

# Basel Committee on Banking Supervision

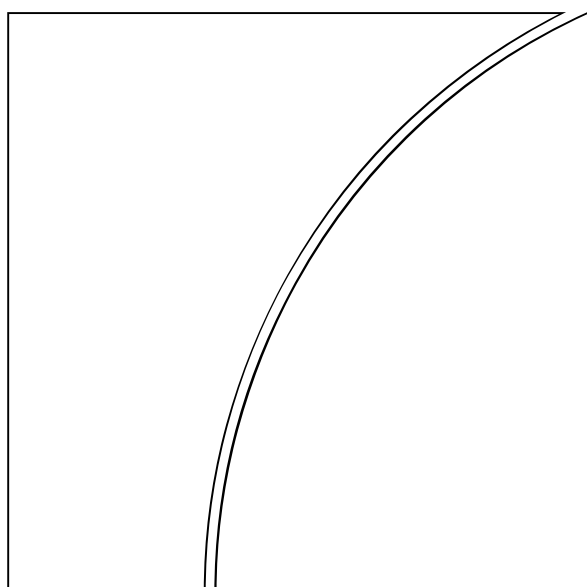
Consultative Document

## **The Standardised Approach to Credit Risk**

Supporting Document  
to the New Basel Capital Accord

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BANK FOR INTERNATIONAL SETTLEMENTS



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# The Standardised Approach to Credit Risk

## INTRODUCTION: OBJECTIVES OF THE STANDARDISED APPROACH

1. This paper, which forms part of the second consultative package on the new capital adequacy framework produced by the Basel Committee on Banking Supervision (the Committee), describes the standardised approach to credit risk in the banking book.

2. The New Basel Capital Accord will continue to be applied to internationally-active banks in the G10 countries. Nevertheless, the Committee expects that its underlying principles should be suitable for application to banks of widely varying levels of complexity and sophistication.

3. In revising the Capital Accord, the Committee realises that a balance between simplicity and accuracy needs to be struck. In recognition that the optimal balance may differ markedly across banks, the Committee is proposing a range of approaches to credit risk, as it has for market risk. Banks will be expected to calculate regulatory capital in a manner that best reflects the current state of their risk measurement and management practices.

4. The standardised approach is the simplest of the three broad approaches to credit risk. The other two approaches are based on banks' internal rating systems – see Supporting Document *Internal Ratings-Based Approach to Credit Risk*. The Committee expects that it will be used for the foreseeable future by a large number of banks around the world.

5. The standardised approach aligns regulatory capital requirements more closely with the key elements of banking risk by introducing a wider differentiation of risk weights and a wider recognition of credit risk mitigation techniques, while avoiding excessive complexity. Accordingly, the standardised approach should produce capital ratios more in line with the actual economic risks that banks are facing, compared to the present Accord. This should improve the incentives for banks to enhance the risk measurement and management capabilities and should also reduce the incentives for regulatory capital arbitrage.

6. This document is in two parts. Part A discusses the calculation of risk weighted assets, and Part B explains the calculation of the credit risk mitigation framework. The treatment of asset securitisation is discussed in a separate document (Supporting Document *Asset Securitisation*).

## A. THE RISK WEIGHTS IN THE STANDARDISED APPROACH

7. Along the lines of the proposals in the consultative paper to the new capital adequacy framework issued in June 1999,<sup>1</sup> the risk weighted assets in the standardised approach will continue to be calculated as the product of the amount of exposures and supervisory determined risk weights. As in the current Accord, the risk weights will be determined by the category of the borrower: sovereign, bank, or corporate. Unlike in the current Accord, there will be no distinction on the sovereign risk weighting depending on whether or not the sovereign is a member of the Organisation for Economic Coordination and

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<sup>1</sup> A *New Capital Adequacy Framework*, Basel Committee on Banking Supervision (June 1999).

Development (OECD). Instead the risk weights for exposures will depend on external credit assessments. The treatment of off-balance sheet exposures will largely remain unchanged, with a few exceptions.

## **MAIN CHANGES FROM THE 1999 CONSULTATIVE PAPER**

8. In light of the comments received during the first consultative period, the June 1999 proposals have been modified, mainly in the following respects:

- A preferential treatment can be extended to short-term inter-bank loans that are denominated and funded in local currency.
- The so-called “sovereign floor” will not be retained to allow for recognition of highly rated banks and corporates. It will, however, be subject to a minimum requirement. Accordingly, exposures to rated banks and corporates that have external ratings higher than those assigned to the sovereign may receive a lower risk weight, subject to a floor of 20%.
- To allow for greater differentiation of risk in corporate claims, a 50% risk weight category will be added for single A rated assets and single B rated assets will be placed in the 150% risk weight.
- The Committee is no longer requiring adherence to the International Monetary Fund (IMF)’s Special Data Dissemination Standards (SDDS), the Basel Committee’s Core Principles for Effective Banking Supervision or the International Organisation of Securities Commissions’ (IOSCO) 30 Objectives and Principles of Securities Regulation as pre-conditions for preferential risk weights.
- A wider scope for defining the contents of the 150% risk weight category is also provided.

9. The details of the risk weights in the standardised approach are discussed below. The structure of the rest of Part A is as follows: (i) risk weights by types of claims, (ii) the recognition process for and eligibility criteria of external credit assessment institutions (ECAIs), and (iii) implementation considerations.

### **1. INDIVIDUAL CLAIMS**

#### ***(i) Sovereign risk weights***

10. The Committee retains its proposal to replace the current Accord with an approach that relies on the sovereign assessments of eligible ECAIs.

11. Claims on sovereigns determined to be of the very highest quality will be eligible for a 0% risk weight. The assessments used should generally be in respect of the sovereign’s long-term domestic rating for domestic currency obligations and foreign rating for foreign currency obligations.

12. The Committee acknowledges the concerns expressed by some commentators regarding the use of external credit assessments, especially credit ratings. However, no alternative has been yet proposed that would be both superior to the current Accord’s OECD/non-OECD distinction and as risk-sensitive as the current proposal. It has also been indicated that the Committee could mitigate concerns on the use of external credit

assessments by providing strict guidance and explicit criteria governing the use of credit assessments. The Committee has clarified the criteria set out in the first Consultative Paper (see section 2: External Credit Assessments).

13. Following the notation<sup>2</sup> used in the June 1999 Consultative Paper, the risk weights of sovereigns would be as follows:

<b>Credit Assessments</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Risk Weights</b>	0%	20%	50%	100%	150%	100%

14. At national discretion, a lower risk weight may be applied to banks' exposures to the sovereign of incorporation denominated in domestic currency and funded<sup>3</sup> in that currency.<sup>4</sup> Where this discretion is exercised, other national supervisory authorities may also permit their banks to apply the same risk weight to domestic currency exposures to this sovereign (or central bank) funded in that currency.

15. To address at least in part the concern expressed over the use of credit ratings and to supplement private sector ratings for sovereign exposures, the Committee is currently exploring the possibility of using the country risk ratings assigned to sovereigns by Export Credit Agencies ("ECAs"). The key advantage of using publicly available export credit agencies' risk scores for sovereigns is that ECA risk scores are available for a far larger number of sovereigns than are private ECAI ratings.

16. A primary function of the ECAs is to insure the country risk, and sometimes also the commercial risk, attached to the provision of export credit to foreign buyers. In April 1999 the OECD introduced a methodology for setting benchmarks for minimum export insurance premiums for country risk. This methodology has been adopted by various countries. Based on an econometric model of three groups of quantitative indicators,<sup>5</sup> the methodology produces a risk classification by assigning individual countries to one of seven risk scores.

17. The Committee proposes that supervisors may recognise the country risk scores assigned to sovereigns by Export Credit Agencies that subscribe to the OECD 1999 methodology and publish their risk scores. Banks may then choose to use the risk scores produced by an ECA (or ECAs) recognised by their supervisor. The OECD 1999 methodology establishes seven risk score categories associated with minimum export insurance premiums. As detailed below, each of those ECA risk scores will correspond to a specific risk weight category (see paragraphs 66 to 68 for a discussion of how to treat

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<sup>2</sup> The notations follow the methodology used by one institution, Standards & Poor's. The paper uses Standard & Poor's credit ratings as an example only; it could equally use those of some other external credit assessment agencies. The ratings used throughout this document, therefore, do not express any preferences or determinations on external assessment institutions on the behalf of the Committee.

<sup>3</sup> This is to say that the bank would also have liabilities denominated in the domestic currency.

<sup>4</sup> This lower risk weight may be extended to the risk weighting of sovereign collateral and guarantees. See sections 2 and 4 of Part B.

<sup>5</sup> These three groups of quantitative indicators are payment experience of a country; financial indicators such as debt-GDP and reserves-imports ratios, and economic indicators such as growth and inflation. See "Export Credit Ratings for Sovereigns", Section II.B of *Credit Ratings and Complementary Sources of Credit Quality Information*, Basel Committee's Research Task Force, February 2000 p.5 for details.

multiple assessments). Where only a risk score which is not associated with a minimum premium is indicated, it will not be recognised for risk weighting purposes. The Committee is proposing that the risk scores will be slotted into the risk weighting categories as in the table below.

<b>ECA risk scores</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4 to 6</b>	<b>7</b>
<b>Risk weights</b>	0%	20%	50%	100%	150%

18. Given the similarity in risk profiles, claims on central banks are assigned the same risk weight as that applicable to their sovereign governments. The Bank for International Settlements (BIS), the International Monetary Fund (IMF), the European Central Bank (ECB) and the European Community will receive the lowest risk weight applicable to sovereigns and central banks.

19. After further reflection, the Committee is no longer calling for adherence to the SDDS set out by the IMF as a pre-condition for preferential risk weights. Judging compliance with these standards is a qualitative exercise and an all-or-nothing judgement may be overly simplistic. Therefore, the Committee does not wish to create a structure in which a sovereign’s or supervisor’s compliance with these fundamental standards would be assessed in a purely mechanical fashion.

**(ii) Risk weights for Non-Central Government Public Sector Entities (PSEs)**

20. Claims on domestic PSEs will be treated as claims on banks of that country. Subject to national discretion, claims on domestic PSEs may also be treated as claims on the sovereigns in whose jurisdictions the PSEs are established. Where this discretion is exercised, other national supervisors may allow their banks to risk weight claims on such PSEs in the same manner.

