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# Guideline

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**Subject: Capital Adequacy Requirements (CAR)**

## **Chapter 5 – Credit Risk Mitigation**

**Effective Date: November 2018 / January 2019<sup>1</sup>**

The Capital Adequacy Requirements (CAR) for banks (including federal credit unions), bank holding companies, federally regulated trust companies, federally regulated loan companies and cooperative retail associations are set out in nine chapters, each of which has been issued as a separate document. This document, Chapter 5 – Credit Risk Mitigation, should be read in conjunction with the other CAR chapters which include:

Chapter 1	Overview
Chapter 2	Definition of Capital
Chapter 3	Credit Risk – Standardized Approach
Chapter 4	Settlement and Counterparty Risk
Chapter 5	Credit Risk Mitigation
Chapter 6	Credit Risk- Internal Ratings Based Approach
Chapter 7	Securitization
Chapter 8	Operational Risk
Chapter 9	Market Risk

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<sup>1</sup> For institutions with a fiscal year ending October 31 or December 31, respectively

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# Chapter 5 - Credit Risk Mitigation

## *Standardized and IRB Banks*

1. This chapter is drawn from the Basel Committee on Banking Supervision (BCBS) Basel II and III frameworks, entitled *International Convergence of Capital Measurement and Capital Standards: A Revised Framework – Comprehensive Version (June 2006)* and *Basel III: A global regulatory framework for more resilient banks and banking systems – December 2010 (rev June 2011)*. For reference, the Basel II text paragraph numbers that are associated with the text appearing in this chapter are indicated in square brackets at the end of each paragraph<sup>2</sup>.

## **5.1 Standardised approach**

### *5.1.1. Overarching issues*

#### **(i) Introduction**

2. Banks use a number of techniques to mitigate the credit risks to which they are exposed. For example, exposures may be collateralised by first priority claims, in whole or in part with cash or securities, a loan exposure may be guaranteed by a third party, or a bank may buy a credit derivative to offset various forms of credit risk. Additionally banks may agree to net loans owed to them against deposits from the same counterparty. [BCBS June 2006 par 109]

3. Where these techniques meet the requirements for legal certainty as described in paragraph 12 and 13 below, the revised approach to CRM allows a wider range of credit risk mitigants to be recognised for regulatory capital purposes than is permitted under the 1988 Accord. [BCBS June 2006 par 110]

#### **(ii) General remarks**

4. The framework set out in this chapter is applicable to the banking book exposures in the standardised approach and the IRB approach. . [BCBS June 2006 par 111]

5. The comprehensive approach for the treatment of collateral (see paragraphs 28 to 36 and 43 to 67 and 102 to 118) will also be applied to calculate the counterparty risk charges for repo-style transactions booked in the trading book. Counterparty credit risk for derivatives booked in the trading book will be calculated according to the SACCR described in section 4.1.6 of Chapter 4.[BCBS June 2006 par 112]

6. No transaction in which CRM techniques are used should receive a higher capital requirement than an otherwise identical transaction where such techniques are not used. [BCBS June 2006 par 113]

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<sup>2</sup> Following the format: [BCBS June 2006 par x]

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## OSFI Notes

7. This limit on the capital requirement applies to collateralized and guaranteed transactions. It does not apply to repo-style transactions under the comprehensive approach for which both sides of the transaction (collateral received and posted) have been taken into account in calculating the exposure amount.

8. The effects of CRM will not be double counted. Therefore, no additional supervisory recognition of CRM for regulatory capital purposes will be granted on claims for which an issue-specific rating is used that already reflects that CRM. As stated in Chapter 3- Credit Risk – Standardized Approach, section 3.6.2.3, principal-only ratings will also not be allowed within the framework of CRM. [BCBS June 2006 par 114]

9. While the use of CRM techniques reduces or transfers credit risk, it simultaneously may increase other risks (residual risks). Residual risks include legal, operational, liquidity and market risks. Therefore, it is imperative that banks employ robust procedures and processes to control these risks, including strategy; consideration of the underlying credit; valuation; policies and procedures; systems; control of roll-off risks; and management of concentration risk arising from the bank's use of CRM techniques and its interaction with the bank's overall credit risk profile. Where these risks are not adequately controlled, supervisors may impose additional capital charges or take other supervisory actions as outlined in Pillar 2. [BCBS June 2006 par 115]

10. Banks must ensure that sufficient resources are devoted to the orderly operation of margin agreements with OTC derivative and securities-financing counterparties, as measured by the timeliness and accuracy of its outgoing calls and response time to incoming calls. Banks must have collateral management policies in place to control, monitor and report:

- the risk to which margin agreements exposes them (such as the volatility and liquidity of the securities exchanged as collateral),
- the concentration risk to particular types of collateral,
- the reuse of collateral (both cash and non-cash) including the potential liquidity shortfalls resulting from the reuse of collateral received from counterparties, and
- the surrender of rights on collateral posted to counterparties.

[BCBS June 2011 par 110]

11. The Pillar 3 requirements must also be observed for banks to obtain capital relief in respect of any CRM techniques. [BCBS June 2006 par 116]

### (iii) Legal certainty

12. In order for banks to obtain capital relief for any use of CRM techniques, the following minimum standards for legal documentation must be met. [BCBS June 2006 par 117]

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13. All documentation used in collateralised transactions and for documenting on-balance sheet netting, guarantees and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability. [BCBS June 2006 par 118]

### **5.1.2. Overview of Credit Risk Mitigation Techniques<sup>3</sup>**

#### **(i) Collateralised transactions**

14. A collateralised transaction is one in which:

- banks have a credit exposure or potential credit exposure; and
- that credit exposure or potential credit exposure is hedged in whole or in part by collateral posted by a counterparty<sup>4</sup> or by a third party on behalf of the counterparty.

[BCBS June 2006 par 119]

15. Where banks take eligible financial collateral (e.g. cash or securities, more specifically defined in paragraphs 43 and 45 below), they are allowed to reduce their credit exposure to a counterparty when calculating their capital requirements to take account of the risk mitigating effect of the collateral. [BCBS June 2006 par 120]

#### *Overall framework and minimum conditions*

16. Banks may opt for either the simple approach, which, similar to the 1988 Accord, substitutes the risk weighting of the collateral for the risk weighting of the counterparty for the collateralised portion of the exposure (generally subject to a 20% floor), or for the comprehensive approach, which allows fuller offset of collateral against exposures, by effectively reducing the exposure amount by the value ascribed to the collateral. Banks may operate under either, but not both, approaches in the banking book, but only under the comprehensive approach in the trading book. Partial collateralisation is recognised in both approaches. Mismatches in the maturity of the underlying exposure and the collateral will only be allowed under the comprehensive approach. [BCBS June 2006 par 121]

#### **OSFI Notes**

17. Institutions using the Standardized and FIRB Approaches may use either the simple approach or the comprehensive approach using supervisory haircuts. The use of own estimates of haircuts for financial collateral or repos, or VaR modelling for repos-type transactions is restricted to institutions that have received approval to use the AIRB Approach.

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<sup>3</sup> See Appendix 1 for an overview of methodologies for the capital treatment of transactions secured by financial collateral under the standardised and IRB approaches.

<sup>4</sup> In this section “counterparty” is used to denote a party to whom a bank has an on- or off-balance sheet credit exposure or a potential credit exposure. That exposure may, for example, take the form of a loan of cash or securities (where the counterparty would traditionally be called the borrower), of securities posted as collateral, of a commitment or of exposure under an OTC derivatives contract.

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18. However, before capital relief will be granted in respect of any form of collateral, the standards set out below in paragraphs 19 to 23 must be met under either approach. [BCBS June 2006 par 122]

19. In addition to the general requirements for legal certainty set out in paragraphs 12 and 13, the legal mechanism by which collateral is pledged or transferred must ensure that the bank has the right to liquidate or take legal possession of it, in a timely manner, in the event of the default, insolvency or bankruptcy (or one or more otherwise-defined credit events set out in the transaction documentation) of the counterparty (and, where applicable, of the custodian holding the collateral). Furthermore banks must take all steps necessary to fulfil those requirements under the law applicable to the bank's interest in the collateral for obtaining and maintaining an enforceable security interest, e.g. by registering it with a registrar, or for exercising a right to net or set off in relation to title transfer collateral. [BCBS June 2006 par 123]

#### **OSFI Notes**

20. For property taken as collateral, institutions may use title insurance in place of a title search to achieve compliance with paragraph 19. OSFI expects institutions that rely on title insurance to reflect the risk of non-performance on these insurance contracts in their estimates of LGD if this risk is material.

21. In order for collateral to provide protection, the credit quality of the counterparty and the value of the collateral must not have a material positive correlation. For example, securities issued by the counterparty — or by any related group entity — would provide little protection and so would be ineligible. [BCBS June 2006 par 124]

22. Banks must have clear and robust procedures for the timely liquidation of collateral to ensure that any legal conditions required for declaring the default of the counterparty and liquidating the collateral are observed, and that collateral can be liquidated promptly. [BCBS June 2006 par 125]

23. Where the collateral is held by a custodian, banks must take reasonable steps to ensure that the custodian segregates the collateral from its own assets. [BCBS June 2006 par 126]

24. A capital requirement will be applied to a bank on either side of the collateralised transaction: for example, both repos and reverse repos will be subject to capital requirements. Likewise, both sides of a securities lending and borrowing transaction will be subject to explicit capital charges, as will the posting of securities in connection with a derivative exposure or other borrowing. [BCBS June 2006 par 127]

25. Where a bank, acting as an agent, arranges a repo-style transaction (i.e. repurchase/reverse repurchase and securities lending/borrowing transactions) between a customer and a third party and provides a guarantee to the customer that the third party will perform on its obligations, then the risk to the bank is the same as if the bank had entered into the transaction as

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a principal. In such circumstances, a bank will be required to calculate capital requirements as if it were itself the principal. [BCBS June 2006 par 128]

### OSFI Notes

26. Transactions where a bank acts as an agent and provides a guarantee to the customer should be treated as a direct credit substitute (i.e. a separate netting set) unless the transaction is covered by a master netting arrangement.

#### *The simple approach*

27. In the simple approach the risk weighting of the collateral instrument collateralising or partially collateralising the exposure is substituted for the risk weighting of the counterparty. Details of this framework are provided in paragraphs 68 to 71. [BCBS June 2006 par 129]

#### *The comprehensive approach*

28. In the comprehensive approach, when taking collateral, banks will need to calculate their adjusted exposure to a counterparty for capital adequacy purposes in order to take account of the effects of that collateral. Using haircuts, banks are required to adjust both the amount of the exposure to the counterparty and the value of any collateral received in support of that counterparty to take account of possible future fluctuations in the value of either,<sup>5</sup> occasioned by market movements. This will produce volatility adjusted amounts for both exposure and collateral. Unless either side of the transaction is cash, the volatility adjusted amount for the exposure will be higher than the exposure and for the collateral it will be lower. [BCBS June 2006 par 130]

29. Additionally where the exposure and collateral are held in different currencies an additional downwards adjustment must be made to the volatility adjusted collateral amount to take account of possible future fluctuations in exchange rates. [BCBS June 2006 par 131]

30. Where the volatility-adjusted exposure amount is greater than the volatility-adjusted collateral amount (including any further adjustment for foreign exchange risk), banks shall calculate their risk-weighted assets as the difference between the two multiplied by the risk weight of the counterparty. The framework for performing these calculations is set out in paragraphs 46 to 49. [BCBS June 2006 par 132]

31. In principle, banks have two ways of calculating the haircuts: (i) standard supervisory haircuts, using parameters set by the Committee, and (ii) own-estimate haircuts, using banks' own internal estimates of market price volatility. Supervisors will allow banks to use own-estimate haircuts only when they fulfil certain qualitative and quantitative criteria. [BCBS June 2006 par 133]

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<sup>5</sup> Exposure amounts may vary where, for example, securities are being lent.

