporate* exposures set out in paragraphs 272 and 273 of the Revised Framework. There is, however, no change to the calculation of the risk weight for all other exposures to the same obligor, including unhedged portions of exposures for which the hedged portion is subject to the double default treatment.

233.   For hedged exposures to be treated within the scope of the double default framework, the risk-weighted asset amount must in no case be lower than the risk-weighted asset amount for an otherwise identical exposure guaranteed by the sovereign of the protection provider and subject to the substitution treatment.

D.   Maturity effects

234.   For the capital requirement on the unhedged portion of a partially hedged exposure the standard maturity adjustment formula according to paragraphs 318 to 324 of the Revised Framework should be applied if the Revised Framework requires an explicit maturity adjustment for the respective exposure. This function should take as inputs the effective maturity of the exposure to the underlying obligor and the underlying obligor's PD.

235.   The maturity adjustment must also be applied to the double default capital requirement. In this case, the maturity adjustment function will use as inputs the effective maturity of the guaranteed exposure and the lower of the PD of the protection provider and the PD of the obligor. The exemptions from the one-year floor do not apply to this calculation.

236.   Maturity mismatches between an underlying exposure and associated credit protection are common, particularly where credit derivatives are used. Where the credit protection expires before the maturity of the underlying exposure, the hedge does not cover

the full "time amount" of the exposure, this being a composite measure across the two dimensions. The treatment of maturity mismatches follows the treatment prescribed in paragraphs 202 to 205 of the Revised Framework for the substitution approach.

237. The BCBS has found that, in general, most banks do not make provisions for the hedged portion of an exposure. Furthermore, the EL is dependent on the joint probability of default of obligor and protection provider and would therefore be minimal. Under these circumstances, EL for the hedged portion of an exposure is assumed to be zero.

E.   Stress testing

238. Banks using the double default framework must consider as part of their stress testing framework the impact of a deterioration in the credit quality of protection providers, in particular the impact of protection providers falling outside the eligibility criteria relating to an A- rating. Banks should also consider the impact of the default of one but not both of the obligor and protection provider, and the consequent increase in risk and capital requirements at the time of that default.

IV.   Pillar 2

239. Banks need to consider whether wrong-way risk is greater than that reflected in the calibration of the double default treatment because, for example, a protection provider has a concentration of exposures (direct or by guarantees) to companies in the particular industrial sector of the obligor. Like any concentration, this is not addressed in the Pillar 1 capital charge for credit risk because the credit-risk model underpinning the Revised Framework assumes perfect diversification of the banks' portfolios. Moreover, given the current nature of the market, it is likely that a limited set of protection providers will be used by a bank, thereby giving rise to increased concentration risk. Concentration of exposures to a protection provider is already addressed in paragraph 773, fourth bullet point, of the Revised Framework.

V.   Pillar 3

240. For Pillar 3, the BCBS believes that the current wording in the Revised Framework in relation to credit risk mitigation techniques is adequate in this respect.

VI.   Impact assessment

241. The BCBS intends to judge the impact of these proposals through the fifth Quantitative Impact Study (QIS 5). Further detail is given in Annex 3.

VII. Proposed rules

A. Operational requirements

242.   The following paragraphs will be inserted after paragraph 307 of the Revised Framework.

Operational requirements for recognition of double default

307a.   A bank using an IRB approach has the option of using the substitution approach in determining the appropriate capital requirement for an exposure. However, for exposures hedged by one of the following instruments the double default framework according to paragraphs 284a to 284d may be applied subject to the additional operational requirements set out in paragraph 307b.

(a)	Single-name unfunded credit derivatives (e.g. credit default swaps) or single-name guarantees.

(b)	First-to-default basket products – the double default treatment will be applied to the asset within the basket with the lowest risk-weighted amount.

(c)	n^{th}-to-default basket products – the protection obtained is only eligible for consideration under the double default framework if eligible $(n\text{-}1)^{th}$ default protection has also be obtained or where $(n\text{-}1)$ of the assets within the basket has/have already defaulted.

307b.   The double default framework is only applicable where the following conditions are met.

(a)	The risk weight that is associated with the exposure prior to the application of the framework does not already factor in any aspect of the credit protection.

(b)	The entity selling credit protection is a bank, investment firm or insurance company (but only those that are in the business of providing credit protection, including mono-lines and re-insurers), referred to as a financial firm, that:
	• is regulated in a manner broadly equivalent to that in the Revised Framework (where there is appropriate supervisory oversight and transparency/market discipline), or externally rated as at least investment grade by a credit rating agency deemed suitable for this purpose by supervisors; and
	• has an internal rating with a PD equivalent to or lower than that associated with an external A- rating.

(c)	The underlying obligation is:	
	•	a corporate exposure as defined in paragraphs 218 to 228 (excluding specialised lending exposures for which the supervisory slotting criteria approach described in paragraphs 275 to 282 is being used); or
	•	a loan extended to a small business and classified as a retail exposure as defined in paragraph 231.
(d)	The underlying obligor is **not**	
	•	a financial firm as defined in (b);
	•	a member of the same group as the protection provider; or
	•	a supplier of goods or services to the protection provider.
(e)	The credit protection meets the minimum operational requirements for such instruments as outlined in paragraphs 189 to 193 of the Revised Framework.	
(f)	In keeping with paragraph 190 of the Revised Framework for guarantees, for any recognition of double default effects for both guarantees and credit derivatives a bank must have the right and expectation to receive payment from the credit protection provider without having to take legal action in order to pursue the counterparty for payment. To the extent possible, a bank should take steps to satisfy itself that the protection provider is willing to pay promptly if a credit event should occur.	
(g)	The purchased credit protection absorbs all credit losses incurred on the hedged exposure that arise due to the credit events outlined in the contract.	
(h)	If the payout structure provides for physical settlement, then there must be legal certainty with respect to the deliverability of a loan, bond, or contingent liability. If a bank intends to deliver an obligation other than the underlying exposure, it must ensure that the deliverable obligation is sufficiently liquid so that the bank would have the ability to purchase it for delivery in accordance with the contract.	
(i)	The terms and conditions of credit protection arrangements must be legally confirmed in writing by both the credit protection provider and the bank.	
(j)	In the case of protection against dilution risk, the seller of purchased receivables must not be a member of the same group as the protection provider; or a supplier of goods or services to the protection provider.	

B.   Calculation of capital requirements

243.   The following paragraphs will be inserted after paragraph 284 of the Revised Framework.

Calculation of risk-weighted assets for exposures subject to the double default framework

284a.   For hedged exposures to be treated within the scope of the double default framework, capital requirements may be calculated according to paragraphs 284b to 284d.

284b.   The capital requirement for a hedged exposure subject to the double default treatment (K_{DD}) is calculated by multiplying K_U as defined below by a multiplier depending on the PD of the protection provider (PD_g)

$$K_{DD} = K_U \cdot \left(0.15 + 270 \cdot PD_g\right)$$

K_U is calculated in the same way as a capital requirement for an unhedged corporate exposure (as defined in paragraphs 272 and 273), but using different parameters for LGD and the maturity adjustment.

$$K_U = LGD_g \cdot \left[N\left(\frac{G(PD_o) + \sqrt{\rho_{os}} \cdot G(0.999)}{\sqrt{1 - \rho_{os}}} \right) - PD_o \right] \cdot \frac{1 + (M - 2.5) \cdot b}{1 - 1.5 \cdot b}$$

PD_o and PD_g are the probabilities of default of the obligor and guarantor, respectively. The correlation ρ_{os} is calculated according to the formula for correlation (R) in paragraph 272 (or, if applicable, paragraph 273), with PD being equal to PD_o and LGD_g being the LGD of a comparable direct exposure to the guarantor (i.e. consistent with paragraph 301, the LGD associated with an unhedged facility to the guarantor or the unhedged facility to the obligor, depending upon whether in the event both the guarantor and the obligor default during the life of the hedged transaction available evidence and the structure of the guarantee indicate that the amount recovered would depend on the financial condition of the guarantor or obligor, respectively). There may be no consideration of double recovery in the LGD estimate. The maturity adjustment coefficient b is calculated according to the formula for maturity adjustment (b) in paragraph 272, with PD being the minimum of PD_o and PD_g. M is the effective maturity of the hedged exposure, which may under no circumstances be below the one-year floor if the double default framework is to be applied.

284c.   The risk-weighted asset amount is calculated in the same way as for unhedged exposures, i.e.

$$RWA_{DD} = K_{DD} \cdot 12.5 \cdot EAD_g.$$

284d.   The risk-weighted asset amount calculated according to paragraph 284c should in no case be lower than the risk-weighted asset amount for an otherwise identical exposure guaranteed by the sovereign of the protection provider and subject to the substitution treatment described in paragraphs 300 to 307.

244.   The following paragraph will be inserted after paragraph 373 of the Revised Framework.

373a.   If protection against dilution risk has been purchased, and the conditions of paragraphs 307a to 307b are met, the double default framework may be used for the calculation of the risk-weighted asset amount for dilution risk. In this case, paragraphs 284a to 284d apply with PD_o being equal to the estimated EL, LGD_g

being equal to 100 percent, and effective maturity being set according to paragraph 369.

C.   Calculation of expected losses

245.   Paragraph 376 of the Revised Framework will be revised as follows (revised wording in italics):

> 376.   Banks must calculate an EL as PD x LGD for corporate, sovereign, bank, and retail exposures *both not in default and not treated as hedged exposures under the double default treatment.* For corporate, sovereign, bank, and retail exposures that are in default, banks must use their best estimate of expected loss as defined in paragraph 471 and banks on the foundation approach must use the supervisory LGD. For SL exposures subject to the supervisory slotting criteria EL is calculated as described in paragraphs 377 and 378. For equity exposures subject to the PD/LGD approach, the EL is calculated as PD x LGD unless paragraphs 351 to 354 apply. Securitisation exposures do not contribute to the EL amount, as set out in paragraph 563. For all other exposures*, including hedged exposures under the double default treatment,* the EL is *zero*.