21. Non-central government PSEs can include different types of institutions, ranging from government agencies and regional governments to government owned corporations. In order to provide some guidance and to delineate the circumstances in which PSEs may receive the more favourable bank or sovereign treatment, the example below shows how PSEs might be categorised, looking at one particular aspect of the PSEs, the revenue raising powers. It should be noted that, given the wide range of PSEs and the significant differences in government structures among different jurisdictions, this is only one example for supervisory authorities in exercising their national discretion. There may be other ways of determining the different treatments for different types of PSEs, for example by focusing on the extent of guarantees provided by the central government.

- 1 Regional governments and local authorities** could qualify for the same treatment as claims on the central government if these governments and local authorities have specific revenue-raising powers and have specific institutional arrangements the effect of which is to reduce their risks of default.
- 2 Administrative bodies responsible to central governments, regional governments or to local authorities and other non-commercial undertakings** owned by the governments or local authorities may not warrant the same treatment as claims on their sovereign if the entities do not have revenue raising powers or



other arrangements as described above. If strict lending rules apply to these entities and a declaration of bankruptcy is not possible because of their special public status, it may be appropriate to treat these claims in the same manner as claims on banks.

- 3 Commercial undertakings** owned by central governments, regional governments or by local authorities may be treated as normal commercial enterprises. If these entities function as a corporate in competitive markets even though the state, a regional authority or a local authority is the major shareholder of these entities, supervisors may decide to attach the risk weights applicable to corporates.

**(iii) Risk weights for multilateral development banks (MDBs)**

22. The risk weights applied to MDBs will be based on external credit assessments as set out under option 2 for treating bank claims explained below. A 0% risk weight will be applied to claims on highly rated MDBs that fulfil to the Committee's satisfaction the criteria provided below. The Committee will continue to evaluate eligibility on a case-by-case basis. The eligibility criteria for MDBs risk weighted at 0% are:

- very high quality long-term issuer ratings, i.e. a majority of an MDB's external assessments must be AAA;
- shareholder structure comprised of a significant proportion of high quality sovereigns with long term issuer credit assessments of AA or better;
- strong shareholder support demonstrated by the amount of paid-in capital contributed by the shareholders; the amount of callable capital the MDBs have the right to call, if required, to repay their liabilities; and continued capital contributions and new pledges from sovereign shareholders;
- adequate level of capital and liquidity (a case-by-case approach is necessary in order to assess whether each institution's capital and liquidity are adequate), and
- strict statutory lending requirements and conservative financial policies, which would include among other conditions a structured approval process, internal creditworthiness and risk concentration limits (per country, sector, and individual exposure and credit category), large exposures approval by the board or a committee of the board, fixed repayment schedules, effective monitoring of use of proceeds, status review process, and rigorous assessment of risk and provisioning to loan loss reserve.

23. The Committee considers that the MDBs currently eligible for a 0% risk weight are:

- The World Bank Group comprised of the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC),
- The Asian Development Bank (ADB),
- The African Development Bank (AfDB),
- The European Bank for Reconstruction and Development (EBRD),
- The Inter-American Development Bank (IADB),
- The European Investment Bank (EIB),
- The Nordic Investment Bank (NIB),
- The Caribbean Development Bank (CDB), and

- The Council of Europe Development Bank (CEDB).

**(iv) Risk weights for banks**

24. As was proposed in the June 1999 Consultative Paper, there will be two options for deciding the risk weights on exposures to banks. National supervisors will apply one option to all banks in their jurisdiction. No claim on an unrated bank may receive a risk weight less than that applied to its sovereign of incorporation.

25. Under the first option, as shown in the table below, all banks incorporated in a given country will be assigned a risk weight one category less favourable than that assigned to claims on the sovereign of incorporation. However, there will be a cap of a 100% risk weight, except for banks incorporated in countries rated below B-, where the risk weight will be capped at 150%.

<b>Credit Assessment of Sovereign</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Sovereign risk weights</b>	0%	20%	50%	100%	150%	100%
<b>Risk weights of Banks</b>	20%	50%	100%	100%	150%	100%

Note: This table does not reflect the potential preferential risk weights banks may be eligible to apply based on paragraphs 14 and 28.

26. The second option bases the risk weighting on the external credit assessment of the bank itself, as shown in the table below. Under this option, a preferential risk weight that is one category more favourable than the risk weight shown in the table below may be applied to claims with an original maturity<sup>6</sup> of three months or less, subject to a floor of 20%. This treatment will be available to both rated and unrated bank claims, but not to banks risk weighted at 150%.

<b>Credit Assessment of Banks</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Risk weights</b>	20%	50%	50%	100%	150%	50%
<b>Risk weights for short-term claims</b>	20%	20%	20%	50%	150%	20%

Note: This table does not reflect the potential preferential risk weights banks may be eligible to apply based on paragraphs 14 and 28).

<sup>6</sup> Supervisors should ensure that claims with (contractual) original maturity under 3 months which are expected to be rolled over (i.e. where the effective maturity is longer than 3 months) do not qualify for this preferential treatment for capital adequacy purposes.

Short-term claims are defined as having an original maturity of three months or less.

27. The Committee is reducing the scope of claims that would receive the preferential risk weight from those with original maturity of 6 months or less, as was proposed in the June 1999 Consultative Paper, to those with original maturity of 3 months or less. This change reflects analysis completed by the Committee which suggests that in practice the upper maturity bound in the short-term inter-bank market is generally three months.

28. In addition, in order to maintain liquidity in local inter-bank markets, the Committee proposes to extend the preferential treatment of domestic government exposures to domestic short-term inter-bank exposures. Accordingly, when the national supervisor has chosen to apply the preferential treatment for claims on the sovereign as described in paragraph 14, it can also assign, under both options 1 and 2, to claims on banks of an original maturity of 3 months or less denominated and funded in the local currency a risk weight that is one category less favourable than that assigned to claims on the sovereign of incorporation.

29. In line with its decision not to require adherence to the SDDS as a prerequisite for risk weighting sovereign claims, the Committee has also decided not to require implementation of the Committee's 25 Core Principles for Effective Banking Supervision as a pre-condition for preferential treatment of bank claims. This decision was made by weighing in the fact that the principles were not designed to result in determinations in a mechanical fashion of whether they have been adequately implemented.

30. The Committee understands that there are cases where a bank or a corporate can have a higher assessment than the sovereign assessment of its home country and that risk weighting exposures to those entities based on such assessments can be justified. Therefore, it will not retain the sovereign floor that was proposed in the June 1999 Consultative Paper.

**(v) Risk weights for securities firms**

31. Claims on securities firms may be treated as claims on banks provided they are subject to supervisory and regulatory arrangements comparable to those under the new capital adequacy framework (including, in particular, risk-based capital requirements<sup>7</sup>).

32. The Committee is no longer proposing to include the implementation of the 30 Objective and Principles of Securities Regulation set out by IOSCO and referenced in the first consultative paper as a condition for receiving a risk weight less than 100%.

**(vi) Risk weights for corporates**

33. The table provided below illustrates the risk weighting of rated corporate claims, including claims on insurance companies. In light of the comments received, a risk weight of 50% has been added and the range of claims risk weighted at 150% has been expanded from the framework in the June 1999 Consultative Paper, aiming at increasing the risk sensitivity of the framework.

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<sup>7</sup> That is capital requirements that are comparable to those applied to banks in this revised Accord. Implicit in the meaning of the word "comparable" is that the securities firm (but not necessarily its parent) is subject to consolidated regulation and supervision with respect to any downstream affiliates.

<b>Credit Assessment</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BB-</b>	<b>Below BB-</b>	<b>Unrated</b>
<b>Risk Weights</b>	20%	50%	100%	150%	100%

34. As with the case of exposure to banks, the Committee will not adopt the sovereign floor that was proposed in the June 1999 Consultative Paper, recognising that there are legitimate cases where a corporate can have a higher assessment than the sovereign assessment of its home country.

35. The standard risk weight for unrated claims on corporates will be 100%. No claim on an unrated corporate may be given a risk weight preferential to that assigned to its sovereign of incorporation.

36. It is evident – and this was commented on by a large number of respondents – that if the risk weighting of unrated exposures is lower than that for low-rated exposures, borrowers with a low rating will have an incentive to give up their solicited rating. There is a risk of adverse selection: for example, if many low-rated corporates give up their ratings, the quality of the average unrated borrower could deteriorate to the extent that a 100% risk weight no longer offers sufficient protection against the credit risk.

37. The Committee must balance awareness of this incentive with consideration of the fact that the majority of corporates – and, in many countries, the majority of banks - do not need to acquire a rating in order to fund their activities. The fact that a borrower is not rated does not, therefore, generally signal low credit quality.

38. In balancing these conflicting considerations, the Committee has decided to assign a 100% risk weight to unrated corporates. This is the same risk weighting that such corporate exposures receive under the 1988 Accord. The Committee emphasises that it does not wish to cause an unwarranted increase in the cost of funding for small and medium-sized businesses, which in most countries are a primary source of job creation and of economic growth.

39. Supervisors should, however, bear in mind that the 100% risk weight for unrated corporates is a floor. In countries where corporates have higher default rates, supervisory authorities should increase the standard risk weight for unrated claims where they judge that a higher risk weight is warranted by the overall default experience in their jurisdiction. As part of the supervisory review process, supervisors may also consider whether the credit quality of corporate claims held by individual banks should warrant a standard risk weight higher than 100%.

**(vii) Risk weights of retail assets**

40. Depending on the outcome of work currently being undertaken in the field of the internal ratings based approach (IRB), the Committee will review the appropriate treatment for retail portfolios in the standardised approach (see Supporting Document *Internal Ratings-Based Approach to Credit Risk*).

**(viii) Risk weights of claims secured by residential property**

41. Lending fully secured by mortgages on residential property that is or will be occupied by the borrower, or that is rented, will continue to be risk weighted at 50%.