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32. A bank may choose to use standard or own-estimate haircuts independently of the choice it has made between the standardised approach and the foundation IRB approach to credit risk. However, if banks seek to use their own-estimate haircuts, they must do so for the full range of instrument types for which they would be eligible to use own-estimates, the exception being immaterial portfolios where they may use the standard supervisory haircuts. [BCBS June 2006 par 134]

33. The size of the individual haircuts will depend on the type of instrument, type of transaction and the frequency of marking-to-market and remargining. For example, repo-style transactions subject to daily marking-to-market and to daily remargining will receive a haircut based on a 5-business day holding period and secured lending transactions with daily mark-to-market and no remargining clauses will receive a haircut based on a 20-business day holding period. These haircut numbers will be scaled up using the square root of time formula depending on the frequency of remargining or marking-to-market. [BCBS June 2006 par 135]

34. For certain types of repo-style transactions (broadly speaking government bond repos as defined in paragraphs 57 to 59) supervisors may allow banks using standard supervisory haircuts or own-estimate haircuts not to apply these in calculating the exposure amount after risk mitigation. [BCBS June 2006 par 136]

35. The effect of master netting agreements covering repo-style transactions can be recognised for the calculation of capital requirements subject to the conditions in paragraph 63. [BCBS June 2006 par 137]

36. As a further alternative to standard supervisory haircuts and own-estimate haircuts banks may use VaR models for calculating potential price volatility for repo-style transactions and other similar SFTs, as set out in paragraphs 114 to 118 below. Alternatively, subject to supervisory approval, they may also calculate, for these transactions, an expected positive exposure, as set forth in Chapter 4 – Settlement and Counterparty Risk of this guideline. [BCBS June 2006 par 138]

**(ii) On-balance sheet netting**

37. Where banks have legally enforceable netting arrangements for loans and deposits they may calculate capital requirements on the basis of net credit exposures subject to the conditions in paragraph 74. [BCBS June 2006 par 139]

**(iii) Guarantees and credit derivatives**

38. Where guarantees or credit derivatives are direct, explicit, irrevocable and unconditional, and supervisors are satisfied that banks fulfil certain minimum operational conditions relating to risk management processes they may allow banks to take account of such credit protection in calculating capital requirements. [BCBS June 2006 par 140]

39. A range of guarantors and protection providers are recognised. As under the 1988 Accord, a substitution approach will be applied. Thus only guarantees issued by or protection



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provided by entities with a lower risk weight than the counterparty will lead to reduced capital charges since the protected portion of the counterparty exposure is assigned the risk weight of the guarantor or protection provider, whereas the uncovered portion retains the risk weight of the underlying counterparty. [BCBS June 2006 par 141]

40. Detailed operational requirements are given below in paragraphs 75 to 81. [BCBS June 2006 par 142]

**(iv) Maturity mismatch**

41. Where the residual maturity of the CRM is less than that of the underlying credit exposure a maturity mismatch occurs. Where there is a maturity mismatch and the CRM has an original maturity of less than one year, the CRM is not recognised for capital purposes. In other cases where there is a maturity mismatch, partial recognition is given to the CRM for regulatory capital purposes as detailed below in paragraphs 93 to 94. Under the simple approach for collateral maturity mismatches will not be allowed. [BCBS June 2006 par 143]

**(v) Miscellaneous**

42. Treatments for pools of credit risk mitigants and first- and second-to-default credit derivatives are given in paragraphs 97 to 101 below. [BCBS June 2006 par 144]

**5.1.3. Collateral**

**(i) Eligible financial collateral**

43. The following collateral instruments are eligible for recognition in the simple approach:
- (a) Cash (as well as certificates of deposit or comparable instruments issued by the lending bank) on deposit with the bank which is incurring the counterparty exposure.<sup>6, 7</sup>
  - (b) Gold
  - (c) Debt securities rated by a recognised external credit assessment institution where these are either:
    - at least BB- when issued by sovereigns or PSEs that are treated as sovereigns by the national supervisor; or
    - at least BBB- when issued by other entities (including banks and securities firms); or
    - at least A-3/P-3 for short-term debt instruments

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<sup>6</sup> Cash funded credit linked notes issued by the bank against exposures in the banking book which fulfil the criteria for credit derivatives will be treated as cash collateralised transactions.

<sup>7</sup> When cash on deposit, certificates of deposit or comparable instruments issued by the lending bank are held as collateral at a third-party bank in a non-custodial arrangement, if they are openly pledged/assigned to the lending bank and if the pledge/assignment is unconditional and irrevocable, the exposure amount covered by the collateral (after any necessary haircuts for currency risk) will receive the risk weight of the third-party bank.

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(d) Debt securities not rated by a recognised external credit assessment institution where these are:

- i. issued by a sovereign, or PSE treated as a sovereign by the national supervisor, that has an issuer rating of BB- or better; or
- ii. issued by a bank; and
  - listed on a regulated public exchange; and
  - classified as senior debt; and
  - all rated issues of the same seniority by the issuing bank must be rated at least BBB- or A-3/P-3 by a recognised external credit assessment institution; and
  - the bank holding the securities as collateral has no information to suggest that the issue justifies a rating below BBB- or A-3/P-3 (as applicable) and
  - the supervisor is sufficiently confident about the market liquidity of the security.

(e) Equities (including convertible bonds) that are included in a main index.

(f) Undertakings for Collective Investments in Transferable Securities (UCITS) and mutual funds where:

- a price for the units is publicly quoted daily; and
- the UCITS/mutual fund is limited to investing in the instruments listed in this paragraph.<sup>8</sup>

[BCBS June 2006 par 145]

44. Re-securitisations (as defined in Chapter 7 – Securitization), irrespective of any credit ratings, are not eligible financial collateral. This prohibition applies whether the bank is using the supervisory haircuts method, the own estimates of haircuts method, the repo VaR method or the internal model method. [BCBS June 2011 par 111]

45. The following collateral instruments are eligible for recognition in the comprehensive approach

- (a) All of the instruments in paragraph 43;
- (b) Equities (including convertible bonds) which are not included in a main index but which are listed on a regulated public exchange;
- (c) UCITS/mutual funds which include such equities

[BCBS June 2006 par 146]

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<sup>8</sup> However, the use or potential use by a UCITS/mutual fund of derivative instruments solely to hedge investments listed in this paragraph and paragraph 45 shall not prevent units in that UCITS/mutual fund from being eligible financial collateral.

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**(ii) The comprehensive approach**

*Calculation of capital requirement*

46. For a collateralised transaction, the exposure amount after risk mitigation is calculated as follows:

$$E^* = \max \{0, [E \times (1 + H_e) - C \times (1 - H_c - H_{fx})]\}$$

where:

$E^*$  = the exposure value after risk mitigation

$E$  = current value of the exposure

$H_e$  = haircut appropriate to the exposure

$C$  = the current value of the collateral received

$H_c$  = haircut appropriate to the collateral

$H_{fx}$  = haircut appropriate for currency mismatch between the collateral and exposure  
[BCBS June 2006 par 147]

47. The exposure amount after risk mitigation will be multiplied by the risk weight of the counterparty to obtain the risk-weighted asset amount for the collateralised transaction. [BCBS June 2006 par 148]

48. The treatment for transactions where there is a mismatch between the maturity of the counterparty exposure and the collateral is given in paragraphs 93 to 96. [BCBS June 2006 par 149]

49. Where the collateral is a basket of assets, the haircut on the basket will be

$H = \sum_i a_i H_i$ , where  $a_i$  is the weight of the asset (as measured by units of currency) in the basket and  $H_i$  the haircut applicable to that asset. [BCBS June 2006 par 150]

*Standard supervisory haircuts*

50. These are the standard supervisory haircuts (assuming daily mark-to-market, daily remargining and a 10-business day holding period), expressed as percentages:

Issue rating for debt securities	Residual Maturity	Sovereigns <sup>9, 10</sup>	Other issuers <sup>11</sup>	Securitization Exposures <sup>12</sup>
AAA to AA-/A-1	≤ 1 year	0.5	1	2
	>1 year, ≤ 5 years	2	4	8
	> 5 years	4	8	16
A+ to BBB-/A-2/A-3/P-3 and unrated bank securities per para. 43	≤ 1 year	1	2	4
	>1 year, ≤ 5 years	3	6	12
	> 5 years	6	12	24
BB+ to BB-	All	15	Not eligible	Not eligible
Main index equities (including convertible bonds) and Gold		15		
Other equities (including convertible bonds) listed on a regulated public exchange		25		
UCITS/Mutual funds		Highest haircut applicable to any security in which the fund can invest		
Cash in the same currency <sup>13</sup>		0		

[BCBS June 2011 par 151 and BCBS June 2011 par 111]

51. The standard supervisory haircut for currency risk where exposure and collateral are denominated in different currencies is 8% (also based on a 10-business day holding period and daily mark-to-market) [BCBS June 2006 par 152]

52. For transactions in which the bank lends non-eligible instruments (e.g. non-investment grade corporate debt securities), the haircut to be applied on the exposure should be the same as the one for equity traded on a regulated public exchange that is not part of a main index. [BCBS June 2006 par 153]

*Adjustment for different holding periods and non daily mark-to-market or remargining*

53. For some transactions, depending on the nature and frequency of the revaluation and remargining provisions, different holding periods are appropriate. The framework for collateral haircuts distinguishes between repo-style transactions (i.e. repo/reverse repos and securities lending/borrowing), “other capital-market-driven transactions” (i.e. OTC derivatives transactions and margin lending) and secured lending. In capital-market-driven transactions and repo-style transactions, the documentation contains remargining clauses; in secured lending transactions, it generally does not. [BCBS June 2006 par 166]

<sup>9</sup> Includes PSEs which are treated as sovereigns by the national supervisor.

<sup>10</sup> Multilateral development banks receiving a 0% risk weight will be treated as sovereigns.

<sup>11</sup> Includes PSEs which are not treated as sovereigns by the national supervisor.

<sup>12</sup> Securitisation exposures are defined as those exposures that meet the definition set forth in the securitisation framework.

<sup>13</sup> Eligible cash collateral specified in paragraph 43 (a).

54. The minimum holding period for various products is summarised in the following table.

Transaction type	Minimum holding period	Condition
Repo-style transaction	five business days	daily remargining
Other capital market transactions	ten business days	daily remargining
Secured lending	twenty business days	daily revaluation

Where a bank has such a transaction or netting set which meets the criteria outlined in Chapter 4 – Settlement and Counterparty Risk, paragraphs 48 and 49, the minimum holding period should be the margin period of risk that would apply under those paragraphs. [BCBS June 2006 par 167 and BCBS June 2011 par 103]

55. When the frequency of remargining or revaluation is longer than the minimum, the minimum haircut numbers will be scaled up depending on the actual number of business days between remargining or revaluation using the square root of time formula below:

$$H = H_M \sqrt{\frac{N_R + (T_M - 1)}{T_M}}$$

where:

$H$  = haircut

$H_M$  = haircut under the minimum holding period

$T_M$  = minimum holding period for the type of transaction

$N_R$  = actual number of business days between remargining for capital market transactions or revaluation for secured transactions.

When a bank calculates the volatility on a  $T_N$  day holding period which is different from the specified minimum holding period  $T_M$ , the  $H_M$  will be calculated using the square root of time formula:

$$H_M = H_N \sqrt{\frac{T_M}{T_N}}$$

$T_N$  = holding period used by the bank for deriving  $H_N$

$H_N$  = haircut based on the holding period  $T_N$

[BCBS June 2006 par 168]

56. For example, for banks using the standard supervisory haircuts, the 10-business day haircuts provided in paragraph 50 will be the basis and this haircut will be scaled up or down depending on the type of transaction and the frequency of remargining or revaluation using the formula below:

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$$H = H_{10} \sqrt{\frac{N_R + (T_M - 1)}{10}}$$

where:

$H$  = haircut

$H_{10}$  = 10-business day standard supervisory haircut for instrument

$N_R$  = actual number of business days between remargining for capital market transactions or revaluation for secured transactions.

$T_M$  = minimum holding period for the type of transaction  
[BCBS June 2006 par 169]

### *Conditions for zero H*

57. For repo-style transactions where the following conditions are satisfied, and the counterparty is a *core market participant*, supervisors may choose not to apply the haircuts specified in the comprehensive approach and may instead apply a haircut of zero. This carve-out will not be available for banks using the modelling approaches as described in paragraphs 114 to 118.

- (a) Both the exposure and the collateral are cash or a sovereign security or PSE security qualifying for a 0% risk weight in the standardised approach;<sup>14</sup>
- (b) Both the exposure and the collateral are denominated in the same currency;
- (c) Either the transaction is overnight or both the exposure and the collateral are marked-to-market daily and are subject to daily remargining;
- (d) Following a counterparty's failure to remargin, the time that is required between the last mark-to-market before the failure to remargin and the liquidation<sup>15</sup> of the collateral is considered to be no more than four business days;
- (e) The transaction is settled across a settlement system proven for that type of transaction;
- (f) The documentation covering the agreement is standard market documentation for repo-style transactions in the securities concerned;
- (g) The transaction is governed by documentation specifying that if the counterparty fails to satisfy an obligation to deliver cash or securities or to deliver margin or otherwise defaults, then the transaction is immediately terminable; and

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<sup>14</sup> Note that where a supervisor has designated domestic-currency claims on its sovereign or central bank to be eligible for a 0% risk weight in the standardised approach, such claims will satisfy this condition.

<sup>15</sup> This does not require the bank to always liquidate the collateral but rather to have the capability to do so within the given time frame.

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(h) Upon any default event, regardless of whether the counterparty is insolvent or bankrupt, the bank has the unfettered, legally enforceable right to immediately seize and liquidate the collateral for its benefit.

[BCBS June 2006 par 170]

#### **OSFI Notes**

58. The carve-out for repos of Government of Canada securities and securities issued by Canadian provinces and territories subject to confirmation that the above criteria are met.

59. *Core market participants* may include, at the discretion of the national supervisor, the following entities:

- (a) Sovereigns, central banks and PSEs;
- (b) Banks and securities firms;
- (c) Other financial companies (including insurance companies) eligible for a 20% risk weight in the standardised approach;
- (d) Regulated mutual funds that are subject to capital or leverage requirements;
- (e) Regulated pension funds; and
- (f) Recognised clearing organisations.

[BCBS June 2006 par 171]

#### **OSFI Notes**

60. OSFI recognises the entities listed above as “core market participants” for purposes of the carve-out. Recognised clearing organisations for purposes of paragraph 59 are those that meet the definition of a “qualifying central counterparty” in Chapter 4.