D.   Stress testing

246.   The following paragraph will be inserted after paragraph 435 of the Revised Framework.

> 435a.   Banks using the double default framework must consider as part of their stress testing framework the impact of a deterioration in the credit quality of protection providers, in particular the impact of protection providers falling outside the eligibility criteria relating to an A- rating. Banks should also consider the impact of the default of one but not both of the obligor and protection provider, and the consequent increase in risk and capital requirements at the time of that default.

E.   Pillar 2

247.   Paragraph 772 of the Revised Framework will be changed as follows (revised wording in italics):

> 772.   Credit risk concentrations, by their nature, are based on common or correlated risk factors, which, in times of stress, have an adverse effect on the creditworthiness of each of the individual counterparties making up the concentration. *Concentration risk arises in both direct exposures to obligors and may also occur through exposures to protection providers.* Such concentrations are not addressed in the Pillar 1 capital charge for credit risk*. Credit risk concentrations may be reduced by the purchase of credit protection. However, banks must consider whether the concentration remains because wrong-way risk is greater than that reflected in the calibration of the double default treatment because, for example, a protection provider has a concentration of exposures (direct or by guarantees) to companies in the particular industrial sector of the obligor.*

Part 3: The short-term maturity adjustment in the IRB approach

I.   Introduction

248.   Since the publication of the Revised Framework, the industry has made representations to the BCBS in relation to the capital requirements for exposures deemed to be "short-term", i.e. those with an original maturity of less than one year. The industry believes that the proposals contained therein produce capital requirements that are not reflective of the risk being run in such transactions where, by their very nature, the creditor bank has an option not to roll-over the transaction at the time that each transaction reaches its maturity. It should be noted, however, that this option may be illusory given relationship considerations between the creditor and obligor. For the BCBS the overriding consideration is the economic substance and associated riskiness of these transactions, and, given that the capital requirements are assessed for the year ahead, the reinvestment strategy of the creditor along the temporal dimension is a critical input into the effective, rather than contractual maturity of the transaction.

249.   The BCBS has therefore evaluated, jointly with the IOSCO, whether the effective maturity of these transactions matches the contractual maturity and, if so, to develop capital requirements that more appropriately capture the risk of these short-term transactions where the option not to roll-over exists in reality and will be exercised. There has been an extensive dialogue with representatives of the industry and trade bodies in order to seek clarification over the relationship nature of short-term transactions with a view to delineating these into those (i) that might be termed "non-relationship", i.e. there is no pressure on the creditor bank to roll over the transaction at maturity with the same counterparty, and those (ii) where relationship concerns are judged to be (possibly) material.

250.   Where it has proved possible to identify those categories of transactions that satisfy this non-relationship condition, the BCBS intends to remove the need for national discretion contained in paragraph 321 of the Revised Framework before the maturity adjustment can be applied to these categories.

251.   Additional transactions meeting the conditions in paragraph 321 dependent on local market characteristics, as judged by national supervisors, might also qualify for the maturity adjustment. This is addressed in the revised paragraph 322.

II.   Effective Maturity

252.   The effective maturity of a transaction may be affected by a number of factors including:

- the nature of embedded options available to the creditor and/or obligor; and

- other economic incentives to (dis)continue a series of transactions, arising from the ongoing and future economic relationship between creditor and obligor.

253.   In assessing the effective maturity to be used for the purposes of the calculation of risk-weighted assets, the first of these has already been addressed in the Revised Framework. The BCBS has been in ongoing discussion with the industry about the reinvestment strategies that banks might pursue. The industry has presented the following four possibilities for reinvestment of the capital freed up on the maturity of the short-term

exposure, where the term "rating" is taken to represent the true creditworthiness of the obligor, however arrived at:

- reinvest in a risk-free asset whatever the path of the obligor's rating, i.e. the bank's portfolio gradually shifts from risky assets to risk-free assets as risky exposures mature;

- where the original exposure is downgraded prior to the contractual maturity of the transaction, reinvest in an asset where the risk characteristics (i.e. rating, LGD) match those of the original exposure at the inception of the transaction, with the result that a bank's portfolio will get safer over time;

- assume that the bank will reinvest all funds in an asset whose risk characteristics match those of the original exposure at the inception of the transaction. This implies that the overall risk composition of a bank's portfolio should remain stable over time (unlike the previous option which treats rating upgrades and downgrades differently); and

- assume that the bank will make a new loan to the same (or observationally similar) obligor once the short-dated exposure matures, this being the most conservative assumption possible. In substance, this approach assumes that the maturity of a short-dated exposure is, in fact, longer than its contractual maturity.

254.   The BCBS has spent a considerable length of time considering the implications for the ongoing risk profile of the bank that is inherent in assuming that banks follow any one of these strategies, but has still found the development of an operational framework to be intractable for all of these scenarios. The number of intangible elements that influence the reinvestment strategy of a bank, which itself is not fixed in time and may vary with changing economic conditions, has led the BCBS to seek to develop proposals that are less specific and dogmatic on the precise course of action that a bank might follow – and certainly less dependent on the path that the rating of the obligor might follow.

255.   Given the intractability of modelling the reinvestment strategies proposed by the industry and having undertaken extensive dialogue with the industry, the BCBS has concluded that there is no consensus on how to calibrate a short-term maturity adjustment function, bearing in mind that the capital requirement should protect the bank over a one-year horizon. The calculation of capital requirements for transactions eligible for a short-term maturity adjustment according to the revised paragraphs 321 and 322 therefore remains as outlined in the Revised Framework.

256.   The BCBS has decided to focus attention in the development of a framework on the relationship nature of short-term transactions. Where a transaction might be classified "non-relationship" across all national markets, i.e. there is no pressure on the creditor bank to roll over the transaction at maturity with the same counterparty, the transaction will automatically qualify for an exemption from the one-year floor.

257.   Where relationship concerns are judged to be (possibly) material it would be the responsibility of national supervisors to determine, in the context of their local market, whether the requisite conditions for non-relationship transactions are fulfilled; if this were the case, these transactions would also qualify for the same maturity adjustment treatment as the non-relationship transactions. Criteria that the national supervisor might consider in relation to the obligor are whether the bank has:

- knowledge – in a timely manner of any deterioration in the credit quality of the obligor;

- legal certainty and practical ability – of that bank's right to terminate the transaction in the event of credit deterioration of the obligor; and

- commercial willingness – to terminate the transaction.

(The last of these is very much a point in time judgement that might or might not be exercised at the time where credit deterioration is detected.)

258.   In these cases set out in paragraphs 256 and 257 the implicit effect is recognition that the effective maturity matches the contractual maturity.

III.   Scope of Application

259.   Given the above conditions for a transaction to be deemed as a non-relationship one, the BCBS has identified categories of transactions as falling onto the first grouping of non-relationship transactions. These are certain short-term exposures, comprising exposures with an original maturity of less than one year, and include capital market-driven transactions and repo-style transactions where the documentation contains daily remargining clauses. For all eligible transactions the documentation must require daily revaluation, and must include provisions that must allow for the prompt liquidation or setoff of collateral in the event of default or failure to re-margin. The maturity of such transactions must be calculated as the greater of one day and the effective maturity.

260.   Similarly, the BCBS has identified the following categories of transactions that might fall into the second grouping (i.e. non-relationship subject to national discretion), with this being dependent on the characteristics of the local market as judged by national supervisors within their own jurisdiction:

- some capital market-driven transactions and repo-style transactions that might not fall within the scope of the revised paragraph 321 of the Revised Framework;

- some short-term self-liquidating trade transactions. Import and export letters of credit and similar transactions could be accounted for at their actual remaining maturity;

- some exposures arising from settling securities purchases and sales. This could also include overdrafts arising from failed securities settlements provided that such overdrafts do not continue more than a short, fixed number of business days;

- some exposures arising from cash settlements by wire transfer, including overdrafts arising from failed transfers provided that such overdrafts do not continue more than a short, fixed number of business days;

- some exposures to banks arising from foreign exchange settlements; or

- some short-term loans and deposits.

261.   The BCBS invites industry comment on these groupings of categories of transactions, especially where there may be differing degrees of relationship across local markets, and it will be liaising with the industry in order to delineate these categories more effectively.

IV.   Proposed rules

262.   The BCBS is proposing the following text be adopted in the Revised Framework.

A.   Exemptions from the one-year floor

263.   The paragraph 321 of the Revised Framework is amended as follows:

> 321.   The one-year floor does not apply to certain short-term exposures, comprising fully or nearly-fully collateralised[43] capital market-driven transactions (i.e. OTC derivatives transactions and margin lending) and repo-style transactions (i.e. repos/reverse repos and securities lending/borrowing) with an original maturity of less than one year, where the documentation contains daily remargining clauses. For all eligible transactions the documentation must require daily revaluation, and must include provisions that must allow for the prompt liquidation or setoff of collateral in the event of default or failure to re-margin. The maturity of such transactions must be calculated as the greater of one day and the effective maturity (M, consistent with the definition above).