**(ix) Risk weights of claims secured on commercial real estate**

42. In view of the experience in numerous countries that commercial property lending has been a recurring cause of troubled assets in the banking industry over the past few decades, the Committee holds to the view that mortgages on commercial real estate do not, in principle, justify other than a 100% weighting of the loans secured.<sup>8</sup>

**(x) Higher risk categories**

43. In addition to the claims on sovereigns, PSEs, banks and securities firms rated below B- and to the claims on corporates rated below BB-, securitisation tranches that are rated between BB+ and BB- as set out in Supporting Document *Asset Securitisation* and the unsecured portion of past due assets net of specific provisioning will be risk weighted at 150%.

44. Banks are expected to establish provisions to cover incurred losses. However, when credit quality deteriorates, the volatility of asset values may increase. Past due status for an asset is often a sign of increased risk. Banks should hold additional capital as a cushion against the potentially higher unexpected losses of an asset that is past due for more than 90 days. The unsecured portion of any past due asset, net of specific provisions, will be risk-weighted at 150%. Eligible collateral and guarantees for the purpose of defining the secured portion of the past due asset will be equivalent to those eligible for credit risk mitigation purposes (see sections 2 and 4 of Part B). There will be a transitional period of three years during which a wider range of collateral may be recognised, subject to national discretion.

45. National supervisors may decide to apply a 150% or higher risk weight reflecting the higher risks associated with some other assets, such as venture capital and private equity investments.

**(xi) Other assets**

46. The treatment of asset related to asset securitisation is stipulated separately (see Supporting Document *Asset Securitisation*). The standardised risk weighting for all other assets will continue to be 100%.

**(xii) Off-balance sheet items**

47. The current framework for calculating the credit exposure of off-balance sheet transactions subject to the standardised approach will be retained, with the following exceptions.

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<sup>8</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 a preferential risk weight of 50 percent for the tranche of the loan that does not exceed the lower of 50 percent of the market value or 60 percent of the mortgage lending value of the property securing the loan. Any exposure beyond these limits will receive a 100% risk weight. This exceptional treatment will be subject to very strict conditions. In particular, two tests must be fulfilled, namely that (i) losses stemming from commercial real estate lending up to the lower of 50 percent of the market value or 60 percent of loan-to-value (LTV) based on mortgage-lending-value (MLV) must not exceed 0.3 percent of the outstanding loans in any given year; and that (ii) overall losses stemming from commercial real estate lending must not exceed 0.5 percent of the outstanding loans in any given year. This is, if either of these tests is not satisfied in a given year, the eligibility to use this treatment will cease and the original eligibility criteria would need to be satisfied again before it could be applied in the future. Countries applying such a treatment must publicly disclose that these and other additional conditions (that are available from the Basel Committee Secretariat) are met.

### *Counterparty risk weightings of OTC derivative*

48. As stated in the June 1999 Consultative Paper, the 50% ceiling on counterparty risk weightings of OTC derivative transactions will no longer apply. This ceiling was founded on the assumption that counterparties to OTC derivatives contracts tend to be first-class names; this assumption is no longer valid. Furthermore, the increased risk-sensitivity of the new standardised approach renders the ceiling needless.

### *Credit conversion factor for short term commitments*

49. The credit conversion factor for business commitments with original maturity up to one year will be 20% as proposed in the June 1999 Consultative Paper. As an exception, a 0% conversion factor will be applied to commitments that are unconditionally cancellable, or that effectively provide for automatic cancellation, due to deterioration in a borrower's creditworthiness, at any time by the bank without prior notice.<sup>9</sup> The credit conversion factor for commitments with original maturity over one year will continue to be 50%.

### *Guaranteed repo-style transactions*

50. A credit conversion factor of 100% will be applied to the lending of banks' securities or the posting of securities as collateral by the bank, including instances where these arise out of repo-style transactions (i.e. repo/reverse repo and securities lending/securities borrowing transactions).<sup>10</sup> See section B. 2. for the calculation of risk weighted assets where the credit converted exposure is secured by eligible collateral. When banks, acting as agents, arrange a repo-style transaction between a customer and a third party and provide a guarantee to the customer that the third party will perform on its obligations, then the risk to the banks is the same as if the banks had entered into a repo-style transaction as principal. In such circumstances, banks would be required to calculate capital requirements as if it were indeed a party to the transaction.

### **(xiii) Maturity**

51. The Committee confirms the view expressed in the June 1999 Consultative paper that, although maturity is one factor that is relevant in the assessment of the credit risk of a claim, it is difficult to pursue greater precision in differentiating among the maturities of claims within the standardised approach given the broad-brush nature of the counterparty risk weighting.

52. The standardised approach is designed to be suitable for application by banks of varying degrees of size and sophistication, and the costs of increasing the complexity of the standardised approach are relatively high. The Committee has concluded that, in general,

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<sup>9</sup> In certain countries, retail commitments are considered unconditionally cancellable if the terms permit the bank to cancel them to the full extent allowable under consumer protection and related legislation.

<sup>10</sup> A repo-style transaction is a transaction that is either a sales of securities with a repurchase agreement (repo) or a collateralised securities lending transaction. A purchase of securities with a resale agreement (reverse repos) and collateralised securities borrowing are the other ends of the transactions, respectively. The proceeds of the sales/repurchase or the collateral can either be cash or securities. These transactions can legally take the form of a sales/purchase or a lending/borrowing transaction and can have different labels in different jurisdictions, but the underlying economics is equivalent to collateralised securities lending/borrowing. The contracts of these transactions typically include clauses to allow remarking i.e. adjustment to the amount of proceeds or collateral in case the value of the securities sold/lent (purchased/borrowed) changes.

the benefits (of improved risk-sensitivity) would be outweighed by the costs (of greater complexity). Despite its improved risk sensitivity, the new standardised approach remains intentionally simple and broad-brush. Therefore, the Committee will not incorporate a maturity dimension throughout the standardised approach. As set out above, the only maturity elements to be included in the standardised approach are the distinction between short-term and long-term commitments, and the distinction between short-term and long-term lending between financial institutions. The other exception is the use of short-term assessments as is discussed below.

## 2. EXTERNAL CREDIT ASSESSMENTS

53. The standardised approach draws on external credit assessments for determining risk weights. Therefore, the soundness and reliability of the institutions performing the assessments are vitally important for the new system to be effective. This section discusses the recognition process and the criteria for eligibility.

### (i) *The recognition process*

54. National supervisors are responsible for determining whether an ECAI meets the criteria listed below. Certain ECAIs may be recognised on a limited basis, e.g. by type of claims or by jurisdiction.

55. Some supervisors may choose to disclose a list of all recognised ECAIs, plus any restrictions which may apply to the use of particular agencies for certain types of exposures. The supervisory process for recognising ECAIs should be made public to avoid unnecessary barriers to entry. Supervisors will have to gain experience in reviewing and recognising rating agencies in the credit risk area. The Committee thus recognises the importance for supervisors of sharing their experiences with the use of credit ratings and continuing dialogue with market participants.

### (ii) *Eligibility criteria*

56. An ECAI must satisfy each of the six criteria presented below. Since all of the eligibility criteria have some subjective elements, it is for supervisors to judge whether each standard has been satisfied. Supervisory judgement is therefore an important element of this process.

57. **Objectivity:** The methodology for assigning credit assessments must be rigorous, systematic, and subject to some form of validation based on historical experience. Moreover, assessments must be subject to ongoing review and responsive to changes in financial condition. Before being recognised by supervisors, an assessment methodology for each market segment, including rigorous backtesting, must have been established for at least one year and preferably three.

58. **Independence:** An ECAI should be independent and should not be subject to political or economic pressures that may influence the rating. The assessment process should be as free as possible from any constraints that could arise in situations where the composition of the board of directors or the shareholder structure of the assessment institution may be seen as creating a conflict of interest.

59. **International access/ Transparency:** The individual assessments should be available to both domestic and foreign institutions with legitimate interests and at equivalent terms. In addition, the general methodology used by the ECAI should be publicly available.

60. **Disclosure:** An ECAI should disclose qualitative and quantitative information as set forth below. Disclosures by ECAs have been designed to ensure that the ratings which banks employ in the allocation of risk weightings are compiled by reputable institutions. An absence of transparency in this context could lead to banks “assessment shopping” for institutions which may give more favourable assessments, leading to misleading indicators of risk exposures and the potential for inadequate capital requirements. Furthermore, such disclosures will underpin the comparability of disclosures across banks. **Qualitative disclosures** enable users to compare assessment methods and put quantitative information into context. Thus information such as the definition of default, the time horizon, and the target of the assessment are all required. **Quantitative disclosures** present information on the actual default rates experienced in each assessment category and information on assessment transitions – i.e. the likelihood of an AAA credit transiting to AA etc over time. The disclosure of certain aspects of ECAs’ methodologies and definitions is important where differences in methodologies present the opportunity for exploitation by individual banks. The information that needs to be disclosed is presented in more detail in Annex 1. The Committee will be carrying out further work on how to make disclosures by ECAs comparable.

61. **Resources:** An ECAI should have sufficient resources to carry out high quality credit assessments. These resources should allow for substantial on-going contact with senior and operational levels within the entities assessed in order to add value to the credit assessments. Such assessments should be based on methodologies combining qualitative and quantitative approaches.

62. **Credibility:** To some extent, credibility is derived from the criteria above. In addition, the reliance on an ECAs external credit assessments by independent parties (investors, insurers, trading partners) is evidence of the credibility of the assessments of an ECAI. The credibility of an ECAI is also underpinned by the existence of internal procedures to prevent the misuse of confidential information. In order to be eligible for recognition, an ECAI does not have to assess firms in more than one country.

### 3. IMPLEMENTATION CONSIDERATIONS

#### (i) *The mapping process*

63. Supervisors will be responsible for slotting ECAs’ assessments into the standardised risk weighting framework, i.e. deciding which assessment categories correspond to which risk weights. The mapping process should be objective and should result in a risk weight assignment consistent with that of the level of credit risk reflected in the tables above and should cover the full spectrum of risk weights. These processes also need to be publicly disclosed. Other possibilities for slotting ECAs’ assessment categories into the risk framework in an objective manner will be evaluated during the consultation period, for example basing the slotting on experienced default probabilities for individual rating categories of ECAs. The Committee has begun work in this area and has identified issues such as the definition of default and the types of assessment to be used.

64. Banks must use the chosen ECAs and their ratings consistently for each type of claim, for both risk weighting and risk management purposes. In other words, banks will not be allowed to “cherry-pick” the assessments provided by different ECAs.