61. Where a supervisor applies a specific carve-out to repo-style transactions in securities issued by its domestic government, then other supervisors may choose to allow banks incorporated in their jurisdiction to adopt the same approach to the same transactions. [BCBS June 2006 par 172]

#### **OSFI Notes**

62. Canadian banks may apply carve-outs permitted by other G-10 supervisors to repo-style transactions in securities issued by their domestic governments to business in those markets.

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*Treatment of repo-style transactions covered under master netting agreements*

63. The effects of bilateral netting agreements covering repo-style transactions will be recognised on a counterparty-by-counterparty basis if the agreements are legally enforceable in each relevant jurisdiction upon the occurrence of an event of default and regardless of whether the counterparty is insolvent or bankrupt. In addition, netting agreements must:

- (a) provide the non-defaulting party the right to terminate and close-out in a timely manner all transactions under the agreement upon an event of default, including in the event of insolvency or bankruptcy of the counterparty;
- (b) provide for the netting of gains and losses on transactions (including the value of any collateral) terminated and closed out under it so that a single net amount is owed by one party to the other;
- (c) allow for the prompt liquidation or setoff of collateral upon the event of default; and
- (d) be, together with the rights arising from the provisions required in (a) to (c) above, legally enforceable in each relevant jurisdiction upon the occurrence of an event of default and regardless of the counterparty's insolvency or bankruptcy.

[BCBS June 2006 par 173]

64. Netting across positions in the banking and trading book will only be recognised when the netted transactions fulfil the following conditions:

- (a) All transactions are marked to market daily;<sup>16</sup> and
- (b) The collateral instruments used in the transactions are recognised as eligible financial collateral in the banking book.

[BCBS June 2006 par 174]

65. The formula in paragraph 46 will be adapted to calculate the capital requirements for transactions with netting agreements. [BCBS June 2006 par 175]

66. For banks using the standard supervisory haircuts or own-estimate haircuts, the framework below will apply to take into account the impact of master netting agreements.

$$E^* = \max \{0, [(\sum(E) - \sum(C)) + \sum (E_s \times H_s) + \sum (E_{fx} \times H_{fx})]\}^{17}$$

where:

- $E^*$  = the exposure value after risk mitigation
- $E$  = current value of the exposure
- $C$  = the value of the collateral received
- $E_s$  = absolute value of the net position in a given security

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<sup>16</sup> The holding period for the haircuts will depend as in other repo-style transactions on the frequency of margining.

<sup>17</sup> The starting point for this formula is the formula in paragraph 46 which can also be presented as the following:  
 $E^* = (E-C) + (E \times H_e) + (C \times H_c) + (C \times H_{fx})$ .



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Hs = haircut appropriate to Es

Efx = absolute value of the net position in a currency different from the settlement currency

Hfx = haircut appropriate for currency mismatch

[BCBS June 2006 par 176]

67. The intention here is to obtain a net exposure amount after netting of the exposures and collateral and have an add-on amount reflecting possible price changes for the securities involved in the transactions and for foreign exchange risk if any. The net long or short position of each security included in the netting agreement will be multiplied by the appropriate haircut. All other rules regarding the calculation of haircuts stated in paragraphs 46 to 62 and paragraphs 102 to 113 equivalently apply for banks using bilateral netting agreements for repo-style transactions. [BCBS June 2006 par 177]

### **(iii) The simple approach**

#### *Minimum conditions*

68. For collateral to be recognised in the simple approach, the collateral must be pledged for at least the life of the exposure and it must be marked to market and revalued with a minimum frequency of six months. Those portions of claims collateralised by the market value of recognised collateral receive the risk weight applicable to the collateral instrument. The risk weight on the collateralised portion will be subject to a floor of 20% except under the conditions specified in paragraphs 69 to 71. The remainder of the claim should be assigned to the risk weight appropriate to the counterparty. A capital requirement will be applied to banks on either side of the collateralised transaction: for example, both repos and reverse repos will be subject to capital requirements. [BCBS June 2006 par 182]

#### *Exceptions to the risk weight floor*

69. Transactions which fulfil the criteria outlined in paragraph 57 and are with a core market participant, as defined in 59, receive a risk weight of 0%. If the counterparty to the transactions is not a core market participant the transaction should receive a risk weight of 10%. [BCBS June 2006 par 183]

70. OTC derivative transactions subject to daily mark-to-market, collateralised by cash and where there is no currency mismatch should receive a 0% risk weight. Such transactions collateralised by sovereign or PSE securities qualifying for a 0% risk weight in the standardised approach can receive a 10% risk weight. [BCBS June 2006 par 184]

71. The 20% floor for the risk weight on a collateralised transaction will not be applied and a 0% risk weight can be applied where the exposure and the collateral are denominated in the same currency, and either:

- the collateral is cash on deposit as defined in paragraph 43 (a); or

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- the collateral is in the form of sovereign/PSE securities eligible for a 0% risk weight, and its market value has been discounted by 20%.  
[BCBS June 2006 par 185]

**(iv) Collateralized OTC derivatives transactions**

72. Under the Standardized Approach for measuring Counterparty Credit Risk described in section 4.1.6 of Chapter 4, the counterparty credit risk charge for an individual contract will be calculated using the following formula, where:

- (1) Alpha = 1.4;
- (2) RC = the replacement cost calculated according to section 4.1.6.1
- (3) PFE = the potential future exposure calculated according to 4.1.6.2

$$\text{Exposure amount} = \text{alpha} * (\text{RC} + \text{PFE})$$

73. As an alternative to the Standardized Approach for measuring Counterparty Credit Risk for the calculation of the counterparty credit risk charge, banks may also use (subject to supervisory approval) the Internal Model Method as set out in section 4.1.5 of Chapter 4.  
[BCBS June 2006 par 187 (i)]

**5.1.4. On-balance sheet netting**

74. Where a bank,
- (a) has a well-founded legal basis for concluding that the netting or offsetting agreement is enforceable in each relevant jurisdiction regardless of whether the counterparty is insolvent or bankrupt;
  - (b) is able at any time to determine those assets and liabilities with the same counterparty that are subject to the netting agreement;
  - (c) monitors and controls its roll-off risks; and
  - (d) monitors and controls the relevant exposures on a net basis,

it may use the net exposure of loans and deposits as the basis for its capital adequacy calculation in accordance with the formula in paragraph 46. Assets (loans) are treated as exposure and liabilities (deposits) as collateral. The haircuts will be zero except when a currency mismatch exists. A 10-business day holding period will apply when daily mark-to-market is conducted and all the requirements contained in paragraphs 50, 56, and 93 to 96 will apply.

[BCBS June 2006 par 188]

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### 5.1.5. Guarantees and credit derivatives

#### (i) Operational requirements

##### *Operational requirements common to guarantees and credit derivatives*

75. A guarantee (counter-guarantee) or credit derivative must represent a direct claim on the protection provider and must be explicitly referenced to specific exposures or a pool of exposures, so that the extent of the cover is clearly defined and incontrovertible. Other than non-payment by a protection purchaser of money due in respect of the credit protection contract it must be irrevocable; there must be no clause in the contract that would allow the protection provider unilaterally to cancel the credit cover or that would increase the effective cost of cover as a result of deteriorating credit quality in the hedged exposure.<sup>18</sup> It must also be unconditional; there should be no clause in the protection contract outside the direct control of the bank that could prevent the protection provider from being obliged to pay out in a timely manner in the event that the original counterparty fails to make the payment(s) due. [BCBS June 2006 par 189]

##### *Additional operational requirements for guarantees*

76. In addition to the legal certainty requirements in paragraphs 12 and 13 above, in order for a guarantee to be recognised, the following conditions must be satisfied:

- (a) On the qualifying default/non-payment of the counterparty, the bank may in a timely manner pursue the guarantor for any monies outstanding under the documentation governing the transaction. The guarantor may make one lump sum payment of all monies under such documentation to the bank, or the guarantor may assume the future payment obligations of the counterparty covered by the guarantee. The bank must have the right to receive any such payments from the guarantor without first having to take legal actions in order to pursue the counterparty for payment.
- (b) The guarantee is an explicitly documented obligation assumed by the guarantor.
- (c) Except as noted in the following sentence, the guarantee covers all types of payments the underlying obligor is expected to make under the documentation governing the transaction, for example notional amount, margin payments etc. Where a guarantee covers payment of principal only, interests and other uncovered payments should be treated as an unsecured amount in accordance with paragraph 88.

[BCBS June 2006 par 190]

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<sup>18</sup> Note that the irrevocability condition does not require that the credit protection and the exposure be maturity matched; rather that the maturity agreed *ex ante* may not be reduced *ex post* by the protection provider. Paragraph 94 sets forth the treatment of call options in determining remaining maturity for credit protection.

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*Additional operational requirements for mortgage insurance*

77. A protection purchaser must establish internal policies and procedures to implement and ensure compliance with the protection provider(s) credit underwriting and other contractual requirements. In addition, institutions are expected to have appropriate policies and procedures in place to originate, underwrite and administer insured mortgages.

78. If, as part of its supervisory work, OSFI determines that there is evidence that an institution has not implemented the required policies and procedures from paragraph 77, a supervisory assessment will be made to determine whether recognition of the mortgage insurance as a guarantee for credit risk mitigation purposes should be reduced by OSFI. As part of this assessment, OSFI may use, but will not rely on, information available from third parties. In determining the size of the reduction of the risk mitigating impact of mortgage insurance, OSFI will take into account the scope and severity of the deficiencies identified as well as the time required to address deficiencies noting that contractual obligations of the protection provider are not a substitute for inadequate policies and/or procedures on the part of the institution. This does not preclude OSFI from imposing additional capital requirements under Pillar 2 as per paragraph 9 of this chapter.

*Additional operational requirements for credit derivatives*

79. In order for a credit derivative contract to be recognised, the following conditions must be satisfied:

- (a) The credit events specified by the contracting parties must at a minimum cover:
  - failure to pay the amounts due under terms of the underlying obligation that are in effect at the time of such failure (with a grace period that is closely in line with the grace period in the underlying obligation);
  - bankruptcy, insolvency or inability of the obligor to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as they become due, and analogous events; and
  - restructuring of the underlying obligation involving forgiveness or postponement of principal, interest or fees that results in a credit loss event (i.e. charge-off, specific provision or other similar debit to the profit and loss account). When restructuring is not specified as a credit event, refer to paragraph 80.
- (b) If the credit derivative covers obligations that do not include the underlying obligation, section (g) below governs whether the asset mismatch is permissible.
- (c) The credit derivative shall not terminate prior to expiration of any grace period required for a default on the underlying obligation to occur as a result of a failure to pay, subject to the provisions of paragraph 94.
- (d) Credit derivatives allowing for cash settlement are recognised for capital purposes insofar as a robust valuation process is in place in order to estimate loss reliably. There must be a clearly specified period for obtaining post-credit-event valuations of the underlying obligation. If the reference obligation specified in the credit derivative for purposes of cash

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settlement is different than the underlying obligation, section (g) below governs whether the asset mismatch is permissible.

- (e) If the protection purchaser's right/ability to transfer the underlying obligation to the protection provider is required for settlement, the terms of the underlying obligation must provide that any required consent to such transfer may not be unreasonably withheld.
- (f) The identity of the parties responsible for determining whether a credit event has occurred must be clearly defined. This determination must not be the sole responsibility of the protection seller. The protection buyer must have the right/ability to inform the protection provider of the occurrence of a credit event.
- (g) A mismatch between the underlying obligation and the reference obligation under the credit derivative (i.e. the obligation used for purposes of determining cash settlement value or the deliverable obligation) is permissible if (1) the reference obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (i.e. the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.
- (h) A mismatch between the underlying obligation and the obligation used for purposes of determining whether a credit event has occurred is permissible if (1) the latter obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (i.e. the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.

[BCBS June 2006 par 191]

80. When the restructuring of the underlying obligation is not covered by the credit derivative, but the other requirements in paragraph 79 are met, partial recognition of the credit derivative will be allowed. If the amount of the credit derivative is less than or equal to the amount of the underlying obligation, 60% of the amount of the hedge can be recognised as covered. If the amount of the credit derivative is larger than that of the underlying obligation, then the amount of eligible hedge is capped at 60% of the amount of the underlying obligation.<sup>19</sup>

[BCBS June 2006 par 192]

81. Only credit default swaps and total return swaps that provide credit protection equivalent to guarantees will be eligible for recognition. The following exception applies. Where a bank buys credit protection through a total return swap and records the net payments received on the swap as net income, but does not record offsetting deterioration in the value of the asset that is protected (either through reductions in fair value or by an addition to reserves), the credit protection will not be recognised. The treatment of first-to-default and second-to-default products is covered separately in paragraphs 98 to 101. [BCBS June 2006 par 193]

82. Other types of credit derivatives will not be eligible for recognition at this time.<sup>20</sup>

[BCBS June 2006 par 194]

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<sup>19</sup> The 60% recognition factor is provided as an interim treatment, which the Committee intends to refine prior to implementation after considering additional data.

<sup>20</sup> Cash funded credit linked notes issued by the bank against exposures in the banking book which fulfil the criteria for credit derivatives will be treated as cash collateralised transactions.