B.   Local market-dependent exemptions from the one-year floor

264.   The paragraph 322 of the Revised Framework is amended as follows:

> 322.   In addition to the transactions considered in paragraph 321, other short-term exposures with an original maturity of less than one year that are not part of a bank's ongoing financing of an obligor may be eligible for exemption from the one-year floor. After a careful review of the particular circumstances in their jurisdictions, national supervisors should define the types of short-term exposures that might be considered eligible for this treatment. The results of these reviews might, for example, include transactions such as:
>
> - some capital market-driven transactions and repo-style transactions that might not fall within the scope of paragraph 321;
>
> - some short-term self-liquidating trade transactions. Import and export letters of credit and similar transactions could be accounted for at their actual remaining maturity;
>
> - some exposures arising from settling securities purchases and sales. This could also include overdrafts arising from failed securities settlements provided that such overdrafts do not continue more than a short, fixed number of business days;
>
> - some exposures arising from cash settlements by wire transfer, including overdrafts arising from failed transfers provided that such overdrafts do not continue more than a short, fixed number of business days;
>
> - some exposures to banks arising from foreign exchange settlements; or
>
> - some short-term loans and deposits.

C.   Maturity calculation of a netting set exclusively containing transactions exempt from the one-year floor (revised paragraph 323)

265.   The paragraph 323 of the Revised Framework is amended as follows:

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[43]   The intention is to include both parties of a transaction meeting these conditions where neither of the parties is systematically under-collateralised.

323. For transactions falling within the scope of paragraph 321 subject to a master netting agreement, the weighted average maturity of the transactions should be used when applying the explicit maturity adjustment. A floor equal to the minimum holding period for the transaction type set out in paragraph 167 will apply to the average. Where more than one transaction type is contained in the master netting agreement a floor equal to the highest holding period will apply to the average. Further, the notional amount of each transaction should be used for weighting maturity.

Part 4: Improvements to the current trading book regime

I.   Introduction

266.   The Market Risk Amendment offers firms[44] the use of either a standardised approach or an internal models approach to capture the market risks arising from their trading book positions. The internal models approach is built on the widely used VaR methodology, using a uniform 10-day holding period and a 99 percent confidence interval. However, a VaR methodology may not fully capture certain trading book risks (e.g. fat tails, changes in correlations and volatilities, intra-day trading risk, and event risk arising from exceptional market circumstances). When the Market Risk Amendment was adopted, it was recognised that some of these risks, particularly fat tails, were not well captured in VaR models. That recognition, and a more general concern about model risk, led the BCBS to require banks to multiply the VaR result by three to arrive at a more appropriate capital charge. As amended in 1997[45], the internal models approach also seeks to capture the specific risk associated with the credit quality of securities issuers. Banks that can demonstrate that they fulfil certain operational requirements can model specific risk, but they are required to increase the VaR multiplier for specific risk to four if they cannot appropriately capture event and default risks. To date, no supervisor has approved the use of a 3xVaR multiplier by a bank that models specific risk. Finally, banks are only allowed to use VaR if their risk management framework incorporates the results of a routine and rigorous programme of stress testing. However, the result of stress tests does not automatically translate into regulatory capital.

267.   Since the Market Risk Amendment took effect, more credit risk-related products have been booked in the trading book. These positions include, for instance, credit default swaps (CDS) and tranches of collateralised debt obligations (CDO). The inclusion in the trading book of such products leads to a concomitant rise in default and jump-to-default risk, risks that are supposed to be captured in specific risk models, but which have proved difficult to capture adequately with VaR.

268.   In addition to credit risk-related products, other structured and exotic products are held in the trading book[46]. These products are generally less liquid and give rise to risks that were not entirely contemplated in the market risk framework when it was introduced, like correlation and skew risk, which are difficult to capture adequately in VaR. In addition firms generally do not capture market concentration risk (e.g. the risk that a bank holds a position in a security that represents a large portion of the overall market for that security) in their VaR framework.

269.   The increase in credit and liquidity risk held in the trading book is expected to accelerate, in part because:

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[44]   The term "firm" is used to refer both to investment and commercial banking firms. When amendments are made to the Revised Framework or the Market Risk Amendment, the term "bank" is used for the sake of consistency with the rest of the text but it should be read to include investment firms, when appropriate.

[45]   See BCBS, *Modification of the Basel Capital Accord of July 1988, as amended in January 1996* (Basel, September 1997).

[46]   A more comprehensive list of structured and exotic products that tend to be less liquid is provided in the summary of responses to the trading book survey, that the BCBS released in April 2005. See BCBS, *Trading Book Survey: A Summary of Responses* (Basel, April 2005).

- The lifting of the eight percent cap on banking book regulatory capital charges, due to the implementation of the Revised Framework, could encourage banks to move banking book positions, especially the highest risk ones, to the trading book. Thus the tendency to arbitrage some positions between trading book and banking book could increase; and

- Accounting standards are moving towards the use of fair value, potentially making less relevant the traditional distinction between banking book positions that are valued at historical cost, and trading book positions that are "fair valued".

270. The 4xVaR multiplier has created a disincentive for banks to improve their specific risk models to attempt to capture better default and event risks because this would generally result in higher capital charges than simply applying the 4xVaR multiplier. Moreover, the lack of standards for modelling specific risk has also led to wide disparities in the robustness of models required by national supervisors.

271. In order to better address these risks, the BCBS and IOSCO worked out some possible improvements to the current trading book regulatory regime, as set forth in the Market Risk Amendment and in Part 2, Section VI, paragraphs 684–718 of the Revised Framework.

II. Summary of improvements proposed to the trading book regulatory regime

272. By improving the market risk capital regime, it is primarily intended to enhance the risk sensitivity of methodologies for assessing risks within the trading book that are not adequately captured in the current capital regime, rather than proposing an extensive set of rules for policing the trading book/banking book boundary. Therefore, the proposed improvements follow the Revised Framework's architecture, based on the three pillars.

273. The Pillar 1 changes aim to clarify the types of exposures that qualify for a trading book capital charge, provide further guidance on prudent valuation and stress testing, and clarify and strengthen modelling standards. Those changes include:

- The exclusion of a limited number of positions from a trading book capital charge; these positions are subject to capital requirements under the Revised Framework's credit risk or securitisation frameworks;

- Stronger, more explicit requirements in the Revised Framework for prudent valuation methods for trading book positions;

- Updating the standardised specific risk charges for sub-investment grade government debt positions and non-qualifying debt positions to conform to the Revised Framework credit risk weights of the Standardised Approach;

- Revisions to the qualifications and treatment for modelled specific risk, e.g. the 4xVaR multiplier for the specific risk surcharge is removed and replaced by a requirement to model default risk and capture event risk;

- More explicit and robust modelling standards for default and event risks; and

- A requirement that banks using internal models incorporate stress testing in their Pillar 2 internal capital assessment, i.e. a Pillar 1 requirement to use stress tests in Pillar 2, similar to the requirement that exists in the Revised Framework for credit risk.

274.   The Pillar 2 changes seek to strengthen firms' assessment of their internal capital adequacy for market risk, taking into account the output of their VaR model, valuation adjustments, and stress tests. In particular, the proposed new Pillar 2 standards require that:

- Banks demonstrate that they hold enough internal capital to withstand a range of severe but plausible market shocks;

- Internal capital assessments include an assessment of market concentration and liquidity risks under stressed market conditions;

- Stress testing factors include market risks that are not adequately captured in the VaR model, for instance, gapping of prices, one-way markets, non linear/deep out-of-the-money products, jumps-to-defaults, significant shifts in correlation, and other material risks that are not adequately captured in the VaR model; and

- Banks demonstrate to their supervisor that they combine their different risk measurement techniques in an appropriate manner to arrive at the overall internal capital assessment for market risk.

275.   To improve the robustness of trading book disclosures in the Pillar 3 of the Revised Framework, it is proposed that banks also disclose:

- The internal capital allocation for the trading portfolio;

- Qualitative information on trading book valuation techniques;

- The soundness standard used for modelling purposes; and

- The methodologies used to achieve the firm's internal capital adequacy assessment, consistent with the soundness standard mentioned above.

276.   In addition to these changes, some further work will be carried out among supervisors to ensure greater consistency in supervisory model approval standards and to share experience on the way banks implement the trading book regulatory regime, including the extent to which liquidity and concentration risks are captured. Furthermore, supervisors expect to initiate a constructive dialogue with the industry on the implementation of the proposed rules set out in this Consultative Document.

III.   Minimum capital requirements under Pillar 1

A.   Positions not subject to a trading book capital charge

277.   The Revised Framework defines the trading book for regulatory capital purposes as consisting only of positions in financial instruments and commodities held either with trading intent or in order to hedge other elements of the trading book. The definition also makes clear that positions held with trading intent are those held intentionally for short-term resale and/or with the intent of benefiting from actual or expected short-term price movements or to lock in arbitrage profits. This definition normally prevents any positions that are not financial instruments from being booked in the trading book. Moreover, a position that has the nature of an exposure that is other than short-term or that constitutes a hedge for regulatory capital purposes of a banking book credit risk exposure, should not be included in the trading book. Accordingly, an institution is precluded from using a hedge booked in the trading book to obtain both a reduced risk weight for a banking book item and an offset of a long trading book position. The definition of the trading book for regulatory capital purposes outlined above may be more restrictive than the definition used for accounting purposes.

B.   Further prudent valuation guidance

278.   The Revised Framework provides guidance on prudent valuation methods, notably on the operational standards that should be met in valuing trading book positions. It also lists factors and risks that should be considered, at a minimum, in the valuation process. These include unearned credit spreads, close-out costs, operational risks, early termination, investing and funding costs, future administrative costs, and, where appropriate, model risk.

279.   However, the Revised Framework language is less precise with respect to the valuation of illiquid or less liquid positions. It states that: "supervisory authorities will require banks to consider the need for establishing reserves for less liquid positions (and on an ongoing basis review their appropriateness)."