65. Banks must disclose on at least an annual basis the credit assessment institutions that they use for the risk weighting of their assets by type of claims, the mapping process determined by supervisors. Other disclosures will also be required, including the percentage of their risk weighted assets that are based on the assessments of each eligible institution (see section 7.2.3 of the Supporting Document Pillar 3: Market Discipline for a full list and discussion).

**(ii) Multiple assessments**

66. If there is only one assessment by an ECAI chosen by a bank for a particular claim, that assessment should be used to determine the risk weight of the claim.

67. If there are two assessments by ECAIs chosen by a bank corresponding to different risk weights, the higher risk weight will be applied.

68. If there are multiple assessments (more than two), the two assessments corresponding to the lowest risk weights referred to, and if they are different, the higher risk weight should be used. If the best two assessments are the same, that assessment should be used to determine the risk weight.<sup>11</sup>

**(iii) Issuer versus issue assessment**

69. Where a bank invests in a particular issue that has an issue-specific assessment, the risk weight of the claim will be based on this assessment. Where the bank's claim is not subject to an issue-specific assessment, the following general principles apply.

- In circumstances where the borrower has a specific assessment for an issued debt - but the bank's claim is not an investment in this particular debt - a **high quality credit assessment** (one which maps into a risk weight lower than that which applies to an unrated claim) on that specific debt may only be applied to the bank's unassessed claim if this claim ranks *pari passu* or senior to the claim with an assessment in all respects. If not, the credit assessment cannot be used and the unassessed claim will receive the risk weight for unrated claims.
- In circumstances where the borrower has an issuer assessment, this typically applies to senior unsecured claims on that issuer. Consequently, only senior claims on that issuer will benefit from a high quality issuer assessment. Other unassessed claims of a highly assessed issuer will be treated as unrated. If either the issuer or a single issue has a **low quality assessment** (mapping into a risk weight equal or higher than that which applies to unrated claims), an unassessed claim on the same counterparty will be attributed the same risk weight applicable to the low quality assessment.

70. In order to avoid any double counting of credit enhancement factors, no supervisory recognition of credit risk mitigation techniques will be taken into account if the credit enhancement is already reflected in the issue specific rating (see paragraph 86).

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<sup>11</sup> Some examples of deriving risk weights from multiple assessments are provided in Annex 2.

**(iv) Short term/long term assessments**

71. The Committee intends to carry out further work to consider the feasibility and desirability of using short-term assessments even in cases where there are long-term assessments. In doing so, it will explore the underpinning of the short-term assessments and evaluate the implication of extending the scope of the maturity dimension in this area against the considerations on maturity in general as previously mentioned. The method of slotting the short-term assessment into the risk weighting will also require further work during the consultation period. Pending further work, the Committee's proposals are as follows:

Short-term assessments can only be used when the claim is short-term and a long-term assessment is not available. If there is a long-term issue or issuer assessment, that assessment should be used not only for long-term claims but also for short-term claims, regardless of the availability of a short-term assessment, provided that the short-term claim ranks *pari passu* (or better). If the two claims do not rank *pari passu*, then the short-term claim should be treated as unrated. In no event can a short-term rating be used to support a preferential risk weight for a long-term claim.

72. It should be noted that, if a short-term assessment is to be used, the institution making the assessment needs to meet all of the eligibility criteria for recognising ECAs as discussed in paragraphs 56 to 62 in terms of its short-term assessment. This includes the transparency criteria under which, among other items, disclosure of the data on historical default according to the short-term assessments will be required.

73. As a general rule, if short-term claims receive a 150% risk weight, an unrated unsecured long-term claim should also receive a 150% risk weight, unless the bank uses recognised credit risk mitigation techniques on the long-term claim.

**(v) Level of application of the assessment**

74. External assessments for one entity within a corporate group should not be used to risk weight other entities within the same group.

**(vi) Unsolicited ratings**

75. As a general rule, banks should use *solicited* ratings from eligible ECAs. National supervisory authorities may, however, allow banks to use *unsolicited* ratings in the same way as solicited ratings. However, there may be the potential for ECAs to use unsolicited ratings to put pressure on entities to obtain solicited ratings. Such behaviour, when identified, should cause supervisors to consider whether to continue recognising such ECAs as eligible for capital adequacy purposes.

## **B. CREDIT RISK MITIGATION IN THE STANDARDISED APPROACH**

### **1. INTRODUCTION**

76. Credit risk mitigation (CRM) relates to the reduction of by, for example, collateral, obtaining credit derivatives or guarantees, or taking an offsetting position subject to a netting agreement.

77. The 1988 Accord recognises only collateral instruments and guarantees deemed to be reliably/identifiably of the very highest quality. The Accord takes an all-or-nothing approach to credit risk mitigants: some forms are recognised while others are not.

78. Since 1988, the markets for the transfer of credit risk have become more liquid and more complex. The number of suppliers of credit protection has increased, and new products such as credit derivatives have allowed banks to unbundle their credit risks and to sell those risks that they do not wish to retain. The Committee welcomes these innovations: greater liquidity in itself reduces the transaction costs of intermediating between borrowers and lenders, and it also encourages a more efficient allocation of risks in the financial system.

79. In designing the new framework for credit risk mitigation, the Committee has pursued three aims:

- improving the incentives for banks to manage credit risk in a prudent and effective manner;
- continuing to offer a prudent and simple approach that may be adopted by a wide range of banks; and
- relating capital treatments to the economic effects of different CRM techniques, delivering greater consistency and flexibility in the treatment of different forms of CRM.

80. In the new framework, the Committee intends to depart from the all-or-nothing approach and to recognise a wider range of credit risk mitigants.

81. The new framework for credit risk mitigation offers a choice of approaches that allow different banks to strike different balances between simplicity and risk-sensitivity. There are three broad treatments to CRM: in the standardised approach, the foundation IRB approach and the advanced IRB approach. The treatments of CRM in the standardised and foundation IRB approaches are very similar. In the advanced IRB approach, banks are permitted to estimate a greater number of risk parameters, but the concepts on which the framework is based are the same (see Supporting Document *Internal Ratings-Based Approach to Credit Risk*).

82. The approach to CRM techniques is designed to focus on economic effect. However, collateral, netting and guarantees/credit derivatives typically have different risk characteristics. For example, collateral represents “funded” protection whereas guarantees and most credit derivatives are “unfunded”.<sup>12</sup> Furthermore, whereas collateral instruments are subject to market risk, guarantees are not. Finally, credit derivatives are more likely than collateral to be subject to maturity or asset mismatches. Hence, although the treatments of collateral, netting and credit derivatives and guarantees are based on similar concepts, the risk weighting schemes are different.

83. While CRM techniques generally reduce credit risk, they do not fully eliminate it. In such transactions, banks - often for good business reasons - leave some residual risks unhedged. Three forms of residual risk are explicitly addressed in the new proposed framework: asset mismatch, maturity mismatch and currency mismatch. The Committee’s

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<sup>12</sup> “Funded” essentially means that the protection instrument is transferable, readily marketable, and of readily determinable value.

approach to maturity and currency mismatch is the same across all CRM techniques. The treatment for asset mismatch is provided in the area of credit derivatives.

84. The June 1999 Consultative Paper set out the Committee's intention to focus on the economic risks, and this intention received broad support among commentators. This document explains the proposed treatments of credit risk mitigants in much greater detail.

85. Also in the context of CRM, given the operational and capital requirements of the first pillar, the second pillar will be used to ensure that banks are sufficiently well equipped, *ex ante*, to control and manage the risks inherent in each business in which they are involved. Furthermore, Pillar 2 supervisory responses will have a role to play should it become apparent, *ex post*, that banks' systems and controls are not adequate to capture and manage the risks of their business.

86. Some rated debt issues may contain credit risk mitigants. Where those mitigants are taken into account in the external credit assessment, they may not be granted regulatory capital relief under the framework set out in this part of the supporting document. If other risk mitigants are applied, then they may be recognised. In other words, no double counting of credit risk mitigation will be allowed.<sup>13</sup>

87. Part B is structured as follows. Sections 2-4 discuss three broad families of credit risk mitigants: collateral; netting; and guarantees/credit derivatives. Asset mismatches are addressed in section 4 within the treatment of credit derivatives. Maturity mismatches and currency mismatches are discussed in sections 5 and 6. Disclosure requirements are set out in section 7. Some numerical examples are given in Annex 4.

## 2. COLLATERAL

88. This section covers collateralised transactions. A collateralised transaction is one in which:

- a bank has an credit exposure or potential credit exposure to another party by virtue of cash or financial instruments lent or posted as collateral, or an OTC derivatives contract; and
- the exposure or potential exposure is hedged in whole or in part by collateral posted by the counterparty.

89. As a general rule, no secured claim should receive a higher capital requirement than an otherwise identical claim on which there is no collateral.

90. Well-documented collateral agreements reduce credit risk to the lender. However, the near-collapse of LTCM in 1998 demonstrated that even a fully collateralised position is not without risk.<sup>14</sup>

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<sup>13</sup> Where both an issuer and an issue-specific rating exist, the issue-specific rating must be used (see Part A section 3).

<sup>14</sup> See *Sound Practices for Banks' Interactions with Highly Leveraged Institutions* and *Banks' Interactions with Highly Leveraged Institutions*, Basel Committee on Banking Supervision, January 1999.

**(i) Minimum conditions**

91. Before capital relief will be granted to any form of collateral, the standards set out in this section must be met. Supervisors will monitor the extent to which banks satisfy these conditions, both at the outset of a collateralised transaction and on an on-going basis.

*Legal certainty*

92. Collateral is effective only if the legal mechanism by which collateral is given is robust and ensures that the lender has clear rights over the collateral, and may liquidate or retain it in the event of the default, insolvency or bankruptcy (or otherwise-defined credit event set out in the transaction documentation) of the obligor and, where applicable, the custodian holding the collateral.

93. A bank must take all steps necessary to fulfil local contractual requirements in respect of the enforceability of security interest, e.g. by registering a security interest with a registrar. Where the collateral is held by a custodian, the bank must seek to ensure that the custodian ensures adequate segregation of the collateral instruments and the custodian's own assets.