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**(ii) Range of eligible guarantors (counter-guarantors)/protection providers**

83. Credit protection given by the following entities will be recognised:

- sovereign entities<sup>21</sup>, PSEs, banks<sup>22</sup> and securities firms with a lower risk weight than the counterparty;
- other entities that currently are externally rated BBB- or better and that were externally rated A- or better at the time the credit protection was provided.
- when credit protection is provided to a securitisation exposure, other entities that currently are externally rated BBB- or better and that were externally rated A- or better at the time the credit protection was provided.

[BCBS June 2011 par 120]

**OSFI Notes**

84. An institution may not reduce the risk weight of an exposure to a third party because of a guarantee or credit protection provided by a related party (parent, subsidiary or affiliate) of the lending institution. This treatment follows the principle that guarantees within a corporate group are not a substitute for capital in the regulated Canadian institution. An exception is made for self-liquidating trade-related transactions that have a tenure of 360 days or less, are market-driven and are not structured to avoid the requirements of OSFI guidelines. The requirement that the transaction be "market-driven" necessitates that the guarantee or letter of credit is requested and paid for by the customer and/or that the market requires the guarantee in the normal course.

**(iii) Risk weights**

85. The protected portion is assigned the risk weight of the protection provider. The uncovered portion of the exposure is assigned the risk weight of the underlying counterparty.

[BCBS June 2006 par 196]

86. Residential mortgages insured under the NHA or equivalent provincial mortgage insurance programs may be assigned the risk weight of the guarantor, that is, the Government of Canada risk weight of 0%. Where a mortgage is comprehensively insured by a private sector mortgage insurer that has a backstop guarantee provided by the Government of Canada (for example, a guarantee made pursuant to section 22 of the *Protection of Residential Mortgage or Hypothecary Insurance Act*), institutions may recognize the risk-mitigating effect of the guarantee by reporting the portion of the exposure that is covered by the Government of Canada backstop as if this portion were directly guaranteed by the Government of Canada. The remainder of the exposure should be treated as a corporate-guaranteed mortgage in accordance with the rules set out in this chapter.

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<sup>21</sup> This includes the Bank for International Settlements, the International Monetary Fund, the European Central Bank and the European Community, as well as those MDBs referred to in Chapter 3 – Credit Risk – Standardized Approach.

<sup>22</sup> This includes other MDBs.

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87. Materiality thresholds on payments below which no payment is made in the event of loss are equivalent to retained first loss positions and must be deducted in full from the capital of the bank purchasing the credit protection. [BCBS June 2006 par 197]

*Proportional cover*

88. Where the amount guaranteed, or against which credit protection is held, is less than the amount of the exposure, and the secured and unsecured portions are of equal seniority, i.e. the bank and the guarantor share losses on a pro-rata basis capital relief will be afforded on a proportional basis: i.e. the protected portion of the exposure will receive the treatment applicable to eligible guarantees/credit derivatives, with the remainder treated as unsecured. [BCBS June 2006 par 198]

*Tranched cover*

89. Where the bank transfers a portion of the risk of an exposure in one or more tranches to a protection seller or sellers and retains some level of risk of the loan and the risk transferred and the risk retained are of different seniority, banks may obtain credit protection for either the senior tranches (e.g. second loss portion) or the junior tranche (e.g. first loss portion). In this case the rules as set out in Chapter 7 - Securitization will apply. [BCBS June 2006 par 199]

**(iv) Currency mismatches**

90. Where the credit protection is denominated in a currency different from that in which the exposure is denominated – i.e. there is a currency mismatch – the amount of the exposure deemed to be protected will be reduced by the application of a haircut  $H_{FX}$ , i.e.

$$G_A = G \times (1 - H_{FX})$$

where:

$G$  = nominal amount of the credit protection

$H_{FX}$  = haircut appropriate for currency mismatch between the credit protection and underlying obligation.

The appropriate haircut based on a 10-business day holding period (assuming daily marking-to-market) will be applied. If a bank uses the supervisory haircuts it will be 8%. The haircuts must be scaled up using the square root of time formula, depending on the frequency of revaluation of the credit protection as described in paragraph 55. [BCBC June 2006 par 200]

**OSFI Notes**

91. A currency mismatch occurs when the currency a bank receives differs from the currency of the collateral held. A currency mismatch always occurs when a bank receives payments in more than one currency under a single contract.



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**(v) Sovereign guarantees and counter-guarantees**

92. A lower risk weight may be applied at national discretion to a bank's exposures to the sovereign (or central bank) where the bank is incorporated and where the exposure is denominated in domestic currency and funded in that currency. National authorities may extend this treatment to portions of claims guaranteed by the sovereign (or central bank), where the guarantee is denominated in the domestic currency and the exposure is funded in that currency. A claim may be covered by a guarantee that is indirectly counter-guaranteed by a sovereign. Such a claim may be treated as covered by a sovereign guarantee provided that:

- (a) the sovereign counter-guarantee covers all credit risk elements of the claim;
- (b) both the original guarantee and the counter-guarantee meet all operational requirements for guarantees, except that the counter-guarantee need not be direct and explicit to the original claim; and
- (c) the supervisor is satisfied that the cover is robust and that no historical evidence suggests that the coverage of the counter-guarantee is less than effectively equivalent to that of a direct sovereign guarantee.

[BCBS June 2006 par 201]

**5.1.6. Maturity mismatches**

93. For the purposes of calculating risk-weighted assets, a maturity mismatch occurs when the residual maturity of a hedge is less than that of the underlying exposure. [BCBS June 2006 par 202]

**(i) Definition of maturity**

94. The maturity of the underlying exposure and the maturity of the hedge should both be defined conservatively. The effective maturity of the underlying should be gauged as the longest possible remaining time before the counterparty is scheduled to fulfil its obligation, taking into account any applicable grace period. For the hedge, embedded options which may reduce the term of the hedge should be taken into account so that the shortest possible effective maturity is used. Where a call is at the discretion of the protection seller, the maturity will always be at the first call date. If the call is at the discretion of the protection buying bank but the terms of the arrangement at origination of the hedge contain a positive incentive for the bank to call the transaction before contractual maturity, the remaining time to the first call date will be deemed to be the effective maturity. For example, where there is a step-up in cost in conjunction with a call feature or where the effective cost of cover increases over time even if credit quality remains the same or increases, the effective maturity will be the remaining time to the first call. [BCBS June 2006 par 203]

**(ii) Risk weights for maturity mismatches**

95. As outlined in paragraph 41, hedges with maturity mismatches are only recognised when their original maturities are greater than or equal to one year. As a result, the maturity of hedges for exposures with original maturities of less than one year must be matched to be



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recognised. In all cases, hedges with maturity mismatches will no longer be recognised when they have a residual maturity of three months or less. [BCBS June 2006 par 204]

96. When there is a maturity mismatch with recognised credit risk mitigants (collateral, on-balance sheet netting, guarantees and credit derivatives) the following adjustment will be applied.

$$Pa = P \times (t-0.25)/(T-0.25)$$

Where:

Pa = value of the credit protection adjusted for maturity mismatch

P = credit protection (e.g. collateral amount, guarantee amount) adjusted for any haircuts

t = min (T, residual maturity of the credit protection arrangement) expressed in years

T = min (5, residual maturity of the exposure) expressed in years

[BCBS June 2006 par 205]

#### ***5.1.7. Other items related to the treatment of CRM techniques***

##### **(i) Treatment of pools of CRM techniques**

97. In the case where a bank has multiple CRM techniques covering a single exposure (e.g. a bank has both collateral and guarantee partially covering an exposure), the bank will be required to subdivide the exposure into portions covered by each type of CRM technique (e.g. portion covered by collateral, portion covered by guarantee) and the risk-weighted assets of each portion must be calculated separately. When credit protection provided by a single protection provider has differing maturities, they must be subdivided into separate protection as well.

[BCBS June 2006 par 206]

##### **(ii) First-to-default credit derivatives**

98. There are cases where a bank obtains credit protection for a basket of reference names and where the first default among the reference names triggers the credit protection and the credit event also terminates the contract. In this case, the bank may recognise regulatory capital relief for the asset within the basket with the lowest risk-weighted amount, but only if the notional amount is less than or equal to the notional amount of the credit derivative. [BCBS June 2006 par 207]

99. With regard to the bank providing credit protection through such an instrument, if the product has an external credit assessment from an eligible credit assessment institution, the risk weight in Chapter 7 – Securitization, section 7.6.2, (ii) applied to securitisation tranches will be applied. If the product is not rated by an eligible external credit assessment institution, the risk weights of the assets included in the basket will be aggregated up to a maximum of 1250% and multiplied by the nominal amount of the protection provided by the credit derivative to obtain the risk-weighted asset amount. [BCBS June 2006 par 208]

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**(iii) Second-to-default credit derivatives**

100. In the case where the second default among the assets within the basket triggers the credit protection, the bank obtaining credit protection through such a product will only be able to recognise any capital relief if first-default-protection has also be obtained or when one of the assets within the basket has already defaulted. [BCBS June 2006 par 209]

101. For banks providing credit protection through such a product, the capital treatment is the same as in paragraph 99 above with one exception. The exception is that, in aggregating the risk weights, the asset with the lowest risk weighted amount can be excluded from the calculation. [BCBS June 2006 par 210]

## **5.2 Internal Ratings Based Approaches**

### **5.2.1. Own estimates for haircuts**

102. Supervisors may permit banks to calculate haircuts using their own internal estimates of market price volatility and foreign exchange volatility. Permission to do so will be conditional on the satisfaction of minimum qualitative and quantitative standards stated in paragraphs 104 to 113. When debt securities are rated BBB-/A-3 or higher, supervisors may allow banks to calculate a volatility estimate for each category of security. In determining relevant categories, institutions must take into account (a) the type of issuer of the security, (b) its rating, (c) its residual maturity, and (d) its modified duration. Volatility estimates must be representative of the securities actually included in the category for that bank. For debt securities rated below BBB-/A-3 or for equities eligible as collateral (lightly shaded boxes in the above table), the haircuts must be calculated for each individual security. [BCBS June 2006 par 154]

103. Banks must estimate the volatility of the collateral instrument or foreign exchange mismatch individually: estimated volatilities for each transaction must not take into account the correlations between unsecured exposure, collateral and exchange rates (see paragraphs 93 to 96 for the approach to maturity mismatches). [BCBS June 2006 par 155]

### **5.2.2. Quantitative criteria**

104. In calculating the haircuts, a 99<sup>th</sup> percentile, one-tailed confidence interval is to be used. [BCBS June 2006 par 156]

105. The minimum holding period will be dependent on the type of transaction and the frequency of remargining or marking to market. The minimum holding periods for different types of transactions are presented in paragraph 54. Banks may use haircut numbers calculated according to shorter holding periods, scaled up to the appropriate holding period by the square root of time formula. [BCBS June 2006 par 157]

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106. Banks must take into account the illiquidity of lower-quality assets. The holding period should be adjusted upwards in cases where such a holding period would be inappropriate given the liquidity of the collateral. They should also identify where historical data may understate potential volatility, e.g. a pegged currency. Such cases must be dealt with by subjecting the data to stress testing. [BCBS June 2006 par 158]

107. The choice of historical observation period (sample period) for calculating haircuts shall be a minimum of one year. For banks that use a weighting scheme or other methods for the historical observation period, the “effective” observation period must be at least one year (that is, the weighted average time lag of the individual observations cannot be less than 6 months). [BCBS June 2006 par 159]

108. Banks should update their data sets no less frequently than once every three months and should also reassess them whenever market prices are subject to material changes. This implies that haircuts must be computed at least every three months. The supervisor may also require a bank to calculate its haircuts using a shorter observation period if, in the supervisor's judgement, this is justified by a significant upsurge in price volatility. [BCBS June 2006 par 160]

109. No particular type of model is prescribed. So long as each model used captures all the material risks run by the bank, banks will be free to use models based on, for example, historical simulations and Monte Carlo simulations. [BCBS June 2006 par 161]

### **5.2.3. Qualitative criteria**

110. The estimated volatility data (and holding period) must be used in the day-to-day risk management process of the bank. [BCBS June 2006 par 162]

111. Banks should have robust processes in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the risk measurement system. [BCBS June 2006 par 163]

112. The risk measurement system should be used in conjunction with internal exposure limits. [BCBS June 2006 par 164]

113. An independent review of the risk measurement system should be carried out regularly in the bank's own internal auditing process. A review of the overall risk management process should take place at regular intervals (ideally not less than once a year) and should specifically address, at a minimum:

- the integration of risk measures into daily risk management;
- the validation of any significant change in the risk measurement process;
- the accuracy and completeness of position data;
- the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources; and
- the accuracy and appropriateness of volatility assumptions.