280.   In order to better address liquidity risks, it is proposed to strengthen the requirement mentioned above so that firms make appropriate valuation adjustments for less liquid positions. Bearing in mind that the underlying 10-day assumption of the Market Risk Amendment may not be consistent with the firm's ability to sell or hedge out positions under normal market conditions, firms will be required to make downward valuation adjustments/reserves for these less liquid positions. Where possible, these adjustments/reserves should be made through fair value. Firms must consider all relevant factors when determining the appropriateness of valuation adjustments/reserves for less liquid positions. These factors may include, but are not limited to, the amount of time it would take to hedge out the position/risks within the position, the average volatility of bid/offer spreads, the availability of independent market quotes (number and identity of market makers), the average and volatility of trading volumes, market concentrations, the aging of positions, the extent to which valuation relies on marking-to-model, and the impact of other model risks.

281.   To the extent that fair value accounting standards do not reflect the degree of illiquidity of certain positions, it is expected that adjustments carried out for regulatory capital purposes will exceed the amount of adjustments made under the accounting standards. In all circumstances, such regulatory capital adjustments will be reflected in Tier 1 capital.

C.   Trading book capital treatment for specific risk under the standardised methodology

282.   Under the Market Risk Amendment, the standard capital charges for specific risk associated with interest rates are tied to the risk weight applicable to banking book exposures in the 1988 Capital Accord. In particular, no capital charge is required for government issuers, which corresponds to the zero percent risk-weight applicable to banking book claims on OECD sovereigns. Similarly, an eight percent capital charge is required for non-qualifying issuers, which reflects the 100 percent risk-weight applicable for most banking book claims on corporates. The Market Risk Amendment adds an intermediate category for qualifying issuers, defined as issuers rated investment grade or unrated but deemed to be as sound as investment grade and listed on a recognised stock exchange. In this category, the Market Risk Amendment sets up three different capital charges according to the residual maturity of the issuance: 0.25 percent (6 months or less), 1.00 percent (between 6 and 24 months), and 1.60 percent (more than 24 months).

283.   The Revised Framework modifies the Market Risk Amendment standard capital charges for the specific risk arising from government paper, in order to reflect the introduction of external ratings in the standardised risk-weights for banking book claims. However, under this new set of capital charges the maximum charge remains at eight percent, which does not appropriately reflect the fact that, in the banking book, the risk-weight for claims on sovereigns rated below B- has been raised to 150 percent. This should translate, in the

trading book, to a capital charge of twelve percent, instead of the eight percent currently set out. The capital charge for unrated government issuers would remain at eight percent.

284.   The standard capital charges for specific risk arising from qualifying issuers would remain unchanged. However, in order to reflect the new banking book treatment for claims on banks and investment firms, set out in the Revised Framework, the definition of qualifying issuers would be expanded to include institutions that are deemed to be equivalent to investment grade quality and subject to supervisory and regulatory arrangements comparable to those set out in the Revised Framework.

285.   In order to increase consistency with the Revised Framework banking book treatment, the "other" category set out in the Market Risk Amendment should be updated to reflect the removal of the eight percent capital charge ceiling for banking book claims on corporates. Indeed, under the Revised Framework, claims on corporates rated non-investment grade now receive a 150 percent risk-weight. This should translate, in the trading book, to a capital charge of twelve percent, instead of the eight percent currently set out. The capital charge for unrated non-qualifying issuers would remain at eight percent.

D.   Trading book capital treatment under the internal models approach

286.   Since the introduction of the Market Risk Amendment in 1996 there has been considerable improvement in modelling technology and supervisory authorities now have greater experience as to the standards that can be reasonably expected. The Market Risk Amendment will therefore be updated to take into account these developments.

287.   Banks will be expected to consider the market risk of both trading book and, if material, banking book positions in their internal capital assessments under Pillar 2 and, under Pillar 3, make appropriate disclosure of the market risk in each book and how those risks translate into an internal capital assessment.

288.   Banks will be required under Pillar 1 to conduct stress testing of trading book positions, and to take stress testing into account when determining their internal capital assessment under Pillar 2.

289.   Standards on model validation have improved across the industry. Further guidance regarding the minimum level of initial model validation that supervisory authorities should expect has therefore been specified. These include the use of hypothetical testing (i.e. using changes in portfolio value that would occur were end-of-day positions to remain unchanged), requiring a longer time period for testing which may improve the statistical power of the VaR model, and testing at multiple percentiles which can provide a greater ability to detect a poor risk model.

290.   The backtesting regime to determine the appropriate regulatory multiplication factor will also be strengthened. Supervisors will have national discretion to require banks to perform backtesting on either hypothetical (i.e. using changes in portfolio value that would occur were end-of-day positions to remain unchanged), or actual trading outcomes (the latter being defined as excluding fees and commissions), or both.

291.   Finally, the proposed amendments detailed below clarify the standards required in order to model specific risk and introduce some new standards reflecting changes in the market. This includes a stronger requirement, and clearer soundness standards, for banks to model default and event risks in order to achieve specific risk model recognition. At the same time the specific risk 4x multiplier would be replaced with a 3x multiplier for both general market and specific risk.

292.   As under the Revised Framework's treatment of credit risk and operational risk, supervisors expect banks to hold sufficient regulatory capital to absorb market risk related losses over a one year time horizon under the assumption of an adverse market environment. Supervisors are concerned that the 10-day, 99th percentile VaR does not adequately capture a firm's exposures to the default of one or more issuers, particularly those for which it has name concentrations across its various trading portfolios (bonds, credit derivatives, equities, and other structured credit products). This is in part because exposures to sudden defaults are embedded in firms' trading portfolios and, therefore, are difficult to hedge. Therefore it is proposed that incremental exposures to sudden defaults (i.e. those that are not captured in the historical spread data of the VAR model) be subject to a soundness standard consistent with the IRB-based approach for credit risk (i.e. a one year holding period and a 99.9th percentile confidence interval). While the composition of a firm's trading book may change over time, the proposed standard assumes that a firm's current positions are the best proxy available for its exposure to default in the aggregate over the one year assessment horizon, an assumption consistent with that made under the frameworks for EPE and short-term maturity adjustments.

293.   As with the AMA approach to operational risk, the proposed approach for capturing default risk at the 99.9th percentile soundness standard will provide significant flexibility to banks in developing models, including how firms aggregate their specific risk and default related capital charge in a manner that avoids the double counting of default, spread, and migration related risks. National supervisors intend to continue a close dialogue with each other regarding best practices as models are implemented. In this regard, supervisors acknowledge that it may be appropriate to make adjustments for trading book positions that are very liquid reflecting the fact that banks may be able to act on market signals. Such realistic assumptions may be built into the models as long as the overall soundness standard continues to be met.

294.   Where banks are unable to meet the requirement to model default risk using their internal model they may instead calculate a charge based on the IRB methodology applied to positions in the banking book. Whilst the BCBS acknowledges that the IRB approach will include some double-counting of spread risks, it believes this approach is more risk sensitive than the current 4x multiplier.

295.   Banks that already have specific risk model recognition will have a reasonable transition period to develop their internal models to capture default and event risks or will have to either apply the new IRB based charge or revert to standardised rules (i.e. model recognition for specific risk would no longer apply).

IV.   Supervisory review process under Pillar 2

A.   Comprehensive assessment of risks

296.   The first principle of the Revised Framework's supervisory review process (Pillar 2) states that banks should have a comprehensive assessment of risks they face. These include credit risk, operational risk, market risk, interest rate risk in the banking book, liquidity risk, and other risks. With regard to market risk, banks are asked to build their assessment on the standardised or internal model measurement of market risks, and emphasis is also to be placed on performing stress testing. However, no further guidance is given to banks as to how they should supplement their VaR approach, in their assessment of risks, with alternative methods, including stress tests.

297.   Since the release of the Market Risk Amendment, banks have generally made considerable efforts to build on their VaR framework and the valuation of their trading positions or portfolios. These efforts include an extensive use of integrated stress testing and scenario analysis focused on some of the less observable risks faced. Therefore, supervisors consider it appropriate to give more guidance on those alternative approaches, building on firms' current sound practices.

298.   In particular, the proposal strengthens the requirement that banks must use stress testing to supplement their VaR models, in their assessment of internal capital adequacy. It also requires that such an assessment cover potential concentration and liquidity risk under stressed market scenarios. In addition, more guidance is provided on the different risk factors that should be taken into account in stress testing and other alternative measurement methods.

B.   Specific issues to be addressed under the supervisory review process

299.   The Revised Framework lists, in Pillar 2, the specific issues that need to be addressed under the supervisory review process. This includes issues arising from interest rate risk in the banking book, credit risk, and operational risk, but does not include specific issues associated with market risk.

300.   In that respect, emphasising some specific issues to be addressed under the supervisory review process would enhance the trading book regulatory regime. In that respect, three areas, to which particular attention should be paid, are identified:

- Valuation methodologies;
- Stress testing;
- Specific risk modelling.

Those are three mutually reinforcing components of market risk measurement. Therefore, material deficiencies or the inappropriateness of any one of these components should attract immediate supervisory action.

V.   Additional disclosure requirements under Pillar 3

301.   In order to supplement the Pillar 1 and Pillar 2 requirements mentioned above, firms' appropriate disclosure of capital adequacy should help market participants properly assess firms' financial soundness. In that respect, the public disclosures required under the Revised Framework are a good step forward for enhanced market discipline. It is intended to supplement them by the following disclosure requirements, reflecting some of the changes proposed above.

- Internal capital allocation for the trading portfolio;
- Qualitative information on trading book valuation techniques;
- The soundness standard used for modelling purposes; and
- The methodologies used to achieve the firm's internal capital adequacy assessment, consistent with the soundness standard mentioned above.

VI. Proposed rules

A. Pillar 1

1. *Capital charges related to the trading book/banking book boundary*

302.   In the Revised Framework, paragraph 706 will be deleted. The following paragraphs 689a, b, c, and d will be inserted just after the current paragraph 689 and before the heading "B. Prudent valuation guidance".