94. A bank must obtain legal opinions confirming the enforceability of the collateral arrangements in all relevant jurisdictions. Legal opinions should be updated at appropriate intervals (e.g. annually).

95. The collateral arrangements must be properly documented, with a clear and robust procedure for the timely liquidation of collateral. A bank's procedures should ensure that any legal conditions required for declaring the default of the customer and liquidating the collateral are observed.

*Low correlation with exposure*

96. In order for collateral to provide protection, the credit quality of the obligor and the value of the collateral must not have a material positive correlation. For example, securities issued by the collateral provider - or by any related group entity - would provide little protection and so would be ineligible.

*Robust risk management process*

97. While collateral reduces credit risk, it simultaneously increases other risks to which a bank is exposed, such as legal, operational, liquidity and market risks. Therefore, it is imperative that a bank employ robust procedures and processes to control these risks. The following is a list of sound practices relating to collateral management.

*Strategy*

98. A clearly articulated strategy for the use of collateral should form an intrinsic part of a bank's general credit strategy<sup>15</sup> and its overall liquidity strategy.

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<sup>15</sup> See for example *Principles for the Management of Credit Risk*, Basel Committee on Banking Supervision, September 2000.

### *Focus on underlying credit*

99. Where an exposure is collateralised, credit managers should continue to assess the exposure on the basis of the borrower's creditworthiness. Credit managers should obtain and analyse sufficient financial information to determine the obligor's risk profile and its risk management and operational capabilities.

### *Valuation*

100. Collateral should be revalued frequently, and the unsecured exposure should also be monitored frequently. More frequent revaluation is more prudent, and the revaluation of marketable securities should preferably occur on (at least) a daily basis. Furthermore, stressed and unstressed measures of the potential unsecured exposure under collateralised transactions should be calculated. One such measure would take account of the time and cost involved if the borrower or counterparty were to default and the collateral had to be liquidated. Furthermore, the setting of limits for collateralised counterparties should take account of the potential unsecured exposure. Stress tests and scenario analysis should be conducted to enable the bank to understand the behaviour of its portfolio of collateral arrangements under unusual market conditions. Any unusual or disproportionate risk identified should be managed and controlled.

### *Policies and procedures*

101. Clear policies and procedures should be established in respect of collateral management, including: the terms of collateral agreements; types of collateral and enforcement of collateral terms (e.g. waivers of posting deadlines); the management of legal risks; the administration of agreements (e.g. detailed plans for determining default and liquidating collateral); and the prompt resolution of disputes, such as valuation of collateral or positions, acceptability of collateral, fulfilment of legal obligations and the interpretation of contract terms.

### *Systems*

102. These policies and procedures should be supported by collateral management systems capable of tracking the location and status of posted collateral (including rehypothecated collateral), outstanding collateral calls and settlement problems.

### *Concentration risk*

103. Taking as collateral large quantities of instruments issued by one obligor creates a concentration risk. A bank should have a clearly defined policy with respect to the amount of concentration risk it is prepared to run. Such a policy might, for example, include a cap on the amount of collateral it would be prepared to take from a particular issuer or market. A bank should also take collateral and purchased credit protection into account when assessing the potential concentrations in its overall credit profile.

### *Roll-off risks*

104. Where the bank obtains credit protection that differs in maturity from the underlying credit exposure, the bank must monitor and control its roll-off risks, i.e. the *fact* that the bank will be fully exposed when the protection expires, and the *risk* that it will be unable to purchase credit protection or ensure its capital adequacy when the credit protection expires.

## *External factors*

105. A bank should monitor general trends in markets for collateral taken. By monitoring changes in levels of market participation and general trend shifts in liquidity in these markets, a bank would be better equipped to moderate the impact of changing collateral market conditions on its collateralised portfolios.

## *Disclosure*

106. In addition, banks must satisfy certain disclosure requirements, as set out in section 7 below.

### **(ii) *The methodologies***

107. Reflecting the different balances between simplicity and accuracy, there are two proposed treatments to collateralised transactions<sup>16</sup> in the standardised approach: a comprehensive and a simple approach. The comprehensive approach focuses on the cash value of the collateral taking into consideration its price volatility. The basic principle is to reduce the underlying risk exposure by (a cautious measure of) the value of collateral taken. Partial collateralisation will therefore be recognised. The risk mitigation impact of collateral is measured conservatively, taking into consideration potential changes in the market price of collateral. This approach will also be used in the foundation IRB approach.

108. The simple approach, developed for banks that engage only to a limited extent in collateralised transactions, maintains the substitution approach of the present Accord, whereby the collateral issuer's risk weight is substituted for that of the underlying obligor. Partial collateralisation will also be recognised in the simple approach. Overall, the simple approach will generate higher capital requirements on collateralised transactions than those generated by the comprehensive approach. Furthermore, for collateral to be recognised in the simple approach, it must be pledged for the life of the exposure – i.e. there must be no maturity mismatch - and it must be marked to market with a minimum frequency of six months.

109. Banks will be permitted to use either the simple or comprehensive alternatives to collateralised transactions, provided they use the chosen alternative consistently for their entire portfolio.

### **(iii) *Eligible collateral***

110. In the June 1999 Consultative Paper, the Committee expressed its intention to broaden the definition of eligible collateral to all include financial assets attracting a risk weight lower than that of the underlying exposure. After further work, the Committee now proposes to adopt a definition of eligible collateral that is much broader than that in the 1988 Accord, but not as broad as that suggested in the June 1999 proposal. The basis of this definition is the fact that it is essential that collateral can be revalued reliably and that its

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<sup>16</sup> As explained in Part A, where a bank, acting as agent, arranges a repo-style transaction (i.e. repurchase/reverse repurchase and securities lending/borrowing transaction) 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 a repo-style transaction as principal. In such circumstances, a bank would be required to calculate capital requirements as if it were itself a party to the transaction.

value is relatively stable over time. The reliability of the valuation of a collateral instrument depends on the instrument's liquidity. The Committee considers certain lower quality financial instruments to be too volatile and illiquid in nature to qualify as eligible collateral.

111. The following collateral instruments are eligible for recognition in both the simple approach and the comprehensive approach:

- cash on deposit with the lending bank;<sup>17</sup>
- securities rated BB- and above issued by sovereigns and PSEs that are treated as sovereigns by the national supervisor;
- bank,<sup>18</sup> securities firm and corporate securities rated BBB- and above;
- equities that are included in a main index; and
- gold.

112. In addition to the above, equities not included in a main index but traded on a recognised exchange are eligible for recognition in the comprehensive approach.

113. Bonds issued by banks which are not assessed by a recognised external credit assessment institution may be treated equivalently to those assessed A/BBB only if they fulfil each of the following criteria:

- (a) the bonds are listed on a recognised exchange;
- (b) the bonds qualify as senior debt;
- (c) no other issue by the issuing bank is rated below BBB;
- (d) the lending bank has no information to suggest that the issue justifies a rating below BBB; and
- (e) the supervisor is sufficiently confident about the market liquidity of the instrument.

114. Certain Undertakings for Collective Investment in Transferable Securities (UCITS) and mutual fund units are also eligible. The units must have a daily public price quote, and the UCITS/mutual funds must be limited to investing in other instruments that are eligible for recognition in the approach (simple or comprehensive) being used.

#### **(iv) The comprehensive approach**

115. The aim of the comprehensive approach is to propose capital requirements needed to match the residual risks on collateralised positions.

116. In the comprehensive approach to collateral, "haircuts" denoted  $H$  will be applied to the market value of collateral, in order to protect against price volatility and a weight  $w$  will be applied to the collateralised portion of the exposure after adjusting for the haircut.

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<sup>17</sup> Where a bank issues credit-linked notes against exposures in its banking book, the exposures will be treated as being collateralised by cash.

<sup>18</sup> Includes PSEs which are not treated as governments by the national supervisor.



117. In order for collateral to provide protection in the event of a counterparty's failure to pay, it must be realised for cash. A bank that relies on collateral faces two major risks.

- First, it may be unable to establish title to the collateral in order to sell it, or the collateral may otherwise turn out to be effectively worthless. Although the risks will vary depending on the type of collateral and documentation, a bank can therefore remain fully exposed to the underlying obligor.
- Secondly, the cash value eventually realised by the sale of the collateral may be less than its book value. The risk that the value of the collateral falls before it is realised depends on the volatility of the collateral and the time taken to liquidate it. These factors, in turn, depend on the liquidity of the collateral and on the nature of the transaction.

118. The comprehensive approach aims to capture these risks in a way that encourage banks to improve their credit risk management. The first risk is addressed by means of a 'floor' capital requirement - denoted  $w$  - that ensures that in most cases the capital requirement remains a function of the credit quality of the borrower.

119. The second risk is addressed by introducing a haircut - denoted  $H$  - which will be applied to all forms of non-cash collateral. The amount of the exposure that is considered to be collateralised will be reduced by a proportion,  $H$ .<sup>19</sup> The value of the collateral adjusted for the haircut(s) is known as the 'adjusted value'.