[BCBS June 2006 par 165]

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#### 5.2.4. Use of models

114. As an alternative to the use of standard or own-estimate haircuts, banks may be permitted to use a VaR models approach to reflect the price volatility of the exposure and collateral for repo-style transactions, taking into account correlation effects between security positions. This approach would apply to repo-style transactions covered by bilateral netting agreements on a counterparty-by-counterparty basis. At the discretion of the national supervisor, firms are also eligible to use the VaR model approach for margin lending transactions<sup>23</sup>, if the transactions are covered under a bilateral master netting agreement that meets the requirements of paragraphs 63 and 64. The VaR models approach is available to banks that have received supervisory recognition for an internal market risk model under the Market Risk Amendment. Banks which have not received supervisory recognition for use of models under the Market Risk Amendment can separately apply for supervisory recognition to use their internal VaR models for calculation of potential price volatility for repo-style transactions. Internal models will only be accepted when a bank can prove the quality of its model to the supervisor through the backtesting of its output using one year of historical data. Banks must meet the model validation requirement of Chapter 4 – Settlement and Counterparty Risk, paragraph 52 to use VaR for repo-style and other SFTs. In addition, other transactions similar to repo-style transactions (like prime brokerage) and that meet the requirements for repo-style transactions, are also eligible to use the VaR models approach provided the model used meets the operational requirements set forth in Chapter 4, section 4.1.5.6. [BCBS June 2006 par 178]

#### OSFI Notes

115. OSFI does not intend to conduct full VaR reviews and application processes for AIRB banks seeking to use internal models for secured lending and borrowing and repo-style transactions. An AIRB bank may use a VaR model for IRB portfolios provided that this model has already been approved for market risk. However OSFI may review the changes to the parameters required under the Basel II framework (i.e. holding periods).

116. The quantitative and qualitative criteria for recognition of internal market risk models for repo-style transactions and other similar transactions are in principle the same as in Chapter 9 – Market Risk, paragraphs 188 to 197. With regard to the holding period, the minimum will be 5-business days for repo-style transactions, rather than the 10-business days under Chapter 9 – Market Risk paragraph 197 (c). For other transactions eligible for the VaR models approach, the 10-business day holding period will be retained. The minimum holding period should be adjusted upwards for market instruments where such a holding period would be inappropriate given the liquidity of the instrument concerned. At a minimum, where a bank has a repo-style or similar transaction or netting set which meets the criteria outlined in paragraphs Chapter 4 – Settlement and Counterparty Risk, paragraphs 48 or 49, the minimum holding period should be the margin period of risk that would apply under those paragraphs, in combination with Chapter 4 – Settlement and Counterparty Risk, paragraph 50. [BCBS June 2006 par 179 and BCBS June 2011 par 103]

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<sup>23</sup> Restricted to institutions that have received approval to use the AIRB approach.

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117. The calculation of the exposure E\* for banks using their internal model will be the following:

$$E^* = \max \{0, [(\sum E - \sum C) + \text{VaR output from internal model}]\}$$

In calculating capital requirements banks will use the previous business day's VaR number.  
[BCBS June 2006 par 181]

118. Subject to supervisory approval, instead of using the VaR approach, banks may also calculate an expected positive exposure for repo-style and other similar SFTs, in accordance with the Internal Model Method set out in Chapter 4 – Settlement and Counterparty Risk of this guideline. [BCBS June 2006 par 181 (i)]

### **5.2.5. Rules for Corporate, Sovereign and Bank Exposures**

#### *Collateral under the foundation approach*

119. In addition to the eligible financial collateral recognised in the standardised approach, under the foundation IRB approach some other forms of collateral, known as eligible IRB collateral, are also recognised. These include receivables, specified commercial and residential real estate (CRE/RRE), and other collateral, where they meet the minimum requirements set out in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.9 (ii).<sup>24</sup> For eligible financial collateral, the requirements are identical to the operational standards as set out in paragraphs 4 to 13. [BCBS June 2006 par 289]

#### *Methodology for recognition of eligible financial collateral under the foundation approach*

120. The methodology for the recognition of eligible financial collateral closely follows that outlined in the comprehensive approach to collateral in the standardised approach in paragraphs 46 to 67 and 102 to 118. The simple approach to collateral presented in the standardised approach will not be available to banks applying the IRB approach. [BCBS June 2006 par 290]

121. Following the comprehensive approach, the effective loss given default (LGD\*) applicable to a collateralised transaction can be expressed as follows, where:

- LGD is that of the senior unsecured exposure before recognition of collateral (45%);
- E is the current value of the exposure (i.e. cash lent or securities lent or posted);

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<sup>24</sup> The Committee, however, recognises that, in exceptional circumstances for well-developed and long-established markets, mortgages on office and/or multi-purpose commercial premises and/or multi-tenanted commercial premises may have the potential to receive alternative recognition as collateral in the corporate portfolio. The LGD applied to the collateralised portion of such exposures, subject to the limitations set out in paragraphs 14 to 67 and 102 to 118 of the standardised approach, will be set at 35%. The LGD applied to the remaining portion of this exposure will be set at 45%. In order to ensure consistency with the capital charges in the standardised approach (while providing a small capital incentive in the IRB approach relative to the standardised approach), supervisors may apply a cap on the capital charge associated with such exposures so as to achieve comparable treatment in both approaches.

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- E\* is the exposure value after risk mitigation as determined in paragraphs 46 to 49 of the standardised approach. This concept is only used to calculate LGD\*. Banks must continue to calculate EAD without taking into account the presence of any collateral, unless otherwise specified.

$$\text{LGD}^* = \text{LGD} \times (\text{E}^* / \text{E})$$

[BCBS June 2006 par 291]

122. Banks that qualify for the foundation IRB approach may calculate E\* using any of the ways specified under the comprehensive approach for collateralised transactions under the standardised approach. [BCBS June 2006 par 292]

123. Where repo-style transactions are subject to a master netting agreement, a bank may choose not to recognise the netting effects in calculating capital. Banks that want to recognise the effect of master netting agreements on such transactions for capital purposes must satisfy the criteria provided in paragraph 63 and 64 of the standardised approach. The bank must calculate E\* in accordance with paragraphs 66 and 67 or 114 to 118 and equate this to EAD. The impact of collateral on these transactions may not be reflected through an adjustment to LGD. [BCBS June 2006 par 293]

#### *Carve out from the comprehensive approach*

124. As in the standardised approach, for transactions where the conditions in paragraph 57 are met, and in addition, the counterparty is a core market participant as specified in paragraph 59, supervisors may choose not to apply the haircuts specified under the comprehensive approach, but instead to apply a zero H. [BCBS June 2006 par 294]

#### *Methodology for recognition of eligible IRB collateral*

125. The methodology for determining the effective LGD under the foundation approach for cases where banks have taken eligible IRB collateral to secure a corporate exposure is as follows.

- Exposures where the minimum eligibility requirements are met, but the ratio of the current value of the collateral received (C) to the current value of the exposure (E) is below a threshold level of C\* (i.e. the required minimum collateralisation level for the exposure) would receive the appropriate LGD for unsecured exposures or those secured by collateral which is not eligible financial collateral or eligible IRB collateral.
- Exposures where the ratio of C to E exceeds a second, higher threshold level of C\*\* (i.e. the required level of over-collateralisation for full LGD recognition) would be assigned an LGD according to the following table.

The following table displays the applicable LGD and required over-collateralisation levels for the secured parts of senior exposures:

### Minimum LGD for secured portion of senior exposures

	Minimum LGD	Required minimum collateralisation level of the exposure (C*)	Required level of over-collateralisation for full LGD recognition (C**)
Eligible Financial collateral	0%	0%	n.a.
Receivables	35%	0%	125%
CRE/RRE	35%	30%	140%
Other collateral <sup>25</sup>	40%	30%	140%

- Senior exposures are to be divided into fully collateralised and uncollateralised portions.
- The part of the exposure considered to be fully collateralised, C/C\*\*, receives the LGD associated with the type of collateral.
- The remaining part of the exposure is regarded as unsecured and receives an LGD of 45%. [BCBS June 2006 par 295]

#### *Methodology for the treatment of pools of collateral*

126. The methodology for determining the effective LGD of a transaction under the foundation approach where banks have taken both financial collateral and other eligible IRB collateral is aligned to the treatment in the standardised approach and based on the following guidance.

- In the case where a bank has obtained multiple forms of CRM, it will be required to subdivide the adjusted value of the exposure (after the haircut for eligible financial collateral) into portions each covered by only one CRM type. That is, the bank must divide the exposure into the portion covered by eligible financial collateral, the portion covered by receivables, the portion covered by CRE/RRE collateral, a portion covered by other collateral, and an unsecured portion, where relevant.
- Where the ratio of the sum of the value of CRE/RRE and other collateral to the reduced exposure (after recognising the effect of eligible financial collateral and receivables collateral) is below the associated threshold level (i.e. the minimum degree of collateralisation of the exposure), the exposure would receive the appropriate unsecured LGD value of 45%.
- The risk-weighted assets for each fully secured portion of exposure must be calculated separately.

[BCBS June 2006 par 296]

<sup>25</sup> Other collateral excludes physical assets acquired by the bank as a result of a loan default.



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### *LGD under the advanced approach*

127. Subject to certain additional minimum requirements specified below, supervisors may permit banks to use their own internal estimates of LGD for corporate, sovereign and bank exposures. LGD must be measured as the loss given default as a percentage of the EAD. Banks eligible for the IRB approach that are unable to meet these additional minimum requirements must utilise the foundation LGD treatment described above. [BCBS June 2006 par 297]

128. The minimum requirements for the derivation of LGD estimates are outlined in Chapter 6 – Credit Risk- Internal Ratings Based Approach, section 6.8.7, (vii). [BCBS June 2006 par 298]

### *Treatment of certain repo-style transactions*

129. Banks that want to recognise the effects of master netting agreements on repo-style transactions for capital purposes must apply the methodology outlined in paragraph 123 for determining E\* for use as the EAD. For banks using the advanced approach, own LGD estimates would be permitted for the unsecured equivalent amount (E\*). [BCBS June 2006 par 299]

### *Treatment of guarantees and credit derivatives*

130. There are two approaches for recognition of CRM in the form of guarantees and credit derivatives in the IRB approach: a foundation approach for banks using supervisory values of LGD, and an advanced approach for those banks using their own internal estimates of LGD. [BCBS June 2006 par 300]

131. Under either approach, CRM in the form of guarantees and credit derivatives must not reflect the effect of double default (see Chapter 6 – Credit Risk- Internal Ratings Based Approach, section 6.8.7, paragraph 309). As such, to the extent that the CRM is recognised by the bank, the adjusted risk weight will not be less than that of a comparable direct exposure to the protection provider. Consistent with the standardised approach, banks may choose not to recognise credit protection if doing so would result in a higher capital requirement. [BCBS June 2006 par 301]

### *Recognition under the foundation approach*

132. For banks using the foundation approach for LGD, the approach to guarantees and credit derivatives closely follows the treatment under the standardised approach as specified in paragraphs 75 to 92. The range of eligible guarantors is the same as under the standardised approach except that companies that are internally rated and associated with a PD equivalent to A- or better may also be recognised under the foundation approach. To receive recognition, the requirements outlined in paragraphs 75 to 82 must be met. [BCBS June 2006 par 302]

133. Eligible guarantees from eligible guarantors will be recognised as follows:

- For the covered portion of the exposure, a risk weight is derived by taking:
  - the risk-weight function appropriate to the type of guarantor, and



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- the PD appropriate to the guarantor's borrower grade, or some grade between the underlying obligor and the guarantor's borrower grade if the bank deems a full substitution treatment not to be warranted.
  - The bank may replace the LGD of the underlying transaction with the LGD applicable to the guarantee taking into account seniority and any collateralisation of a guaranteed commitment.
- [BCBS June 2006 par 303]

### OSFI Notes

134. Although the PD component may be adjusted to lie somewhere between those of the guarantor and the obligor if the guarantor's PD is not appropriate, note that LGD may only be substituted and may not be adjusted.

135. Paragraph 131 establishes a floor on the recognition of a guarantee. Therefore, the PD and LGD used for the covered portion of an exposure under the foundation approach must not result in a risk weight that is lower than that of a comparable direct exposure to the guarantor. While substituting both the PD and LGD of the guarantor for those of the borrower will result in a risk weight equal to that of a direct exposure to the guarantor, replacing or adjusting only one of these components could result in a risk weight that is lower. Paragraph 133 notwithstanding, institutions are not permitted to combine a risk component of the guarantor with a component of the underlying obligation in the risk weight formula if doing so results in a risk weight lower than that of a comparable direct exposure to the guarantor.

136. The uncovered portion of the exposure is assigned the risk weight associated with the underlying obligor. [BCBS June 2006 par 304]

137. Where partial coverage exists, or where there is a currency mismatch between the underlying obligation and the credit protection, it is necessary to split the exposure into a covered and an uncovered amount. The treatment in the foundation approach follows that outlined in the standardised approach in paragraphs 88 to 90, and depends upon whether the cover is proportional or tranching. [BCBS June 2006 par 305]

#### *Recognition under the advanced approach*

138. Banks using the advanced approach for estimating LGDs may reflect the risk-mitigating effect of guarantees and credit derivatives through either adjusting PD or LGD estimates. Whether adjustments are done through PD or LGD, they must be done in a consistent manner for a given guarantee or credit derivative type. In doing so, banks must not include the effect of double default in such adjustments. Thus, the adjusted risk weight must not be less than that of a comparable direct exposure to the protection provider. [BCBS June 2006 par 306]

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## OSFI Notes

139. Under all circumstances, with the exception of transactions qualifying for double default treatment, the risk weight of a guaranteed exposure cannot be lower than that of a comparable direct claim on the guarantor. This assumes that any claim on the guarantor will be net of any recovery from the collateral pledged by the borrower, and reflects the Basel Committee's explanation of why it prohibits the recognition of double recovery in the double default framework.