> 689a.   A position that has the nature of an exposure that is other than short-term or that constitutes a hedge for regulatory capital purposes of a banking book credit risk exposure should not be included in the trading book (e.g. a CDS hedging a banking book loan).
>
> •   Positions that would be subject to a credit risk capital charge include, but are not necessarily limited to, securitisation pipelines of credit exposures that are not securitised in the short-term, certain equity stakes that do not comply with the general requirements for inclusion in the trading book (e.g. those held in investment vehicles and hedge funds), and all investments in non-financial assets (e.g. real estate).
>
> •   When a bank hedges a banking book credit risk exposure using a credit derivative booked in its trading book (i.e. using an internal hedge), the banking book exposure is not deemed to be hedged for capital purposes unless the bank purchases from an eligible third party protection provider a credit derivative meeting the requirements of paragraph 191 vis-à-vis the banking book exposure. Where such third party protection is purchased and is recognised as a hedge of a banking book exposure for regulatory capital purposes, neither the internal nor external credit derivative hedge would be included in the trading book for regulatory capital purposes.
>
> 689b.   Any securitisation exposures that are included in the trading book and that are :
>
> •   unrated (e.g. liquidity lines or letters of credit), or
>
> •   rated below BBB-, or
>
> •   deducted under the treatment for securitisation set out in the Revised Framework
>
> will be subject to a capital requirement no less than that set forth in the treatment for securitisation set out in the Revised Framework. A limited exception is available for dealers that can demonstrate that, in addition to trading intent, an active liquid two-way market exists for a particular exposure.
>
> 689c.   Positions in the bank's own eligible regulatory capital instruments are deducted from capital. Positions in other banks', securities firms', and other financial entities' eligible regulatory capital instruments, as well as intangible assets, will receive the same treatment as that set down by the national supervisor for such assets held in the banking book, which in many cases is deduction from capital. Where a bank demonstrates that it is an active market maker then a national supervisor may establish a dealer exception for holdings of other banks', securities firms', and other financial entities' capital instruments in the trading book. In order to qualify for the dealer exception, the bank must have adequate systems and controls

surrounding the trading of financial institutions' eligible regulatory capital instruments.

689d.   Term trading-related repo-style transactions that a bank accounts for in its banking book may be included in the bank's trading book for regulatory capital purposes so long as all such repo-style transactions are included. For this purpose, trading-related repo-style transactions are defined as only those that meet the requirements of paragraphs 687 and 688 and both legs are in the form of either cash or securities includable in the trading book. Regardless of where they are booked, all repo-style transactions are subject to a banking book counterparty credit risk charge.

2.   *Further prudent valuation guidance*

303.   Paragraph 700 and 701 of the Revised Framework will be amended as follows:

700.   Bearing in mind that the underlying 10-day assumption of the Market Risk Amendment may not be consistent with the bank's ability to sell or hedge out positions under normal market conditions, banks must make downward valuation adjustments/reserves for these less liquid positions, and to review their continued appropriateness on an on-going basis. Reduced liquidity could arise from market events. Additionally, close-out prices for concentrated positions and/or stale positions should be considered in establishing those valuation adjustments/reserves. Banks must consider all relevant factors when determining the appropriateness of valuation adjustments/reserves for less liquid positions. These factors may include, but are not limited to, the amount of time it would take to hedge out the position/risks within the position, the average volatility of bid/offer spreads, the availability of independent market quotes (number and identity of market makers), the average and volatility of trading volumes, market concentrations, the aging of positions, the extent to which valuation relies on marking-to-model, and the impact of other model risks.

701.   Valuation adjustments/reserves made under paragraph 700 must impact Tier 1 regulatory capital and may exceed those made under financial accounting standards.

3.   *Trading book capital treatment for specific risk under the standardised methodology*

304.   In the Revised Framework, the footnote 106 to paragraph 709 will be modified as follows:

[106] The specific risk capital charges for qualifying debt paper and equities as set out in the Market Risk Amendment remain unchanged.

305.   At the end of paragraph A.1-6 of the Market Risk Amendment, a sentence will be added, as follows:

Furthermore, the "qualifying" category shall include securities issued by institutions that are deemed to be equivalent to investment grade quality and subject to supervisory and regulatory arrangements comparable to those under the Revised Framework.

306.   Paragraph 710, and corresponding heading, of the Revised Framework, relating to the specific risk rules for government paper, will be modified as follows.

1.   *Specific risk capital charges for issuer risk*

710.   The new capital charges for "government" and "other" categories will be as follows.

Categories	External credit assessment	Specific risk capital charge
Government	AAA to AA-	0%
	A+ to BBB-	0.25% (residual term to final maturity 6 months or less)
		1.00% (residual term to final maturity greater than 6 and up to and including 24 months)
		1.60% (residual term to final maturity exceeding 24 months)
	BB+ to B-	8.00%
	Below B-	12.00%
	Unrated	8.00%
Qualifying		0.25% (residual term to final maturity 6 months or less)
		1.00% (residual term to final maturity greater than 6 and up to and including 24 months)
		1.60% (residual term to final maturity exceeding 24 months)
Other	Similar to credit risk charges under the standardised approach of the Revised Framework, e.g.:	
	BB+ to BB-	8.00%
	Below BB-	12.00%
	Unrated	8.00%

307.   In the Revised Framework, after the paragraph 712, a new heading and new paragraph will be inserted, as follows.

3.   *Specific risk rules for non-qualifying issuers*

713.   Instruments issued by a non-qualifying issuer will receive the same specific risk charge as a non-investment grade corporate borrower under the standardised approach for credit risk under the Revised Framework.

However, since this may in certain cases considerably underestimate the specific risk for debt instruments which have a high yield to redemption relative to government debt securities, each national supervisor will have the discretion:

- To apply a higher specific risk charge to such instruments; and/or

- To disallow offsetting for the purposes of defining the extent of general market risk between such instruments and any other debt instruments."

4.   *Trading book capital treatment under the internal models approach*

308.   The following change will be made to Section B.2 (f) of the Market Risk Amendment:

B.2 (f)   The results of stress testing should be reviewed periodically by senior management, **used in the internal assessment of capital adequacy**, and reflected in the policies and limits set by management and the board of directors. Where stress tests reveal particular vulnerability to a given set of circumstances, prompt steps should be taken to manage those risks appropriately (e.g. by hedging against that outcome or reducing the size of the bank's exposures, or increasing capital).

309.   A new paragraph will be added to Section B.2 of the Market Risk Amendment, after the current paragraph B.2 (b), providing further requirements for model validation.

(b1)   The unit should also conduct the initial and on-going validation of the internal model[47].

Furthermore, a new section B.9 will be added to the Market Risk Amendment:

B.9   Model validation standards

It is important that banks have processes in place to ensure that their internal models have been adequately validated by suitably qualified parties independent of the development process to ensure that they are conceptually sound and adequately capture all material risks. This validation should be conducted when the model is initially developed and when any significant changes are made to the model. The validation should also be conducted on a periodic basis but especially where there have been any significant structural changes in the market or changes to the composition of the portfolio which might lead to the model no longer being adequate. More extensive model validation is particularly important where specific risk is also modelled and is required to meet the further specific risk criteria. As techniques and best practices evolve, banks should avail themselves of these advances. Model validation should not be limited to backtesting, but should, at a minimum, also include the following:

(a)   Tests to demonstrate that any assumptions made within the internal model are appropriate and do not underestimate risk. This may include the assumption of the normal distribution, the use of the square root of time to scale from a 1 day holding period to a 10 day holding period or where extrapolation or interpolation techniques are used, or pricing models;

(b)   Further to the regulatory backtesting programmes, testing for model validation should be carried out using additional tests, which may include:

- Testing carried out using hypothetical changes in portfolio value that would occur were end-of-day positions to remain unchanged. It therefore excludes fees, commissions, bid-ask spreads, net interest income and intra-day trading;

- Testing carried out for longer periods than required for the regular backtesting programme (e.g. 3 years). The longer time period generally improves the power of the backtesting. A longer time period may not be desirable if the VaR model or market conditions

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[47]   Further guidance regarding the standards that supervisory authorities will expect can be found in section B.9.

have changed to the extent that historical data is no longer relevant;

- Testing carried out using confidence intervals other than the 99 percent interval required under the quantitative standards;

- Testing of portfolios below the overall bank level;

(c) The use of hypothetical portfolios to ensure that the model is able to account for particular structural features that may arise, for example:

- Where data histories for a particular instrument do not meet the quantitative standards in section B.4 and where the bank has to map these positions to proxies, then the bank must ensure that the proxies produce conservative results under relevant market scenarios;

- Ensuring that material basis risks are adequately captured. This may include mismatches between long and short positions by maturity or by issuer;

- Ensuring that the model captures concentration risk that may arise in an undiversified portfolio.

310. The following sentence will be added to the end of paragraph B.4 (j) of the Market Risk Amendment:

Supervisors will have national discretion to require banks to perform backtesting on either hypothetical (i.e. using changes in portfolio value that would occur were end-of-day positions to remain unchanged), or actual trading (i.e. excluding fees, commissions, and net interest income) outcomes, or both.

311. Section B.4. of the Market Risk Amendment will be updated as follows:

(i) Each bank must meet on a daily basis, a capital requirement expressed as the higher of (i) its previous day's value-at-risk number measured according to the parameters specified in this section and (ii) an average of the daily value-at-risk measures on each of the preceding sixty business days, multiplied by a multiplication factor. In addition, for bank's that incorporate specific risk in their VaR model, the minimum regulatory capital requirement includes a further amount to cover default risk measured according to parameters specified in section B.8., paragraph 3. Where a firm can demonstrate that the VaR measure produced by the internal model captures default risk, allowance may be made in the further amount required under this paragraph to ensure there is no double-counting.