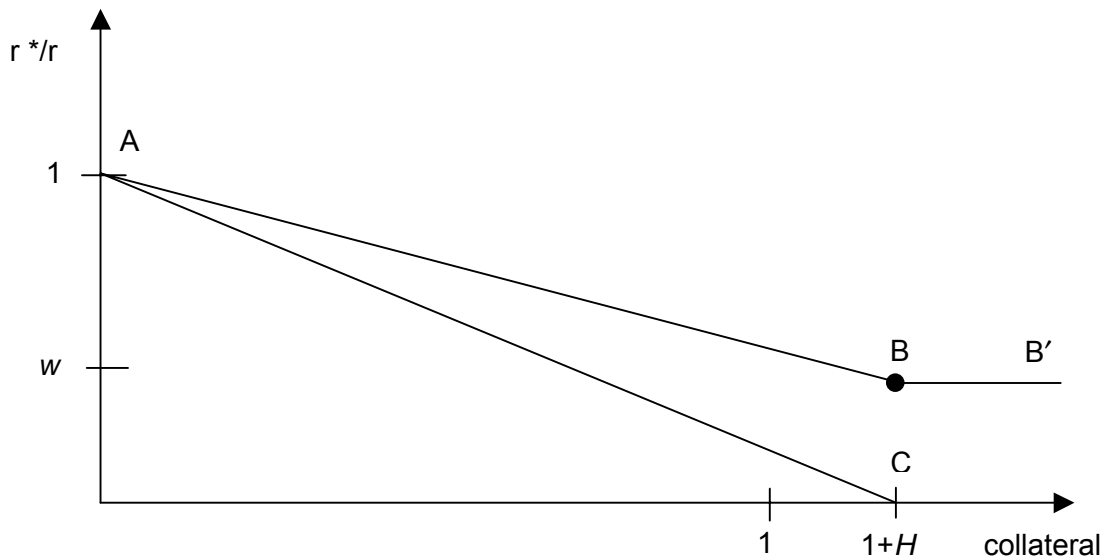
120. The Committee has previously noted that there is a risk that losses could occur "when [a] bank has provided collateral owing to a negative exposure and the value of this collateral at the moment of the counterparty's default is larger than the mark-to-market position."<sup>20</sup> Accordingly, a credit conversion factor of 100% will be applied to the lending banks' securities or the posting of securities as collateral by banks, including instances where these arise out of repo-style transactions. Likewise, both sides of the securities lending and borrowing transactions will be subject to explicit capital charges, as will the posting of securities in connection with a derivative exposure or other borrowing. Where a bank's exposure is secured by collateral (including situations in which the bank borrows securities), the value of that collateral will be reduced by the haircut appropriate to the collateral instrument. Where a bank's exposure takes the form of securities posted or lent, the value of the collateral it receives (which may be either cash or securities) will be reduced by the haircut appropriate to the securities that it posts.

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<sup>19</sup> Note that the collateral haircut does not replace the add-on for potential future unsecured exposure applied to OTC derivative transactions.

<sup>20</sup> *Sound Practices for Banks' Interactions with Highly Leveraged Institutions*, January 1999.

**Diagram 1:** the relationship between the effective risk weight and proportion collateralised



121. In Diagram 1, line AC shows the effect of the haircut: the effective risk weight goes to zero once the exposure is overcollateralised by an amount  $H$ . Line ABB' shows the additional impact of  $w$ . It can be seen that  $w$  has two effects: it discounts the recognised value of collateral, and it provides a floor. As the amount of collateral increases, the effective risk weight falls continuously, until the point where the exposure is fully covered by the value of collateral, adjusted for its haircut. From this point, as the collateral taken increases, the effective risk weight is subject to a constant floor that is dependent on  $w$  and on the risk weight of the borrower or counterparty.

122. Where collateral is denominated in a currency that differs from that in which the underlying exposure is denominated, i.e. there is a currency mismatch, a haircut reflecting the currency volatility should be added to the haircut appropriate to the collateral (see Annex 3 for the values of the haircuts).

123. The adjusted value of the collateral is

$$C_A = \frac{C}{1 + H_E + H_C + H_{FX}}$$

where

$H_E$  is a haircut appropriate to the exposure ( $E$ ),  
 $C$  is the current value of the collateral received,  
 $H_C$  is a haircut appropriate for the collateral received,  
 $H_{FX}$  is a haircut for currency mismatch, and  
 $C_A$  is the adjusted value of the collateral.

124. The risk weighted assets for a collateralised transaction are:

$$r^* \times E = r \times \text{MAX} [E - (1-w) \times C_A, w \times E]$$

where

$r^*$  is the risk weight of the position taking into account the risk reduction from the collateral,

$r$  is the risk weight of the uncollateralised exposure,  
 $E$  is the current value of the uncollateralised exposure (i.e. cash lent or securities lent or posted), and  
 $w$  is the floor factor applied to the secured portion of the transaction.

125. This may be more intuitively decomposed into two cases. If the value of the exposure exceeds the adjusted value of the collateral, i.e.  $E > C_A$ , then the risk weighted assets are

$$r^* \times E = r \times [E - (1-w) \times C_A]$$

126. The first term in the brackets on the right-hand side of the equation covers the exposure. The second term covers the collateralised portion of the exposure and reflects the effectiveness of the collateral. Note that the capital requirement also depends on the obligor's risk weight.

127. If the value of the exposure is no more than the adjusted value of the collateral, i.e.  $E \leq C_A$ , then the risk weighted assets are subject to a floor related to the borrower's creditworthiness:

$$r^* \times E = r \times w \times E$$

#### *Collateral haircuts*

128. Haircuts are designed to reflect the volatility of the exposure ( $H_E$ ), the volatility of collateral received ( $H_C$ ) and any currency volatility ( $H_{FX}$ ). Haircuts may be calculated in two ways: a standard supervisory approach and an own estimates approach. Under the standard supervisory haircut approach, each item of eligible collateral receives a standard prescribed haircut. Alternatively, supervisors may permit banks satisfying certain minimum standards to use their own internal estimates of collateral volatilities.

129. A bank's choice between standard supervisory and internal haircuts is independent of the choice it has made between the standardised approach and the foundation IRB approach to credit risk. However, if a bank seeks to use its own estimate haircuts, it must do so for the full range of instrument types for which it would be eligible to use own estimates.

130. The formulae set out above apply in both the standard supervisory and own estimate haircut approaches.

#### *The level of $w$*

131. For collateralised transactions in general,  $w$  is 0.15. There is, however, one exception – see below on special treatment for government repo-style transactions.

132. The Committee plans to continue work on the appropriate level of  $w$  for cash collateralised transactions and seeks comments on this issue.

#### *Standard supervisory haircuts*

133. The proposed standardised supervisory haircuts are set out in Annex 3.

134. The haircut to be applied to eligible UCITS/units in mutual funds is the highest haircut that would be applicable to any of the assets in which the fund has the right to invest.

135. Unrated bank bonds satisfying the eligibility criteria in paragraph 113 above will be treated as bank/corporate bonds rated A/BBB.

136. Where collateral is denominated in a currency that differs from that in which the underlying exposure is denominated, i.e. there is a currency mismatch, then the value of the collateral must be discounted by the haircut set out in the section 6 below.

137. While  $H$  is fixed between reviews of the regime, price volatility and liquidity vary unpredictably over time. Supervisors should monitor the liquidity and volatility of collateral instruments and should seek to ensure that banks are not taking advantage of differences between regulatory and economic capital requirements, i.e. gaming.

#### *Own estimates for haircuts*

138. Supervisors may permit banks to calculate  $H$  using their own internal estimates of market price and currency volatility. As with other aspects of the revised capital framework, the internal estimates approach will provide banks with the incentive to improve their internal risk management processes – in this case, the processes surrounding collateral evaluation and management. The approach also provides a mechanism for automatically incorporating changes in market volatility over time.

139. Permission to calculate  $H$  using own estimates will be conditional on the satisfaction of minimum qualitative and quantitative standards and will be limited to those banks that have received supervisory recognition for an internal market risk model under the 1996 Market Risk Amendment.<sup>21</sup> Banks will be required to calculate a volatility estimate for each security.

140. The quantitative standards for use of own estimates for haircuts will be equivalent to those applied to the use of the internal models approach in the Market Risk Amendment, key parameters of which are the 10-business-day holding period and the 99% confidence interval. Foreign exchange risk will also be calculated in a similar fashion.

141. In producing own estimates, banks must take into account the generally lower liquidity of lower-quality assets. The holding period should be adjusted upwards in cases where doubt exists as to the liquidity of the collateral.

142. Banks should also identify circumstances in which historical data may understate the extent of potential risk. Such cases must be dealt with through a stress scenario.

143. Banks must estimate volatility of the collateral instrument or foreign exchange mismatch individually: estimated volatilities must not take into account the correlations between unsecured exposure, collateral and exchange rates (see section 6 for the approach to currency mismatches). 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 in the basket and  $H_i$  the haircut

applicable to that asset. This is equivalent to decomposing the collateralised portion of an exposure into the different collateralised transactions and applying the standard formulae to each.

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<sup>21</sup> *Amendment to the Capital Accord to Incorporate Market Risk*, Basel Committee on Banking Supervision, (January 1996).

### *Holding periods*

144. The size of a collateral haircut depends on the time horizon over which the value of the collateral may change. This in turn depends on:

- the frequency of marking to market;
- the frequency of remargining;
- the period required for the bank to recognise that a default – including the failure to meet margin requirements - has occurred; and
- the liquidation period required for the bank to take possession of the collateral and realise cash. This is itself a function of the robustness of the documentation, the delivery and settlement process and the liquidity of the collateral.

145. The holding periods used in both approaches to haircuts depend on the frequency of marking to market or remargining.

146. The appropriate holding period depends on the liquidation costs, which depend not only on the volatility of prices, but on the liquidity of the assets. Unadjusted market volatility data are likely to understate the potential loss on liquidation of less liquid assets. Furthermore, for poorer-quality claims, volatility data may also suffer from “survivorship” bias.<sup>22</sup>

147. The standard supervisory haircuts have been calibrated approximately to a 99% 10-day confidence interval. As mentioned above, haircuts need to be adjusted for illiquidity and survivorship bias. Liquidity is, in general, positively correlated with credit quality. Sovereign debt is also, in general, more liquid than bank and corporate debt. The standard haircuts have therefore been adjusted in order to take these factors into account. However, although these haircuts are not finalised, the Committee would welcome suggestions on the haircut levels, on data sources, and, in particular, on the means of accounting for illiquidity and survivorship bias.

148. The framework for the treatment of collateral distinguishes between “capital-market-driven transactions” (i.e. repos/reverse repos, securities lending/borrowing, derivatives transactions and margin lending) and secured lending. In capital-market-driven transactions, the documentation contains remargining clauses, whereas in secured lending transactions, it generally does not.

### *Capital market driven transactions*

149. If there is daily remargining, the holding period will be assumed to be ten business days. As in the 1996 Market Risk Amendment, a ten-business-day holding period was used as the base case for calibrating the standard collateral haircuts set out in Annex 3. A ten-business day holding period is also the benchmark for haircuts in the internal estimates approach.

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<sup>22</sup> (*Ex ante*) forecasts of the volatility of securities with significant credit risk may be biased downwards if they are based only on *ex post* performance of securities on which the issuer has not defaulted.

150. If the frequency of remargining is lower than daily, larger haircuts are required. These will be calculated by reference to the benchmark haircuts, using this 'square root of time' formula:

$$H = H_{10} \sqrt{\frac{N_{RM} + 9}{10}}$$

where:

$H$  = haircut

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

$N_{RM}$  = actual number of days between remargining.