140. In determining the risk weight for a comparable direct exposure, banks should take into account both the seniority and the exposure at default of the direct exposure.

141. When an adjustment is made to PD, the risk weight function used for the guaranteed exposure should be that of the protection provider. However, when an adjustment is made to LGD the risk weight function used must be the one applicable to the original exposure.

142. A bank relying on own-estimates of LGD has the option to adopt the treatment outlined above for banks under the foundation IRB approach (paragraphs 132 to 137), or to make an adjustment to its LGD estimate of the exposure to reflect the presence of the guarantee or credit derivative. Under this option, there are no limits to the range of eligible guarantors although the set of minimum requirements provided in paragraphs 163 to 165 concerning the type of guarantee must be satisfied. For credit derivatives, the requirements of paragraphs 169 and 170 must be satisfied.<sup>26</sup> [BCBS June 2006 par 307]

### *Operational requirements for recognition of double default*

143. 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 Chapter 6 – Credit Risk- Internal Ratings Based Approach, section 6.3.1 paragraphs 100 may be applied subject to the additional operational requirements set out in paragraph 144. A bank may decide separately for each eligible exposure to apply either the double default framework or the substitution approach.

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

[BCBS June 2006 par 307 (i)]

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<sup>26</sup> When credit derivatives do not cover the restructuring of the underlying obligation, the partial recognition set out in paragraph 80 applies.

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144. 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<sup>27</sup>, investment firm or insurance company (but only those that are in the business of providing credit protection, including mono-lines, re-insurers, and non-sovereign credit export agencies<sup>28</sup>), referred to as a financial firm, that:
  - is regulated in a manner broadly equivalent to that in this 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;
  - had an internal rating with a PD equivalent to or lower than that associated with an external A– rating at the time the credit protection for an exposure was first provided or for any period of time thereafter; and
  - has an internal rating with a PD equivalent to or lower than that associated with an external investment-grade rating.
- (c) The underlying obligation is:
  - a corporate exposure as defined in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.2.1, (i)(excluding specialised lending exposures for which the supervisory slotting criteria approach described in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.3.1, (iii); or
  - a claim on a PSE that is not a sovereign exposure as defined in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.2.1 (ii); or
  - a loan extended to a small business and classified as a retail exposure as defined in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.2.1, (iv) .
- (d) The underlying obligor is **not**:
  - a financial firm as defined in (b); or
  - a member of the same group as the protection provider.
- (e) The credit protection meets the minimum operational requirements for such instruments as outlined in paragraphs 75 to 81.
- (f) In keeping with paragraph 76 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

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<sup>27</sup> This does not include PSEs and MDBs, even though claims on these may be treated as claims on banks according to Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.2.1, (iii) .

<sup>28</sup> By non-sovereign it is meant that credit protection in question does not benefit from any explicit sovereign counter-guarantee.

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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 portion of an 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.
- (k) There is no excessive correlation between the creditworthiness of a protection provider and the obligor of the underlying exposure due to their performance being dependent on common factors beyond the systematic risk factor. The bank has a process to detect such excessive correlation. An example of a situation in which such excessive correlation would arise is when a protection provider guarantees the debt of a supplier of goods or services and the supplier derives a high proportion of its income or revenue from the protection provider.

[BCBS June 2006 par 307 (ii)]

#### *Exposure at default (EAD)*

145. The following sections apply to both on and off-balance sheet positions. All exposures are measured gross of specific allowances<sup>29</sup>. The EAD on drawn amounts should not be less than the sum of (i) the amount by which a bank's regulatory capital would be reduced if the exposure were written-off fully, and (ii) any specific allowances. When the difference between the instrument's EAD and the sum of (i) and (ii) is positive, this amount is termed a discount. The calculation of risk-weighted assets is independent of any discounts. Under the limited circumstances described in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.7.2, (i), discounts may be included in the measurement of total eligible allowances for purposes of the EL-provision calculation set out in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.7. [BCBS June 2006 par 308]

#### *Exposure measurement for on-balance sheet items*

146. On-balance sheet netting of loans and deposits will be recognised subject to the same conditions as under the standardised approach (see paragraph 74). Where currency or maturity mismatched on-balance sheet netting exists, the treatment follows the standardised approach, as set out in paragraphs 90 to 91 and 93 to 96. [BCBS June 2006 par 309]

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<sup>29</sup> Under IFRS 9, Stage 3 allowances and partial write-offs are considered to be specific allowances, while Stage 1 and Stage 2 allowances are considered to be general allowances.

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## 5.2.6. Rules for retail exposures

### *Recognition of guarantees and credit derivatives*

147. Banks may reflect the risk-reducing effects of guarantees and credit derivatives, either in support of an individual obligation or a pool of exposures, through an adjustment of either the PD or LGD estimate, subject to the minimum requirements in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.7, (ix). Whether adjustments are done through PD or LGD, they must be done in a consistent manner for a given guarantee or credit derivative type. [BCBS June 2006 par 332]

148. Consistent with the requirements outlined above for corporate, sovereign, and bank exposures, banks must not include the effect of double default in such adjustments. The adjusted risk weight must not be less than that of a comparable direct exposure to the protection provider. Consistent with the standardised approach, banks may choose not to recognise credit protection if doing so would result in a higher capital requirement. [BCBS June 2006 par 333]

149. On-balance sheet netting of loans and deposits of a bank to or from a retail customer will be permitted subject to the same conditions outlined in paragraph 74 of the standardised approach. For retail off-balance sheet items, banks must use their own estimates of CCFs provided the minimum requirements in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.7, (viii) are satisfied. [BCBS June 2006 par 335]

## 5.2.7. Rules for purchased receivables

150. Credit risk mitigants will be recognised generally using the same type of framework as set forth in paragraphs 130 to 142.<sup>30</sup> In particular, a guarantee provided by the seller or a third party will be treated using the existing IRB rules for guarantees, regardless of whether the guarantee covers default risk, dilution risk, or both.

- If the guarantee covers both the pool's default risk *and* dilution risk, the bank will substitute the risk weight for an exposure to the guarantor in place of the pool's total risk weight for default and dilution risk.
- If the guarantee covers only default risk or dilution risk, but not both, the bank will substitute the risk weight for an exposure to the guarantor in place of the pool's risk weight for the corresponding risk component (default or dilution). The capital requirement for the other component will then be added.
- If a guarantee covers only a portion of the default and/or dilution risk, the uncovered portion of the default and/or dilution risk will be treated as per the existing CRM rules for proportional or tranching coverage (i.e. the risk weights of the uncovered risk components will be added to the risk weights of the covered risk components).

[BCBS June 2006 par 373]

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<sup>30</sup> At national supervisory discretion, banks may recognise guarantors that are internally rated and associated with a PD equivalent to less than A- under the foundation IRB approach for purposes of determining capital requirements for dilution risk.

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### 5.2.8. Risk quantification

*Minimum requirements for assessing effect of guarantees and credit derivatives. Standards for corporate, sovereign, and bank exposures where own estimates of LGD are used and standards for retail exposures.*

#### *Guarantees*

151. When a bank uses its own estimates of LGD, it may reflect the risk-mitigating effect of guarantees through an adjustment to PD or LGD estimates. The option to adjust LGDs is available only to those banks that have been approved to use their own internal estimates of LGD. For retail exposures, where guarantees exist, either in support of an individual obligation or a pool of exposures, a bank may reflect the risk-reducing effect either through its estimates of PD or LGD, provided this is done consistently. In adopting one or the other technique, a bank must adopt a consistent approach, both across types of guarantees and over time. [BCBS June 2006 par 480]

#### **OSFI Notes**

152. The risk-mitigating benefits of collateral from both borrowers and guarantors can be recognized for capital purposes only if an institution can establish that it can simultaneously and independently realize on both the collateral and guarantee. A guarantee is normally obtained to perfect an interest in collateral. In this case, the risk mitigation effect of the collateral, not the guarantee will be recognized.

153. Any recognition of the mitigating effect of a guarantee arrangement under the Canada Small Business Financing Act must recognize the risk of non-performance by the guarantor due to a cap on the total claims that can be made on defaulted loans covered by the guarantee arrangement.

154. The following requirements will apply to banks that reflect the effect of guarantees through adjustments to LGD:

155. No recognition of double default: Paragraphs 138 - 142 of the Framework permit banks to adjust either PD or LGD to reflect guarantees, but paragraphs 138 and 162 stipulate that the risk weight resulting from these adjustments must not be lower than that of a comparable exposure to the guarantor. A bank using LGD adjustments must demonstrate that its methodology does not incorporate the effects of double default. Furthermore, the bank must demonstrate that its LGD adjustments do not incorporate implicit assumptions about the correlation of guarantor default to that of the obligor. (Although paragraph 142 and Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.3.1, paragraph 100 permit recognition of double default in some instances, they stipulate that it must be recognized through adjustments to PD, not LGD. LGD adjustments will not be permitted for exposures that are recognised under the double default framework).



156. No recognition of double recovery: Under the double default framework, banks are prohibited from recognizing double recovery from both collateral and a guarantee on the same exposure. Since collateral is reflected through an adjustment to LGD, a bank using a separate adjustment to LGD to reflect a guarantee must be able to distinguish the effects of the two sources of mitigation and to demonstrate that its methodology does not incorporate double recovery.

157. Requirement to track guarantor PDs: Any institution that measures credit risk comprehensively must track exposures to guarantors for the purpose of assessing concentration risk, and by extension must still track the guarantors' PDs.

158. Requirement to recognize the possibility of guarantor default in the adjustment: Any LGD adjustment must fully reflect the likelihood of guarantor default – a bank may not assume that the guarantor will always perform under the guarantee. For this purpose, it will not be sufficient only to demonstrate that the risk weight resulting from an LGD adjustment is no lower than that of the guarantor.

159. Requirement for credible data: Any estimates used in an LGD adjustment must be based on credible, relevant data, and the relation between the source data and the amount of the adjustment should be transparent. Banks should also analyse the degree of uncertainty inherent in the source data and resulting estimates.

160. Use of consistent methodology for similar types of guarantees: Under paragraph 138, a bank must use the same method for all guarantees of a given type. This means that a bank will be required to have one single method for guarantees, one for credit default swaps, one for insurance, and so on. Banks will not be permitted to selectively choose the exposures having a particular type of guarantee to receive an LGD adjustment, and any adjustment methodology must be broadly applicable to all exposures that are mitigated in the same way.

161. In all cases, both the borrower and all recognised guarantors must be assigned a borrower rating at the outset and on an ongoing basis. A bank must follow all minimum requirements for assigning borrower ratings set out in this document, including the regular monitoring of the guarantor's condition and ability and willingness to honour its obligations. Consistent with the requirements in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.4, (iv) , a bank must retain all relevant information on the borrower absent the guarantee and the guarantor. In the case of retail guarantees, these requirements also apply to the assignment of an exposure to a pool, and the estimation of PD. [BCBS June 2006 par 481]

162. In no case can the bank assign the guaranteed exposure an adjusted PD or LGD such that the adjusted risk weight would be lower than that of a comparable, direct exposure to the guarantor. Neither criteria nor rating processes are permitted to consider possible favourable effects of imperfect expected correlation between default events for the borrower and guarantor for purposes of regulatory minimum capital requirements. As such, the adjusted risk weight must not reflect the risk mitigation of “double default.” [BCBS June 2006 par 482]

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*Eligible guarantors and guarantees*

163. There are no restrictions on the types of eligible guarantors. The bank must, however, have clearly specified criteria for the types of guarantors it will recognise for regulatory capital purposes. [BCBS June 2006 par 483]

**OSFI Notes**

164. An institution may not reduce the risk weight of an exposure to a third party on account of a guarantee or credit protection provided by a related party (parent, subsidiary or affiliate) of the institution. This treatment follows the principle that guarantees within a corporate group are not a substitute for capital. . An exception is made for self-liquidating trade-related transactions that have a tenure of 360 days or less, are market-driven and are not structured to avoid the requirements of OSFI guidelines. The requirement that the transaction be "market-driven" necessitates that the guarantee or letter of credit is requested and paid for by the customer and/or that the market requires the guarantee in the normal course.