(k) Banks using models will also be subject to a capital charge to cover specific risk (as defined under the standardised approach) of interest rate related instruments and equity securities as set out in section B.8. below.

312. Section B.8 of the Market Risk Amendment will be updated. Paragraphs 1, 2, and 3 will be amended as follows while paragraph 4 will be removed:

1. Where a bank has a VaR measure that incorporates specific risk and that meets all the qualitative and quantitative requirements for general risk models, it may base its charge on modelled estimates, provided the measure is based on models that meet the additional criteria and requirements set out below. Banks which are unable to meet these additional criteria and requirements will be required

to base their specific risk capital charge on the full amount of the standardised-based specific risk charge.

2.   The criteria for supervisory recognition of banks' modelling of specific risk require that a bank's model must capture all material components of price risk and be responsive to changes in market conditions and compositions of portfolios. In particular, the model must:

- explain the historical price variation in the portfolio[48];

- capture concentrations (magnitude and changes in composition)[49];

- be robust to an adverse environment[50];

- capture name-related basis risk[51];

- capture event risk[52].

- be validated through backtesting[53].

Where a bank is subject to event risk that is not reflected in its VaR measure, because it is beyond the 10-day holding period and 99 percent confidence interval (i.e. low probability and high severity events), banks must ensure that the impact of such events is factored in to its internal capital assessment, for example through its stress testing.

The bank's model must conservatively assess the risk arising from less liquid positions and/or positions with limited price transparency under realistic market scenarios. In addition, the model must meet minimum data standards. Proxies may be used only where available data is insufficient or is not reflective of the true volatility of a position or portfolio, and only where they are appropriately conservative.

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[48] The key ex ante measures of model quality are "goodness-of-fit" measures which address the question of how much of the historical variation in price value is explained by the risk factors included within the model. One measure of this type which can often be used is an R-squared measure from regression methodology. If this measure is to be used, the risk factors included in the bank's model would be expected to be able to explain a high percentage, such as 90%, of the historical price variation or the model should explicitly include estimates of the residual variability not captured in the factors included in this regression. For some types of models, it may not be feasible to calculate a goodness-of-fit measure. In such instance, a bank is expected to work with its national supervisor to define an acceptable alternative measure which would meet this regulatory objective.)

[49] The bank would be expected to demonstrate that the model is sensitive to changes in portfolio construction and that higher capital charges are attracted for portfolios that have increasing concentrations in particular names or sectors.

[50] The bank should be able to demonstrate that the model will signal rising risk in an adverse environment. This could be achieved by incorporating in the historical estimation period of the model at least one full credit cycle and ensuring that the model would not have been inaccurate in the downward portion of the cycle. Another approach for demonstrating this is through simulation of historical or plausible worst-case environments.

[51] Banks should be able to demonstrate that the model is sensitive to material idiosyncratic differences between similar but not identical positions, for example debt positions with different levels of subordination, maturity mismatches, or credit derivatives with different default events.

[52] For debt positions, this should include migration risk. For equity positions, events that are reflected in large changes or jumps in prices must be captured, e.g. merger break-ups/takeovers. In particular, firms must consider issues related to survivorship bias.

[53] Aimed at assessing whether specific risk, as well as general market risk, is being captured adequately.

Further, as techniques and best practices evolve, banks should avail themselves of these advances.

3.   In addition, the bank must be able to demonstrate that it has an approach in place to capture default risk for its trading book positions in its regulatory capital. While no particular approach is prescribed (and it may be part of the bank's internal model or a surcharge from a separate calculation), any approach used must deliver capital consistent with a 1 year time horizon and a 99.9 percentile confidence level soundness standard.

One way a surcharge may be calculated is through an approach consistent with those available for credit risk in the banking book as set out in the Revised Framework. For example, a surcharge could be calculated according to the following steps:

a)   For portfolios subject to default risk a bank could derive an internal assessment as to what the change in value would be in its trading book positions if a specific issuer jumped to default. By design, the firm's model considers long and short positions held in a specific issuer (including various long and short positions).

b)   The change in value described above can be considered to be broadly equivalent to EAD*LGD, in IRB terminology. The bank could then apply a PD to the change in value, to calculate the incremental charge under IRB for that specific issuer in its portfolio. The PD applied would be equivalent to the PD that the bank would apply to a banking book exposure of the issuer. Alternatively, the bank could base their PD estimates on the risk-weight categories specified under the standardised approach.

c)   The bank would perform this calculation for each issuer in the trading book for which it would lose money in the event of default and sum them up to arrive at an overall surcharge.

In order to remain consistent with the IRB framework, the recovery assumptions used by banks to determine the change in value of their positions at default would be based on an assessment of recovery in economic downturn.

B.   Pillar 2

1.   *Comprehensive assessment of risks*

313.   Paragraph 738 of the Revised Framework will be expanded as below.

738.   *Market risk*: Banks should have methodologies that enable them to assess and actively manage the market risk arising from their trading book activities, and banking book activities if material, at position, desk, business line and firm-wide level. For more sophisticated banks, their assessment of internal capital adequacy for market risk, at a minimum, should be based on both VaR modelling and stress testing, including an assessment of concentration risk and the assessment of illiquidity under stressful market scenarios, although all firms' assessments should include stress testing appropriate to their trading activity."

314.   New paragraphs 738a, b, c, d, and e will be inserted in the Revised Framework, after paragraph 738.

- 738a. VaR is an important tool in monitoring aggregate market risk exposures and provides a common metric for comparing the risk being run by different desks and business lines. A bank's VaR model should be adequate to identify and measure risks arising from all its trading activities and should be integrated into the bank's overall internal capital assessment as well as subject to rigorous on-going validation. A VaR model estimates should be sensitive to changes in the trading book risk profile. When market volatilities rise, the VaR estimate should increase immediately, provided that the bank has not undertaken offsetting hedging trades.

738b. Banks must supplement their VaR model with stress tests (factor shocks or integrated scenarios whether historic or hypothetical) and other appropriate risk management techniques. In the bank's internal capital assessment it must demonstrate that it has enough capital to not only meet the minimum capital requirements but also to withstand a range of severe but plausible market shocks. In particular, it must factor in:

- Illiquidity/gapping of prices;

- Concentrated positions (in relation to market turnover);

- One-way markets;

- Non-linear products/deep out-of-the money positions;

- Events and jumps-to-defaults;

- Significant shifts in correlations;

- Other risks that may not be captured appropriately in VaR (e.g. recovery rate uncertainty, implied correlations, or skew risk).

The stress tests applied by a bank and, in particular, the calibration of those tests (e.g. the parameters of the shocks or types of events considered) should be reconciled back to a clear statement setting out the premise upon which the bank's internal capital assessment is based (e.g. ensuring there is adequate capital to manage the traded portfolios within stated limits through what may be a prolonged period of market stress and illiquidity, or that there is adequate capital to ensure that, over a given time horizon to a specified confidence level, all positions can be liquidated or the risk hedged in an orderly fashion). The market shocks applied in the tests must reflect the nature of portfolios and the time it could take to hedge out or manage risks under severe market conditions.

738c. Concentration risk should be pro-actively managed and assessed by firms and concentrated positions should be routinely reported to senior management.

738d. Banks should design their risk management systems, including the VaR methodology and stress tests, to properly measure the material risks in instruments they trade as well as the trading strategies they pursue. As their instruments and trading strategies change, the VaR methodologies and stress tests should also evolve to accommodate the changes.

738e. Banks must demonstrate how they combine their risk measurement approaches to arrive at the overall internal capital for market risk.

2. Specific issues to be addressed under the supervisory review process

315. In Part 3, Section III, of the Revised Framework, a section D on market risk will be inserted, after paragraph 778.

D. Market risk

1. Valuation

778a. Prudent valuation policies and procedures form the foundation on which any robust assessment of market risk capital adequacy should be built. For a well diversified portfolio consisting of highly liquid cash instruments, and without market concentration, the valuation of the portfolio, combined with the minimum quantitative standards set out in the Market Risk Amendment, as revised in this section, may deliver sufficient capital to enable a bank, in adverse market conditions, to close out or hedge its positions within 10 days in an orderly fashion. However, for less well diversified portfolios, for portfolios containing less liquid instruments, for portfolios with concentrations in relation to market turnover, and/or for portfolios which contain large numbers of positions that are marked-to-model this is less likely to be the case. In such circumstances, supervisors will consider whether a bank has sufficient capital. To the extent there is a shortfall the supervisor will react appropriately. This will usually require the bank to reduce its risks and/or hold additional amount of capital.

2. Stress testing under the internal models approach

778b. A bank must ensure that it has sufficient capital to meet the minimum capital requirements set out in the Market Risk Amendment and to cover the results of its stress testing required by that amendment (paragraph B.2(f), taking into account the principles set forth in paragraphs 738b. and 740). Supervisors will consider whether a bank has sufficient capital for these purposes, taking into account the nature and scale of the bank's trading activities and any other relevant factors such as valuation adjustments made by the bank. To the extent that there is a shortfall, or if supervisors are not satisfied with the premise upon which the bank's assessment of internal market risk capital adequacy is based, supervisors will take the appropriate measures. This will usually involve requiring the bank to reduce its risk exposures and/or to hold an additional amount of capital, so that its overall capital resources at least cover the Pillar 1 requirements plus the result of a stress test acceptable to the supervisor.

3. Specific risk modelling under the internal models approach

778c. For banks wishing to model the specific risk arising from their trading activities, additional criteria have been set out in the revised section B-8, paragraph 2 of the Market Risk Amendment, including conservatively assessing the risk arising from less liquid positions and/or positions with limited price transparency under realistic market scenarios. Where supervisors consider that limited liquidity or price transparency undermines the effectiveness of a bank's model to capture the specific risk, they will take appropriate measures, including requiring the exclusion of positions from the bank's specific risk model. Supervisors should review the adequacy of the bank's measure of the default risk surcharge; where the bank's approach is inadequate, the use of the standardised specific risk charges will be required.