#### *Secured lending transactions*

151. In order for a bank to receive recognition for the collateral, it must be revalued within a maximum period of six months. If the collateral is marked to market daily, then the holding period will be *twenty business days*.

152. Where the collateral is marked to market less frequently than daily, the haircut will be increased according to the following formula:

$$H = H_{10} \sqrt{\frac{N_{RV} + 19}{10}}$$

where:

$H$  = haircut

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

$N_{RV}$  = actual number of days between revaluations.

#### *Rationale for $w$*

153. The impact of  $w$  is to discount the recognised value of collateral and to place a floor under the capital requirement for collateralised transactions. For the majority of transactions, no amount of overcollateralisation will lead to a zero capital requirement and the residual capital requirement will depend on the credit quality of the borrower.

154. There are two reasons for introducing the factor  $w$ . The first relates to the type of collateral and the second to the process on which the transaction is based, particularly the documentation and controls provided such as remargining. In both cases, there is a risk that the collateral may turn out to be effectively worthless, so that an exposure that is apparently secured turns out to be unsecured.<sup>23</sup>

155. The collateral haircut  $H$  is designed to convert collateral into a cash equivalent amount. In order to have confidence in this approach, there must be some objective and reliable market price for the collateral. For this to be the case, the collateral instrument must

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<sup>23</sup> See *Sound Practices for Banks' Interactions with Highly Leveraged Institutions*, Basel Committee on Banking Supervision January 1999.

be sufficiently liquid. The standard supervisory haircuts have been calibrated with a cautious view of liquidity, but there remains the risk that the collateral may be effectively impossible to liquidate.

156. The process for realising collateral may also be subject to uncertainty. The key issues are the documentation -in particular its definition of default- and the degree of legal certainty. These in turn will reflect how new the documentation is and the extent to which it has been tested in legal cases.

157. In practice, the two risks are often linked: lower-quality collateral may be difficult to sell, and the documentation surrounding its use as collateral may also be less reliable. These risks are reflected in  $w$ . Unless the supervisor is satisfied that both residual risks are minimal, a transaction will be subject to a floor in which the value of  $w$  is positive (i.e. 0.15). The benchmark against which supervisors will judge the residual risks is the established government repo markets, in which the underlying securities are liquid, and the documentation is well tested.

#### *Special treatment for government repo-style transactions*

158. In certain government securities repo-style transactions, (i.e. repo/reverse repo and securities lending/securities borrowing transactions) banks will be permitted to apply a zero  $w$ . In this case the risk-weighted assets will be:

$$r^* \times E = r \times [E - C_A]$$

subject to a floor of zero.

159. For a zero  $w$  to apply, the following conditions must be fulfilled:

- (a) The transaction is a repo-style transaction;
- (b) Both the exposure and the collateral are cash or a sovereign or PSE security qualifying for a 0% risk weight in the standardised approach;<sup>24</sup>
- (c) Both the exposure and the collateral are denominated in currency of the sovereign or PSE security concerned;
- (d) Either the transaction is overnight or both the exposure and the collateral are marked-to-market daily and are subject to daily remargining;
- (e) Following a counterparty's failure to remargin, the time between the last mark to market before the failure to remargin and the liquidation of the collateral is no more than four business days;
- (f) The transaction is settled across a settlement system proven for that type of transaction in the jurisdiction or currency area in which the securities are issued;
- (g) The documentation covering the agreement is standard domestic market documentation for repo-style transactions in the securities concerned;
- (h) 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>24</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.

- (i) Notwithstanding the counterparty's insolvency or bankruptcy, the bank has the unfettered, legally enforceable right to immediately seize and liquidate the collateral for its benefit.

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

160. The credit risk may be very small on well-documented repo transactions in liquid securities conducted with experienced counterparties and settled quickly across proven settlement systems may be very small. In recognition of this fact, supervisors may choose not to apply the haircuts specified in the comprehensive approach and may instead apply a zero  $H$  for transactions where conditions for a zero  $w$  set out in the paragraph above are satisfied, and where in addition the counterparty is a *core market participant*.

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

- sovereigns, central banks and PSEs;
- banks and securities firms;
- other financial companies (including insurance companies) eligible for a 20% risk weight;
- regulated mutual funds that are subject to capital or leverage requirements;
- regulated pension funds; and
- recognised clearing organisations.

162. 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. For example, if the supervisor in Country A applies a specific treatment to government security repo in that country, then other supervisors may allow branches of banks in their jurisdiction that are located in Country A to adopt the same approach to repos in Country A government securities that satisfy all the other conditions set out above.

#### **(v) *The simple approach***

##### *Framework*

163. This method is designed for banks that engage only to a limited extent in collateralised transactions, and for whom applying haircuts on a transaction-by-transaction basis could prove unduly costly.

164. The simple approach retains the substitution approach of the 1988 Accord - and therefore will not require haircut calculations - but widens the definition of eligible collateral.

165. In view of the absence of requirements for haircuts on collateral, the simple alternative recognises a more limited range of collateral types for capital purposes.

166. Consistent with the Committee's general approach that to accuracy versus simplicity, the simple approach will result in higher capital requirements overall.



### *Minimum conditions*

167. For collateral to be recognised in the simple approach, the collateral must be pledged for the life of the exposure and it must be marked to market and revalued with a minimum frequency of six months.

### *Risk weights*

168. In the simple approach, 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 the next two sub-sections. The remainder of the claim should be assigned to the risk weight appropriate to the counterparty or borrower.

169. A capital requirement will be applied to either side of a collateralised transaction in order to protect against potential future exposure: for example, both repos and reverse repos will be subject to capital requirements.

### *Transactions subject to daily mark-to-market and daily remargining*

170. Collateralised claims are eligible for a risk weight of less than 20% only if they meet the following conditions specified in this paragraph. They can receive a risk weight of 0% or 10% depending on whether they additionally meet the conditions in either paragraph 171 or 172:

- (a) Both the exposure and the collateral are denominated in the same currency;
- (b) Either the transaction is overnight or both the exposure and the collateral are marked-to-market daily and are subject to daily remargining;
- (c) 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;
- (d) Notwithstanding the counterparty's insolvency or bankruptcy, the bank has the unfettered, legally enforceable right to immediately seize and liquidate the collateral for its benefit; and
- (e) Following a counterparty's failure to remargin, the time between the last mark to market before the failure to remargin and the liquidation of the collateral is no more than ten business days.

171. The risk weight on the collateralised transaction is 0% where the conditions in the paragraph above are satisfied and:

- (a) The transaction is a repo-style transaction (i.e. repo/reverse repo or securities lending/securities borrowing transaction);
- (b) Both the exposure and the collateral are cash or sovereign or PSE securities qualifying for a 0% risk weight in the standardised approach;<sup>25</sup>

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<sup>25</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.

- (c) Following a counterparty's failure to remargin, the time between the last mark to market before the failure to remargin and the liquidation of the collateral is no more than four business days;
- (d) The transaction is settled across a settlement system proven for that type of transaction in the jurisdiction or currency area in which the securities are issued; and
- (e) The documentation covering the agreement is standard domestic market documentation for repo-style transactions in the securities concerned.

172. The portion of a claim secured by the market value of the collateral may be assigned a 10% risk weight where the conditions in paragraph 170 are satisfied and either:

- (a) The bank's claim and the collateral are both in the form of a loan of cash, (a claim in the form of a loan of cash, a guarantee or commitment to pay cash, or a derivative exposure treated as a cash position) or sovereign/PSE securities qualifying for a 0% risk weight; or
- (b) The bank's claim on an unsecured basis would have a risk weight of 20%, *and* one side of the transaction (the bank's claim or the collateral) is cash or securities qualifying for a 0% risk weight, and the other side is eligible collateral as set out in the previous section.

#### *Other transactions*

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

- (a) The collateral is cash on deposit and is securing a loan in the same currency; or
- (b) The collateral is in the form of sovereign/PSE securities qualifying for a 0% risk weight in the standardised approach, and its market value has been discounted by 30%.

### **3. NETTING**

#### ***(i) On-balance sheet netting***

174. In 1998<sup>26</sup> the Committee proposed to accept forms of on-balance sheet netting other than novation as a means of reducing gross exposures to a single net amount. The new proposals supersede and generalise the 1998 amendment.

175. The Committee proposes to recognise agreements for the on-balance sheet netting in the banking book of loans and deposits of a bank to or from any other counterparty subject to the following conditions:

- (a) the bank has a well-founded legal basis for concluding the netting or offsetting and the agreement is enforceable in each relevant jurisdiction, including in insolvency proceedings;

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<sup>26</sup> *Consultative Paper on on-balance-sheet netting*, April 1998.

- (b) the bank is able at any time to determine those assets and liabilities with the same counterparty that are subject to the netting agreement;
- (c) the bank monitors and controls its roll-off risks; and
- (d) the bank monitors and controls the relevant exposures on a net basis.

176. The scope of on-balance sheet netting will be limited to the netting of loans and deposits to a single counterparty. This limitation is the result of concerns about the stability of the net balance sheet, especially for tradable assets. Furthermore, the legal enforceability of cross-product netting agreements is not considered to be sufficiently well tested in many jurisdictions to warrant recognition.

177. For on-balance sheet netting,  $w$  will be zero. In other respects, on-balance sheet netting will be dealt with as a collateralised transaction under section 2 above and sections 5, 6 and 7 below. Where a bank has a number of loans and deposits with the same counterparty, the portfolio of loans and assets must be decomposed and netted on an individual basis. Moreover, when a currency mismatch exists, a haircut  $H_{FX}$  should be applied to the liability side, as described in section 6 on currency mismatches.

#### **(ii) Off-balance sheet netting/PFEs**

178. The capital framework for the netting of potential future unsecured exposures on OTC derivatives transactions remains unchanged from the treatment set out in 1995.<sup>27</sup> The Committee plans to continue work in this area including the methodology for calculating the net-to-gross ratio for transactions that are subject to netting agreements and collateralised.