165. The guarantee must be evidenced in writing, non-cancellable on the part of the guarantor, in force until the debt is satisfied in full (to the extent of the amount and tenor of the guarantee) and legally enforceable against the guarantor in a jurisdiction where the guarantor has assets to attach and enforce a judgement. However, in contrast to the foundation approach to corporate, bank, and sovereign exposures, guarantees prescribing conditions under which the guarantor may not be obliged to perform (conditional guarantees) may be recognised under certain conditions. Specifically, the onus is on the bank to demonstrate that the assignment criteria adequately address any potential reduction in the risk mitigation effect. [BCBS June 2006 par 484]

*Adjustment criteria*

166. A bank must have clearly specified criteria for adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools) to reflect the impact of guarantees for regulatory capital purposes. These criteria must be as detailed as the criteria for assigning exposures to grades consistent with Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.3, (iii)a, and must follow all minimum requirements for assigning borrower or facility ratings set out in this document. [BCBS June 2006 par 485]

167. The criteria must be plausible and intuitive, and must address the guarantor's ability and willingness to perform under the guarantee. The criteria must also address the likely timing of any payments and the degree to which the guarantor's ability to perform under the guarantee is correlated with the borrower's ability to repay. The bank's criteria must also consider the extent to which residual risk to the borrower remains, for example a currency mismatch between the guarantee and the underlying exposure. [BCBS June 2006 par 486]

168. In adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools), banks must take all relevant available information into account. [BCBS June 2006 par 2487]



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### *Credit derivatives*

169. The minimum requirements for guarantees are relevant also for single-name credit derivatives. Additional considerations arise in respect of asset mismatches. The criteria used for assigning adjusted borrower grades or LGD estimates (or pools) for exposures hedged with credit derivatives must require that the asset on which the protection is based (the reference asset) cannot be different from the underlying asset, unless the conditions outlined in the foundation approach are met. [BCBS June 2006 par 488]

170. In addition, the criteria must address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries. The bank must also consider the extent to which other forms of residual risk remain. [BCBS June 2006 par 489]

### *For banks using foundation LGD estimates*

171. The minimum requirements outlined in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.7, (ix) apply to banks using the foundation LGD estimates with the following exceptions:

- (1) The bank is not able to use an ‘LGD-adjustment’ option; and
- (2) The range of eligible guarantees and guarantors is limited to those outlined in paragraph 132.

[BCBS June 2006 par 490]

### *Requirements specific to estimating PD and LGD (or EL) for qualifying purchased receivables*

172. The following minimum requirements for risk quantification must be satisfied for any purchased receivables (corporate or retail) making use of the top-down treatment of default risk and/or the IRB treatments of dilution risk. [BCBS June 2006 par 491]

173. The purchasing bank will be required to group the receivables into sufficiently homogeneous pools so that accurate and consistent estimates of PD and LGD (or EL) for default losses and EL estimates of dilution losses can be determined. In general, the risk bucketing process will reflect the seller’s underwriting practices and the heterogeneity of its customers. In addition, methods and data for estimating PD, LGD, and EL must comply with the existing risk quantification standards for retail exposures. In particular, quantification should reflect all information available to the purchasing bank regarding the quality of the underlying receivables, including data for similar pools provided by the seller, by the purchasing bank, or by external sources. The purchasing bank must determine whether the data provided by the seller are consistent with expectations agreed upon by both parties concerning, for example, the type, volume and on-going quality of receivables purchased. Where this is not the case, the purchasing bank is expected to obtain and rely upon more relevant data. [BCBS June 2006 par 492]

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### 5.2.9. Other Collateral for IRB

174. Banks under the foundation IRB approach, which do not meet the requirements for own-estimates of LGD and EAD, above, must meet the minimum requirements described in the standardised approach to receive recognition for eligible financial collateral. They must meet the following additional minimum requirements in order to receive recognition for additional collateral types. [BCBS June 2006 par 506]

#### (i) Definition of eligibility of CRE and RRE as collateral

175. Eligible CRE and RRE collateral for corporate, sovereign and bank exposures are defined as:

- Collateral where the risk of the borrower is not materially dependent upon the performance of the underlying property or project, but rather on the underlying capacity of the borrower to repay the debt from other sources. As such, repayment of the facility is not materially dependent on any cash flow generated by the underlying CRE/RRE serving as collateral;<sup>31</sup> and
- Additionally, the value of the collateral pledged must not be materially dependent on the performance of the borrower. This requirement is not intended to preclude situations where purely macro-economic factors affect both the value of the collateral and the performance of the borrower.

[BCBS June 2006 par 507]

176. In light of the generic description above and the definition of corporate exposures, income producing real estate that falls under the SL asset class is specifically excluded from recognition as collateral for corporate exposures.<sup>32</sup> [BCBS June 2006 par 508]

#### (ii) Operational requirements for eligible CRE/RRE

177. Subject to meeting the definition above, CRE and RRE will be eligible for recognition as collateral for corporate claims only if all of the following operational requirements are met.

- *Legal enforceability*: any claim on a collateral taken must be legally enforceable in all relevant jurisdictions, and any claim on collateral must be properly filed on a timely basis. Collateral interests must reflect a perfected lien (i.e. all legal requirements for establishing the claim have been fulfilled). Furthermore, the collateral agreement and the

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<sup>31</sup> The Committee recognises that in some countries where multifamily housing makes up an important part of the housing market and where public policy is supportive of that sector, including specially established public sector companies as major providers, the risk characteristics of lending secured by mortgage on such residential real estate can be similar to those of traditional corporate exposures. The national supervisor may under such circumstances recognise mortgage on multifamily residential real estate as eligible collateral for corporate exposures.

<sup>32</sup> As noted in footnote 23, in exceptional circumstances for well-developed and long-established markets, mortgages on office and/or multi-purpose commercial premises and/or multi-tenanted commercial premises may have the potential to receive recognition as collateral in the corporate portfolio.

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legal process underpinning it must be such that they provide for the bank to realise the value of the collateral within a reasonable timeframe.

- *Objective market value of collateral:* the collateral must be valued at or less than the current fair value under which the property could be sold under private contract between a willing seller and an arm's-length buyer on the date of valuation.
- *Frequent revaluation:* the bank is expected to monitor the value of the collateral on a frequent basis and at a minimum once every year. More frequent monitoring is suggested where the market is subject to significant changes in conditions. Statistical methods of evaluation (e.g. reference to house price indices, sampling) may be used to update estimates or to identify collateral that may have declined in value and that may need re-appraisal. A qualified professional must evaluate the property when information indicates that the value of the collateral may have declined materially relative to general market prices or when a credit event, such as default, occurs.
- *Junior liens:* In some member countries, eligible collateral will be restricted to situations where the lender has a first charge over the property.<sup>33</sup> Junior liens may be taken into account where there is no doubt that the claim for collateral is legally enforceable and constitutes an efficient credit risk mitigant. When recognised, junior liens are to be treated using the C\*/C\*\* threshold, which is used for senior liens. In such cases, the C\* and C\*\* are calculated by taking into account the sum of the junior lien and all more senior liens.

[BCBS June 2006 par 509]

#### OSFI Notes

178. Residential and commercial real estate may be recognized as collateral for FIRB only when the institution's collateral interest is the first lien on the property, and there is no more senior or intervening claim. Junior liens are recognized as collateral only where the institution holds the senior lien and where no other party holds an intervening lien on the property.

179. Additional collateral management requirements are as follows:

- The types of CRE and RRE collateral accepted by the bank and lending policies (advance rates) when this type of collateral is taken must be clearly documented.
- The bank must take steps to ensure that the property taken as collateral is adequately insured against damage or deterioration.
- The bank must monitor on an ongoing basis the extent of any permissible prior claims (e.g. tax) on the property.
- The bank must appropriately monitor the risk of environmental liability arising in respect of the collateral, such as the presence of toxic material on a property.

[BCBS June 2006 par 510]

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<sup>33</sup> In some of these jurisdictions, first liens are subject to the prior right of preferential creditors, such as outstanding tax claims and employees' wages.

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### (iii) Requirements for recognition of financial receivables

#### *Definition of eligible receivables*

180. Eligible financial receivables are claims with an original maturity of less than or equal to one year where repayment will occur through the commercial or financial flows related to the underlying assets of the borrower. This includes both self-liquidating debt arising from the sale of goods or services linked to a commercial transaction and general amounts owed by buyers, suppliers, renters, national and local governmental authorities, or other non-affiliated parties not related to the sale of goods or services linked to a commercial transaction. Eligible receivables do not include those associated with securitisations, sub-participations or credit derivatives. [BCBS June 2006 par 511]

#### *Operational requirements*

##### *Legal certainty*

181. The legal mechanism by which collateral is given must be robust and ensure that the lender has clear rights over the proceeds from the collateral. [BCBS June 2006 par 512]

182. Banks must take all steps necessary to fulfil local requirements in respect of the enforceability of security interest, e.g. by registering a security interest with a registrar. There should be a framework that allows the potential lender to have a perfected first priority claim over the collateral. [BCBS June 2006 par 513]

183. All documentation used in collateralised transactions must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability. [BCBS June 2006 par 514]

184. The collateral arrangements must be properly documented, with a clear and robust procedure for the timely collection of collateral proceeds. Banks' procedures should ensure that any legal conditions required for declaring the default of the customer and timely collection of collateral are observed. In the event of the obligor's financial distress or default, the bank should have legal authority to sell or assign the receivables to other parties without consent of the receivables' obligors. [BCBS June 2006 par 515]

#### *Risk management*

185. The bank must have a sound process for determining the credit risk in the receivables. Such a process should include, among other things, analyses of the borrower's business and industry (e.g. effects of the business cycle) and the types of customers with whom the borrower does business. Where the bank relies on the borrower to ascertain the credit risk of the customers, the bank must review the borrower's credit policy to ascertain its soundness and credibility. [BCBS June 2006 par 516]

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186. The margin between the amount of the exposure and the value of the receivables must reflect all appropriate factors, including the cost of collection, concentration within the receivables pool pledged by an individual borrower, and potential concentration risk within the bank's total exposures. [BCBS June 2006 par 517]

187. The bank must maintain a continuous monitoring process that is appropriate for the specific exposures (either immediate or contingent) attributable to the collateral to be utilised as a risk mitigant. This process may include, as appropriate and relevant, ageing reports, control of trade documents, borrowing base certificates, frequent audits of collateral, confirmation of accounts, control of the proceeds of accounts paid, analyses of dilution (credits given by the borrower to the issuers) and regular financial analysis of both the borrower and the issuers of the receivables, especially in the case when a small number of large-sized receivables are taken as collateral. Observance of the bank's overall concentration limits should be monitored. Additionally, compliance with loan covenants, environmental restrictions, and other legal requirements should be reviewed on a regular basis. [BCBS June 2006 par 518]

188. The receivables pledged by a borrower should be diversified and not be unduly correlated with the borrower. Where the correlation is high, e.g. where some issuers of the receivables are reliant on the borrower for their viability or the borrower and the issuers belong to a common industry, the attendant risks should be taken into account in the setting of margins for the collateral pool as a whole. Receivables from affiliates of the borrower (including subsidiaries and employees) will not be recognised as risk mitigants. [BCBS June 2006 par 519]

189. The bank should have a documented process for collecting receivable payments in distressed situations. The requisite facilities for collection should be in place, even when the bank normally looks to the borrower for collections. [BCBS June 2006 par 520]

#### *Requirements for recognition of other collateral*

190. Supervisors may allow for recognition of the credit risk mitigating effect of certain other physical collateral. Each supervisor will determine which, if any, collateral types in its jurisdiction meet the following two standards:

- Existence of liquid markets for disposal of collateral in an expeditious and economically efficient manner.
- Existence of well established, publicly available market prices for the collateral. Supervisors will seek to ensure that the amount a bank receives when collateral is realised does not deviate significantly from these market prices.

[BCBS June 2006 par 521]

191. In order for a given bank to receive recognition for additional physical collateral, it must meet all the standards in Chapter 6 – Credit Risk – Internal Ratings Based Approach, section 6.8.9, (ii), subject to the following modifications.

- First Claim: With the sole exception of permissible prior claims specified in footnote 24, only first liens on, or charges over, collateral are permissible. As such, the bank must have priority over all other lenders to the realised proceeds of the collateral.

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- The loan agreement must include detailed descriptions of the collateral plus detailed specifications of the manner and frequency of revaluation.
  - The types of physical collateral accepted by the bank and policies and practices in respect of the appropriate amount of each type of collateral relative to the exposure amount must be clearly documented in internal credit policies and procedures and available for examination and/or audit review.
  - Bank credit policies with regard to the transaction structure must address appropriate collateral requirements relative to the exposure amount, the ability to liquidate the collateral readily, the ability to establish objectively a price or market value, the frequency with which the value can readily be obtained (including a professional appraisal or valuation), and the volatility of the value of the collateral. The periodic revaluation process must pay particular attention to “fashion-sensitive” collateral to ensure that valuations are appropriately adjusted downward of fashion, or model-year, obsolescence as well as physical obsolescence or deterioration.
  - In cases of inventories (e.g. raw materials, finished goods, dealers’ inventories of autos) and equipment, the periodic revaluation process must include physical inspection of the collateral.

[BCBS June 2006 par 522]

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## ***Appendix 5-1 - Overview of Methodologies for the Capital Treatment of Transactions Secured by Financial Collateral under the Standardised and IRB Approaches***

[BCBS June 2006 Annex 10]

1. The rules set forth in the standardised approach – Credit Risk Mitigation (CRM), for collateralised transactions generally determine the treatment under both the standardised and the foundation internal ratings-based (IRB) approaches for claims in the banking book that are secured by financial collateral of sufficient quality. Banks using the advanced IRB approach will typically take financial collateral on banking book exposures into account by using their own internal estimates to adjust the exposure's loss given default (LGD). One exception for a bank using the advanced IRB approach pertains to the recognition of repo-style transactions subject to a master netting agreement, as discussed below.
2. Collateralised exposures that take the form of repo-style transactions (i.e. repo/reverse repos and securities lending/borrowing) are subject to special considerations. Such transactions that are held in the trading book are subject to a counterparty risk capital charge as described below. Further, all banks, including those using the advanced IRB approach, must follow the methodology in the CRM section, which is outlined below, for repo-style transactions booked in either the banking book or trading book that are subject to master netting agreements if they wish to recognise the effects of netting for capital purposes.