C. Pillar 3

316. In Part 4, Table 10, of the Revised Framework, a new item (e) will be added to "Quantitative disclosures":

The amount of internal capital allocated for trading portfolios.

317.   In Part 4, Table 10, of the Revised Framework, the qualitative disclosure requirement (a) will be changed as follows:

The general qualitative disclosure requirement (paragraph 824) for market risk including the portfolios covered by the IMA. In addition, a discussion of the extent of and methodologies for compliance with the "Prudent valuation guidance" for positions held in the trading book (paragraphs 690 to 701, inclusive).

In addition, in the same table, a new quantitative requirement (b) will be added:

The discussion should include an articulation of the soundness standards on which the bank's internal capital adequacy assessment is based. It should also include a description of the methodologies used to achieve a capital adequacy assessment that is consistent with the soundness standards.

Finally, in the same table, the quantitative requirement (d) will be changed as follows:

For trading portfolios under the IMA:

- The high, mean, and low VaR values over the reporting period and period-end; and

- A comparison of VaR estimates with actual gains/losses experienced by the bank, with analysis of important "outliers" in backtest results.

Part 5: A proposed capital treatment for unsettled and failed trades

I.   Introduction

318.   The current Basel Capital Accord does not dictate any specific treatments for the type of exposures that are confirmed but not yet settled (unsettled trades) or whose settlement failed (failed trades). IOSCO guidelines are also generally silent on specific capital adequacy treatments for these exposures. In addition, the Revised Framework does not explicitly set forth capital treatments for unsettled and failed trades.

319.   As a result of this lack of a standard global treatment, different frameworks have developed distinct methods of dealing with such exposures. As examples:

- European standards are dictated at directive level and permit a 5-business day grace period after settlement date on delivery versus payment (DvP)[54] transactions before any charges are imposed at which point they are subject to charges on the exposure. These increase with time to 100 percent after 46 days. Settlement date is not defined or subject to specific limitations. For non-DvP transactions, the charge starts immediately (with a one day grace period for cross border transactions) at a flat eight percent risk weighting of the exposure to the counterparty.

- US banking regulators take a balance sheet approach, under which a standard risk weight, usually 100 percent but in some cases 20 percent, is applied to the full notional amount of trades that have failed to settle without a grace period.

- In general US securities regulators allow for a 5-business day grace period following settlement date before reducing net capital i.e. an approach similar to the European standard. However, after that period, current exposure of the failed trade is deducted from capital and capital is required against the position.

320.   The proposal that follows aims to set out a uniform treatment for the various types of unsettled transactions, and, where possible, to encourage orderly markets. The proposed treatments distinguish between DvP transactions (with separate proposals for transactions with normal settlement lags and those with longer settlement lags) and non-DvP transactions (again with separate proposals for normal settlement lags, including those generally associated with foreign exchange – FX – trades, and longer settlement lags). These proposals are intended to apply to the settlement of commodities transactions as well as to the settlement of FX and securities transactions envisaged in the Revised Framework.[55] They are also intended to apply to transactions through recognised clearing houses that are subject to daily mark-to-market and payment of daily variation margins. However, it is expected that such transactions would not incur a capital charge unless they involve a mismatched trade. Finally, one-way cash payments due under OTC derivative transactions are not included under these proposals but will instead be captured under the credit risk treatment set out in the Revised Framework.

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[54]   For the purpose of this paper DvP transactions include payment versus payment (PvP) transactions.

[55]   See in particular paragraphs 88 and 702 (footnote 105) of the Revised Framework.

II.   Proposed rules

A.   Overarching principles

321.   Banks should continue to develop, implement and improve systems for tracking and monitoring the credit risk exposures arising from unsettled transactions as appropriate for producing management information that facilitates action on a timely basis, pursuant to paragraph 88 of the Revised Framework.

322.   Non-DvP transactions and long settlement lags should be avoided whenever possible. A settlement lag is the time lag between entering into the trade and its scheduled discharge by the final exchange of a financial asset for payment. For the purpose of this paper, a settlement lag is considered normal when it is scheduled to last for no more than five business days, excluding trade date (i.e. T+5)[56]. When it is greater than T+5, it is considered, for the purpose of this paper, as a long settlement lag.

323.   In cases of a system wide failure of a settlement or clearing system, a national supervisor may use its discretion to waive capital charges until the situation is rectified. Failure of a counterparty to settle a trade will not be deemed a default for purposes of credit risk under the Revised Framework.

324.   In applying a risk weight to unsettled trade exposures treated as forwards or loans, IRB banks may assign PDs to counterparties for which they have no other banking book exposure on the basis of the counterparty's external rating. Advanced IRB banks may use a 45 percent LGD in lieu of estimating LGDs so long as they apply it to all unsettled trade exposures. Alternatively, IRB banks may opt to apply the standardised approach risk weights. If this alternative is used, standardised risk weights must be used for all unsettled trade exposures.

B.   Proposals

1.   DvP transactions

325.   For DvP transactions, with a normal settlement lag, no capital charge is imposed before the settlement date.

326.   If the payments have not yet taken place five business days after the settlement date, the positive current exposure will be deducted from a firm's capital. This treatment applies until the transaction is extinguished.

327.   When the settlement lag is longer, both parties will treat their exposure as a forward contract up to four business days after the settlement date. This means that a capital charge for counterparty credit risk is to be calculated under the rules set forth in Part 1 of this Consultative Document.

328.   When the settlement lag is longer, on the fifth business day after the settlement date, if the payments have not yet taken place, the positive current exposure will be

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[56]   Supervisors recognise and are encouraged that the industry has increasingly moved to T+3 for normal settlement lags on securities trades. However since the scope of this proposal goes beyond securities trades, the supervisors believe that defining normal settlement lags for the purpose of regulatory capital as T+5 is more appropriate.

deducted from a firm's capital, similar to a transaction with a normal settlement lag. This treatment applies until the transaction is extinguished.

329.   A summary of the proposed capital treatment for unsettled and failed DvP transactions is given in Table 7 below.

Table 7

Capital treatment for DvP transactions

Transaction Type	Up to settlement date	1-4 days post settlement date	5 days post settlement date
DVP – normal settlement lag[57]	No charge	No charge	Deduct positive current exposure
DVP – longer settlement lag[58]	Treat as a forward	Treat as a forward	Deduct positive current exposure

2.   Non-DvP transactions

330.   For non-DvP transactions, with a normal settlement lag, no capital charge is imposed until the first contractual payment/delivery leg.

331.   After the first contractual payment/delivery leg, the bank that has made the payment will treat its exposure as a loan if the second leg has not been received by the end of the business day[59]. This means that a bank under the IRB approach will apply the appropriate IRB formula set out in the Revised Framework, for the exposure to the counterparty, in the same way as it does for all other banking book exposures. Similarly, banks under the Standardised Approach will use the standardised risk weights set forth in the Revised Framework. However, when exposures are not material, banks may choose to apply a uniform 100 percent risk-weight to these exposures, in order to avoid the burden of a full credit assessment.

332.   If two business days after the second contractual payment/delivery date (or two business days after the due date of the first contractual payment/delivery leg) the second leg has not yet effectively taken place, the bank that has made the first payment leg will deduct from capital the full amount of the value transferred plus replacement cost, if any. This treatment will apply until the second payment/delivery leg is effectively made.

333.   When the settlement lag is longer, the capital treatment is the same, except that, up to the first contractual payment/delivery leg, both parties will treat their exposure as a forward transaction. In this case, the capital charge will be calculated pursuant to paragraph 327 above.

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[57]   For the purpose of this document, "normal settlement lag" means up to T+5 (see paragraph 322 above)

[58]   For the purpose of this document, "longer settlement lag" means more than T+5 (see paragraph 322 above)

[59]   If the dates when two payment legs are made are the same according to the time zones where each payment is made, it is deemed that they are settled on the same day. For example, if a bank in Tokyo transfers Yen on day X (Japan Standard Time) and receives corresponding US Dollar via CHIPS on day X (US Eastern Standard Time), the settlement is deemed to take place on the same value date.

334.   A summary of capital treatment for unsettled and failed non-DvP transactions is given in Table 8 below.

Table 8

Capital treatment for non-DvP transactions

Transaction Type	Up to first contractual payment/delivery leg	From first contractual payment/delivery leg up to one day after second contractual payment/delivery leg	2 days post second contractual payment/delivery leg
Non-DvP normal settlement lag[60]	No charge	Treat as a loan[61]	Deduct value transferred plus current positive exposure
Non-DvP longer settlement lag[62]	Treat as a forward	Treat as a loan[63]	Deduct value transferred plus current positive exposure

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[60] See footnote 57 above.

[61] After the date when the first contractual payment/delivery leg is due but the obligor has not made the payment/delivery, both parties will treat their exposure as a forward transaction. In this case, the capital charge will be calculated pursuant to paragraph 327 above. This treatment results in a slightly higher charge than for a DvP transaction in order to provide incentives for both parties to avoid deferral of the settlement date and to encourage use of DvP systems where available. However, in cases where the obligor of the first contractual payment/delivery leg has not made the payment/delivery due and this results in the cancellation of the transaction, no charge will be applied.

[62] See footnote 58 above.

[63] See footnote 61 above.

Annex 1

Derivation of Risk-Weighted Assets for Hedged Exposures

1.   The Revised Framework distinguishes between the expected loss (EL) and unexpected loss (UL) components of credit risk, but the total UL+EL requirement assessed against an exposure is considered first as, once a suitable calibration of the total capital requirement is obtained, a separation of this requirement into UL and EL components is usually straightforward.

2.   In order to illustrate this, consider the case where an exposure to an obligor (denoted by the subscript "o") is not hedged. Denote the EAD for the unhedged exposure by EAD_o, and the expected recovery on the unhedged exposure under adverse economic conditions by REC_o. The LGD for the unhedged exposure expressed as a percentage of the EAD is then

$$LGD_o = \frac{EAD_o - REC_o}{EAD_o}.$$

Assuming for simplicity a maturity of one year, the UL+EL requirement for this exposure is

$$K_o = SPD_o \times LGD_o \times EAD_o$$

where the "stressed" PD for the obligor is given by

$$(1) \qquad SPD_o = \Phi\left(\frac{\Phi^{-1}(PD_o) + \sqrt{\rho_{os}} \cdot \Phi^{-1}(0.999)}{\sqrt{1 - \rho_{os}}}\right).$$

This stressed PD is a function of PD_o, the "expected" PD for the obligor. SPD_o is intended to reflect the probability that the obligor will default given an adverse draw of a systematic risk factor that drives correlations in defaults across obligors. The parameter ρ_{os} is an asset-value correlation that has been set by supervisors based on empirical analysis, not by firms, into the formula that links expected PDs to stressed PDs.

3.   Now consider that the exposure to the underlying obligor is fully hedged by some form of guarantee provided by a guarantor ("g"). The guarantor agrees to pay the full exposure amount net of recoveries from the obligor in the event that the obligor defaults. The FRB White Paper showed that the UL+EL capital requirement for the transaction is

$$K_{og} = SPD_{og} \times LGD_{og} \times EAD_o$$

The "stressed" joint default probability SPD_{og} is the probability that both the obligor and the guarantor default conditional on an adverse draw of a systematic risk factor. Under assumptions consistent with the derivation of the risk weight functions for unhedged exposures, this stressed joint default probability is

$$(2) \qquad SPD_{og} = \Phi_2\left(\frac{\Phi^{-1}(PD_o) + \sqrt{\rho_{os}} \cdot \Phi^{-1}(0.999)}{\sqrt{1 - \rho_{os}}}, \frac{\Phi^{-1}(PD_o) + \sqrt{\rho_{os}} \cdot \Phi^{-1}(0.999)}{\sqrt{1 - \rho_{gs}}}, \frac{\rho_{og} - \sqrt{\rho_{os}\rho_{gs}}}{\sqrt{(1 - \rho_{os})(1 - \rho_{gs})}}\right)$$

where $\Phi_2\left(y_1, y_2; r\right)$ is the bivariate normal cumulative distribution function (CDF) for a pair of standard normal variables with correlation *r*. As before, the parameters ρ_{os}, ρ_{gs}, and ρ_{og} are asset correlations that will be prescribed by supervisors.

4.   The BCBS has decided to consider the entire capital requirement for hedged exposures as capital for UL. This has several virtues: it is simple; it is consistent with the fact that banks are unlikely to specifically provision against guarantor counterparty exposures.

Annex 2

Examples of capital requirements for unsettled and failed trades

1.   We consider the example of a bank A, externally rated AA+, selling 1 million of Swiss francs to a bank B, also rated AA+, at a forward exchange rate of 1.5670 (i.e. EUR1=CHF1.5670). Both banks calculate their capital charges in EUR.

The exchange rates EUR/CHF observed in the market are as follows:

T+1	1.5692
T+2	1.5653
T+3	1.5671
T+4	1.5683
T+5	1.5662
T+6	1.5677
T+7	1.5678
T+8	1.5739
T+9	1.5724
T+10	1.5792

1.   In a DvP framework

2.   Assuming first that the transaction is concluded through a DvP framework, we consider that the transaction is concluded at day T and the delivery of CHF versus payment of EUR is scheduled at day T+4 (i.e. normal settlement lag). For any reason, the delivery does not take place, as planned, at T+4, but is delayed until T+10. The capital charges for banks A and B would be as follows, according to the proposal detailed in Part 5 of this consultative document:

Table 1

Bank	From T to T+4	T+5 to T+8	T+9	T+10
A (EUR)	0	0	2,192	0
B (CHF)	0	0	0	0

3.   For both banks, there is not charge from T to 4 days post-settlement (i.e. T+8).

4.   At T+9, the positive current exposure is deducted from banks' capital. Therefore, the corresponding capital charge for bank A is:

1,000,000/1.5670-1,000,000/1.5724=2,192EUR

5.   At T+10, the delivery and corresponding payment are made, so that the transaction terminates and the capital charge comes back to 0. Note that for bank B, the current exposure is negative from T+5 to T+10, requiring no capital charge.

2. In a non-DvP framework

6. Now we consider the same example in a non-DvP context, where the payment in EUR is due from bank B on date T+2 and the delivery of CHF by bank A is scheduled at T+4 (i.e. normal settlement lag). Let us assume that the first payment is made, as scheduled, but the delivery of CHF is delayed until T+10. The capital charges for banks A and B would be as follows, according to the proposal detailed in Part 5 of this consultative document:

Table 2

Bank	From T to T+1	From T+2 to T+5	From T+5 to T+9				T+10
			T+6	T+7	T+8	T+9	
A (EUR)	0	0	285	325	2,798	2,192	0
B (CHF)	0	10,211	638,162	638,162	638,162	638,162	0

7. From trade date up to the first payment/delivery date, there is no capital charge. Therefore, no capital charge is calculated from day T to T+1.

8. From the payment date to one day-post contractual delivery date, a capital charge is calculated, that is equivalent to that applicable to a loan to bank A. In this case, the capital charge for bank B, from T+2 to T+5, is:

(1,000,000/1.5670)x20%x8%=10,211 EUR

9. From T+6 onward, the capital charge is calculated by deducting the amount paid to bank A, plus any positive current exposure. For instance, at T+6, current exposure is negative for bank B, so that the capital charge equals:

1,000,000/1.5670=638,162 EUR

However, the current exposure is positive for bank A, which should thus deduct this positive exposure, and the equivalent capital charge for bank A, at T+6, is:

1,000,000/1,5670-1,000,000/1,5677=285 EUR

10. A similar calculation is made for T+7, T+8, and T+9. At T+10, the delivery of CHF is finally made, so that the capital charge comes back to 0.

Annex 3

Significant additional data requirements for
the fifth Quantitative Impact Study (QIS 5)

1.   Overview

1.   In the following Table 1 the additional data requirements for the fifth Quantitative Impact Study (QIS 5) arising from the proposals in this Consultative Document are listed. Only those data requirements are included which have not already been captured in the Excel workbooks used for QIS 3 and QIS 4.

Table 1

Significant additional data requirements for QIS 5

	Reference	**Necessary adjustments of Excel workbooks**
Counterparty credit risk	Part 1, Section VII	No adjustments of the spreadsheets are necessary. The EADs calculated through an internal models approach or the standardised approach have to be assigned to the risk weights (standardised approach) or PD buckets (IRB approaches) in the same way as the EADs computed by the current exposure method (replacement cost + add-on) or the multiple capital treatments available for SFTs in the Revised Framework. It is necessary to distinguish between OTC derivatives and SFTs. The respective exposures have to be entered into the panels for OTC derivatives and repo-style transactions.
Double default	Part 2, Section VII	For each of the affected exposure classes (e.g. corporate, SME corporate) and each exposure type (e.g. drawn, undrawn), additional matrices for exposures, maturities and risk-weighted assets have to be inserted. The eligible exposures have to be assigned to buckets according to the PD of the obligor and the LGD. As far as the guarantor's PD is concerned, an exposure-weighted average for each LGD bucket has to be provided by the banks.
Maturity adjustments	Part 3, Section IV, paragraphs 263 and 264	Banks have to decide according to the revised rules whether or not the one-year-floor applies when they calculate the exposure-weighted average maturity.
Specific risk in the trading book under the standardised methodology	Part 4, Section VI, paragraph 306	New risk-weight buckets for "government" and "other" categories have to be provided in the specific risk section of the trading book worksheets in order to capture the new risk weights for specific interest rate risk.

2. Treatment of double default

2. In order to capture the impact of the double default framework, the assignment of exposures to portfolios within the QIS 5 workbook will have to be changed for exposures subject to this framework. In contrast to the treatment of the substitution approach in the QIS workbook, these exposures will have to be assigned to the portfolio of the obligor and reported in separate panels. They then need to be separated into segments according to the PD of the obligor and the LGD as defined in the new paragraph 284b of the Revised Framework,[64] and banks will have to calculate the exposure-weighted average PD of the guarantors for each of the LGD segments defined. Likewise, the maturity matrix will be extended requiring that banks provide the weighted-average maturity for each segment appearing in the PD/LGD matrix. Finally, the risk-weighted asset computation will be carried out for each segment according to the new paragraphs 284b to 284d of the Revised Framework.[65]

3. The table that will be used to capture exposures eligible for the double default treatment is outlined in Table 2 below. A similar matrix capturing information on maturities will be included in the QIS spreadsheets. These matrices have to be provided for all exposure classes (e.g. corporate, SME corporate) and exposure types (drawn, undrawn, OTC derivatives, off balance-sheet exposures) which comprise exposures subject to the double default treatment.

Table 2

Information on exposures subject to the double default treatment in QIS 5

	Financial Institutions fixed values: ρ_{og}, ρ_{gs}		
	LGD 1	**…**	**LGD n**
	Average PD of guarantors	**…**	**Average PD of guarantors**
PD bands (obligor)	Exposure	…	Exposure
	…	…	…
	…	…	…

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[64] See Part 2, Section VII.B above.

[65] See Part 2, Section VII.B above.