### **Standardised and Foundation IRB Approaches**

3. Banks under the standardised approach may use either the simple approach or the comprehensive approach for determining the appropriate risk weight for a transaction secured by eligible financial collateral. Under the simple approach, the risk weight of the collateral substitutes for that of the counterparty. Apart from a few types of very low risk transactions, the risk weight floor is 20%. Under the foundation IRB approach, banks may only use the comprehensive approach.
4. Under the comprehensive approach, eligible financial collateral reduces the amount of the exposure to the counterparty. The amount of the collateral is decreased and, where appropriate, the amount of the exposure is increased through the use of haircuts, to account for potential changes in the market prices of securities and foreign exchange rates over the holding period. This results in an adjusted exposure amount,  $E^*$ . Banks may either use supervisory haircuts set by the Committee or, subject to qualifying criteria, rely on their "own" estimates of haircuts. Where the supervisory holding period for calculating the haircut amounts differs from the holding period set down in the rules for that type of collateralised transaction, the haircuts are to be scaled up or down as appropriate. Once  $E^*$  is calculated, the standardised bank will assign that amount a risk weight appropriate to the counterparty. For transactions secured by financial collateral other than repos subject to a master netting agreement, foundation IRB banks are to use  $E^*$  to adjust the LGD on the exposure.



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## Special Considerations for Repo-Style Transactions

5. Repo-style transactions booked in the trading book, will, like OTC derivatives held in the trading book, be subject to a counterparty credit risk charge. In calculating this charge, a bank under the standardised approach must use the comprehensive approach to collateral; the simple approach will not be available.

6. The capital treatment for repo-style transactions that are not subject to master netting agreements is the same as that for other collateralised transactions. However, for banks using the comprehensive approach, national supervisors have the discretion to determine that a haircut of zero may be used where the transaction is with a core market participant and meets certain other criteria (so-called carve-out treatment). Where repo-style transactions are subject to a master netting agreement whether they are held in the banking book or trading book, a bank may choose not to recognise the netting effects in calculating capital. In that case, each transaction will be subject to a capital charge as if there were no master netting agreement.

7. If a bank wishes to recognise the effects of master netting agreements on repo-style transactions for capital purposes, it must apply the treatment the CRM section sets forth in that regard on a counterparty-by-counterparty basis. This treatment would apply to all repo-style transactions subject to master netting agreements, regardless of whether the bank is under the standardised, foundation IRB, or advanced IRB approach and regardless of whether the transactions are held in the banking or trading book. Under this treatment, the bank would calculate  $E^*$  as the sum of the net current exposure on the contract plus an add-on for potential changes in security prices and foreign exchange rates. The add-on may be determined through the supervisory haircuts or, for those banks that meet the qualifying criteria, own estimate haircuts or an internal VaR model. The carve-out treatment for haircuts on repo-style transactions may not be used where an internal VaR model is applied.

8. The calculated  $E^*$  is in effect an unsecured loan equivalent amount that would be used for the exposure amount under the standardised approach and the exposure at default (EAD) value under both the foundation and advanced IRB approaches.  $E^*$  is used for EAD under the IRB approaches, thus would be treated in the same manner as the credit equivalent amount (calculated as the sum of replacement cost plus an add-on for potential future exposure) for OTC derivatives subject to master netting agreements.

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## ***Appendix 5-2 - Credit Derivatives -- Product Types***

[formerly Appendix 4-1]

### ***Description of Credit Derivatives***

1. The most widely used types of credit derivatives are credit default products and total rate-of-return (TROR) swaps. While the timing and structure of the cash flows associated with credit default and TROR swaps differ, the economic substance of both arrangements seek to transfer the credit risk of the asset(s) referenced in the transaction.

2. Another less common form of credit derivative is the credit-linked note, which is an obligation that is based on a reference asset. Credit-linked notes are similar to structured notes with embedded credit derivatives. Credit indicators on the reference asset rather than market price factors influence the payment of interest and principal. If there is a credit event, the repayment of the note's principal is based on the price of the reference asset.

### ***Total Rate-of-Return Swap***

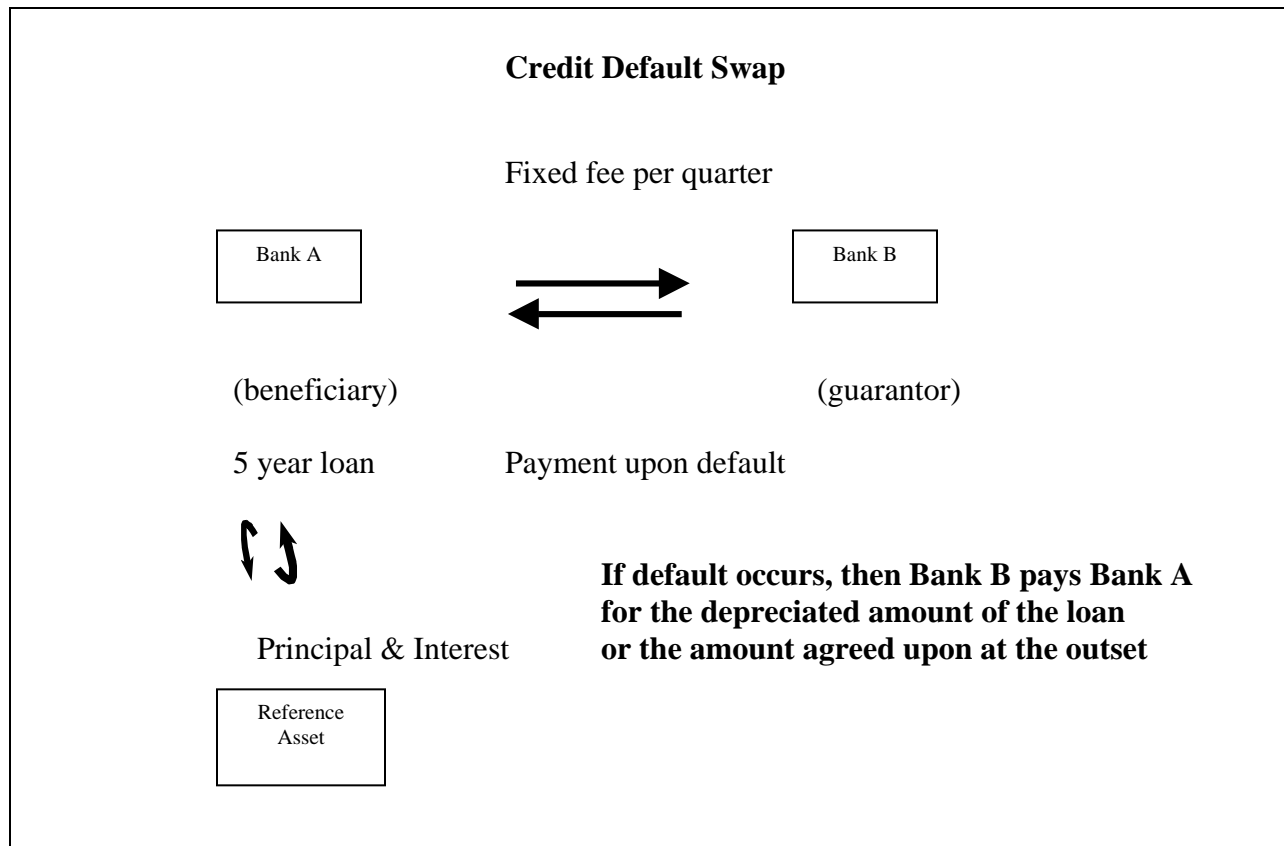
3. In a total rate-of-return (TROR) swap, illustrated below, the beneficiary (Bank A) agrees to pay the guarantor (Bank B) the total return on the reference asset, which consists of all contractual payments, as well as any appreciation in the market value of the reference asset. To complete the swap arrangement, the guarantor agrees to pay LIBOR plus a spread and any depreciation to the beneficiary. The guarantor in a TROR swap could be viewed as having synthetic ownership of the reference asset since it bears the risks and rewards of ownership over the term of the swap.



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## Credit Default Swaps/Products

7. The purpose of a credit default swap, as its name suggests, is to provide protection against credit losses associated with a default on a specified reference asset. The swap purchaser (beneficiary) swaps the credit risk with the provider of the swap (guarantor). While the transaction is called a swap, it is very similar to a guarantee.

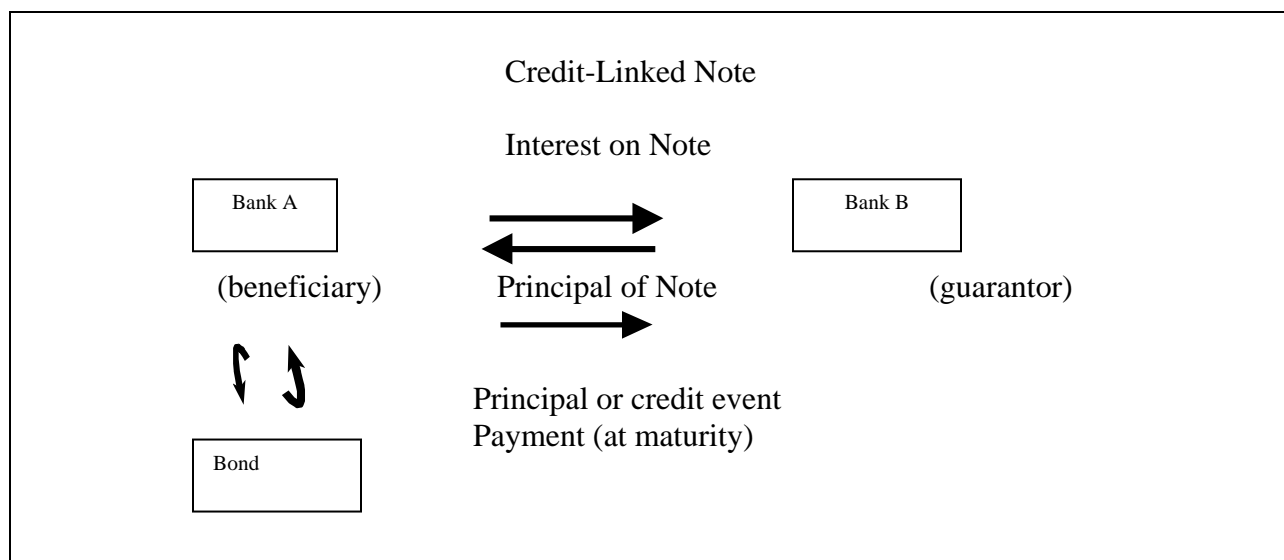


8. In a credit default swap, the beneficiary (Bank A) agrees to pay to the guarantor (Bank B) a fee typically amounting to a certain number of basis points on the par value of the reference asset, either quarterly or annually. In return, the guarantor agrees to pay the beneficiary an agreed upon, market-based, post-default amount or a predetermined fixed percentage of the value of the reference asset if there is a default. The guarantor makes no payment until there is a default. A default is strictly defined in the contract to include, for example, bankruptcy, insolvency, or payment default, and the default event must be publicly verifiable. In some instances, the guarantor need not make payments to the beneficiary until a pre-established amount of loss has been exceeded in conjunction with a default event. This event is often referred to as the maturity of the swap. The amount owed by the guarantor is the difference between the reference asset's initial principal (or notional) amount and the actual market value of the defaulted, reference asset. The method for establishing the post-default market value of the reference asset should be set out in the contract. Often, the market value of the defaulted reference asset may be determined by sampling dealer quotes. The guarantor may have the option to purchase the defaulted underlying asset and pursue a workout with the borrower

directly. Alternatively, the swap may call for a fixed payment in the event of default, for example, 15 per cent of the notional value of the reference asset. The treatment of credit default swaps could differ from a guarantee depending upon the definition of default, the term, and the extent of coverage.

### *Credit-Linked Notes*

9. In a credit-linked note, the beneficiary (Bank A) agrees to pay the guarantor (Bank B) the interest on an issued note referenced to a bond. The guarantor has in this case paid the principal on the note to the issuing bank. If there is no default on the reference bond, the note simply matures at the end of the period. If a credit event occurs on the bond, the note is redeemed, based on the default recovery.



10. A credit-linked note is a securitized version of a credit default swap. The difference between a credit default swap and a credit-linked note is that the beneficiary bank receives the principal payment from the guarantor when the contract is originated.

11. Through the purchase of the credit-linked note, the guarantor (Bank B) assumes the risk of the bond and funds this exposure through the purchase of the note. The guarantor bank takes on the exposure to the beneficiary (Bank A) to the full amount of the funding it has provided. The beneficiary bank hedges its risk on the bond without acquiring any additional credit exposure. Many variations of this product are available.

### *Credit Spread Products*

12. Credit derivative products can also go beyond the credit transfer products described above to include various forms of credit spread products or index related products. These types of instruments tend not to be credit risk management vehicles but rather options that are traded on the credit quality or credit migration of the underlying assets. In these cases, the bank is not

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transferring or hedging its risk but rather attempting to profit from changes in spreads. These products should be treated identically to other option products under Chapter 9 - Market Risk.