## **4. GUARANTEES AND CREDIT DERIVATIVES**

### **(i) Introduction**

179. In the 1988 Accord, recognition of guarantees is limited to those issued by OECD central governments or PSEs; OECD incorporated banks and securities firms; non-OECD banks, where the underlying transaction has a residual maturity of up to one year; and multilateral development banks. Credit derivatives, of course, are not mentioned at all.

180. This approach reflects the relatively narrow market for credit protection that existed in 1988. Since then, the number of suppliers of credit protection has increased markedly. In addition, credit protection can now be structured in a plethora of ways.

181. The proposed approach to guarantees and credit derivatives is based on the substitution approach of the current Accord, but includes an additional capital floor element. For the protected portion of an exposure, a bank may substitute the risk weight of the protection provider for that of the obligor. To the substituted risk weight will be added a capital requirement dependent on the floor term  $w$  and on the underlying obligor's risk weight. However, in the case of a guarantee from a sovereign, central bank or bank, there will be no additional capital requirement (i.e.  $w$  is zero); this equates to 'pure substitution'.

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<sup>27</sup> *The treatment of potential exposure for off-balance sheet items*, April 1995.

182. In the first consultative paper, the Committee noted that a bank only suffers loss if both the obligor and its guarantor default. This 'double default' effect can reduce credit risk to which a bank is subject – i.e. if there is a low correlation between the default of the obligor and that of the guarantor. The Committee has investigated whether simple proxies for correlation could be used to provide a basis for discounts. None of the proxies investigated could offer a satisfactory balance of prudence and simplicity. Furthermore, the potential for such proxies to create perverse incentives was prohibitively high. Accordingly, no recognition will be given to the double default effect.

**(ii) Minimum conditions**

183. Before granting capital relief to any form of guarantee or credit derivative, the supervisor must be satisfied both that the bank fulfils minimum conditions relating to risk management processes and that the guarantee or credit derivatives is direct, explicit, irrevocable and unconditional. These conditions are explained below. Further distinct operational requirements specific to guarantees and credit derivatives are set out below. Supervisors will monitor the extent to which banks satisfy these conditions, both at the outset and on an on-going basis.

184. In addition, the bank must satisfy certain disclosure requirements, as set out in section 7 below.

185. As a general rule, no claim on which credit protection has been purchased should receive a higher capital requirement than an otherwise identical claim on which there is no credit protection.

*Robust risk management process*

186. While guarantees and credit derivatives reduce credit risk, they simultaneously increase other risks to which a bank is exposed, such as legal and operational risks. Therefore, it is imperative that a bank employ robust procedures and processes to control these risks.

187. These procedures and processes include strategy, consideration of the underlying credit and systems. Furthermore, purchasing a large amount of credit protection from a single provider creates a concentration risk. A bank should have a clearly defined policy with respect to the amount of concentration risk it is prepared to run. Such a policy might include a cap on the amount of credit protection it is prepared to purchase from a single protection provider. A bank should also take purchased credit protection into account when assessing the potential concentrations in its overall credit risk profile.

188. A bank should monitor general trends affecting its credit protection providers, in order to mitigate this concentration risk.

189. Where the bank obtains credit protection that differs in maturity from the underlying credit exposure, the bank must monitor and control its roll-off risks.

*Direct*

190. The credit protection must represent a direct claim on the protection provider.

### *Explicit*

191. The credit protection must be linked to specific exposures, so that the extent of the cover is clearly defined and incontrovertible.

### *Irrevocable*

192. Other than a protection purchaser's non-payment of money due in respect of the credit protection contract, there must be no clause in the contract that would allow the protection provider unilaterally to cancel the credit cover.<sup>28</sup>

### *Unconditional*

193. There should be no clause in the protection contract that could prevent the protection provider from being obliged to pay out in a timely manner in the event that the original obligor fails to make the payment(s) due.

### **(iii) Operational requirements for guarantees**

194. In order for a guarantee to be recognised, the following conditions must be satisfied:

- (a) on the qualifying default/non-payment of the obligor, the lender may in a timely manner pursue the guarantor for monies outstanding under the loan, rather than having to continue to pursue the obligor. The act of the guarantor making a payment under the guarantee grants the guarantor the right to pursue the obligor for monies outstanding under the loan;
- (b) the guarantee is an explicitly documented obligation assumed by the guarantor;
- (c) for the proportion of the exposure covered, the guarantor covers all payments the underlying obligor is expected to make under the loan/exposure, notional amount etc; and
- (d) the guarantee must be legally enforceable in all relevant jurisdictions.

### **(iv) Operational requirements for credit derivatives**

195. In order for protection from a credit derivative to be recognised, the following conditions must be satisfied:

- (a) The credit events specified by the contracting parties must at a minimum include:
  - failure to pay the amounts due according to reference asset specified in the contract;
  - a reduction in the rate or amount of interest payable or the amount of scheduled interest accruals;

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<sup>28</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.

- a reduction in the amount of principal or premium payable at maturity or at scheduled redemption dates;
  - a change in the ranking in the priority of payment of any obligation, causing the subordination of such obligation.
- (b) Contracts 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 also be a clearly specified period for obtaining post-credit-event valuations of the reference asset, typically no more than 30 days;
- (c) The credit protection must be legally enforceable in all relevant jurisdictions;
- (d) Default events must be triggered by any material event, e.g. failure to make payment over a certain period or filing for bankruptcy or protection from creditors;
- (e) The grace period in the credit derivative contract must not be longer than the grace period agreed upon under the loan agreement;
- (f) The protection purchaser must have the right/ability to transfer the underlying exposure to protection provider, if required for settlement;
- (g) 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;
- (h) Where there is an asset mismatch between the exposure and the reference asset then:
- the reference and underlying assets must be issued by the same obligor (i.e. the same legal entity); and
  - the reference asset must rank *pari passu* or more junior than the underlying asset, and legally effective cross-reference clauses (e.g. cross-default or cross-acceleration clauses) must apply.

196. An asset mismatch occurs when a credit protection contract refers to an instrument that is not the same as the exposure being hedged. The protection afforded by the hedge varies directly with the correlation between the performance on the exposure and the performance of the 'reference asset'. However, estimates of default correlation are not recognised in the new framework. As a result, the new framework will use the rule set out above.

197. 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 buying credit protection through a total return swap 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.

198. Other types of credit derivatives will not be eligible for this treatment at this time.<sup>29</sup> Further work is expected in this area.

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<sup>29</sup> However, credit linked notes issued by the bank will be treated as cash collateralised transactions (see footnote 17).

**(v) Range of eligible guarantors/protection providers**

199. Credit protection given by the following will be recognised:

- sovereign entities, PSEs and banks with a lower risk weight than the obligor;
- corporates (including insurance companies) including parental guarantees rated A or better.

**(vi) Risk weights**

200. The 1988 Accord uses *pure substitution*, which implies that the risk weight (either based on external or internal ratings) of the underlying exposure is substituted by the risk weight of the guarantor. A capital regime based on pure substitution assumes that the bank can fully assess, monitor and manage the contingent credit risk towards the guarantor.

201. In addition to the credit quality of the counterparty, the quality and the robustness of the guarantee clearly have an impact on the protection value of the contract. The Committee's approach aims to address both of these issues.

202. In the new framework, the protected portion is assigned a risk weight that is a weighted average of the obligor's risk weight and the protection provider's risk weight. The uncovered portion of the exposure is assigned the risk weight of the underlying obligor.

*Fully-protected exposure*

203. The risk weight applicable to a fully-guaranteed exposure – i.e. where the nominal amount of the credit protection equals that of the exposure - is

$$r^* = w \times r + (1 - w) \times g$$

or, equivalently,

$$r^* = g + w \times (r - g)$$

where  $r^*$  is the effective risk weight of the position taking into account the risk reduction from the guarantee/credit derivative

$r$  is the risk weight of the obligor

$w$  is the weight applied to the underlying exposure

$g$  is the risk weight of the guarantor.

204. Guarantees from sovereign, central banks and banks will receive a  $w$  of zero (see paragraph 216). In this case the treatment is the same as the pure substitution treatment of the 1988 Accord:

$$r^* = g$$

205. Materiality thresholds below which no payment will be 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.

206. Where the currency of the credit protection differs from that of the underlying exposure – i.e. there is a currency mismatch – then the value of the protection will be discounted according to the method set out in section 6 below.

*Proportional cover*

207. This case applies to guarantees/credit derivatives where the amount protected is less than the amount of the exposure, and the secured and unsecured portions are of equal seniority i.e. the bank and guarantor share losses on a pro-rata basis. Proportional cover will be afforded proportional regulatory capital relief: i.e. the protected portion of the exposure will receive the treatment applicable to eligible guarantees/credit derivatives, with the remainder treated as unsecured.

208. For a credit-protected exposure, the risk-weighted assets will be:

$$E \times r^* = (E - G_A) \times r + G_A \times [w \times r + (1 - w) \times g]$$

or, equivalently,

$$E \times r^* = E \times r - (1 - w) \times G_A \times (r - g)$$

where

$E$  is the value of the exposure (e.g. nominal amount of loan);

$G_A$  is the nominal amount of the cover (adjusted if necessary for foreign exchange risk);

$r^*$  is the effective risk weight of the position taking into account the risk reduction from the protection purchased;

$r$  is the risk weight of the obligor;

$w$  is the residual risk factor; and

$g$  is the risk weight of the protection provider.

209. In the case of full protection, the equation becomes the following:

$$E \times r^* = E \times [w \times r + (1 - w) \times g]$$

*Tranched cover*

210. In a tranched structure, the bank transfers a portion of the risk on a loan to a protection seller and retains some level of risk on the loan. The risk transferred and the risk retained are of different seniority. A bank may either obtain credit protection for the senior tranche (i.e. second loss portion) or the junior tranche (i.e. first loss portion).



*Case 1: credit risk on junior tranche is transferred and risk on senior tranche is retained*

211. For the bank obtaining credit protection, the junior tranche will be treated as covered while the senior tranche will receive the risk weight of the underlying obligor.

$$E x r^* = (G_S) x r + G_J x [w x r + (1 - w) x g]$$

where

$G_S$  is the nominal amount of the senior tranche and

$G_J$  is the nominal amount of the junior tranche;

212. For the bank providing protection, the amount of the junior tranche covered must be deducted from the bank's capital.

*Case 2: credit risk on junior tranche is retained and risk on senior tranche is transferred*

213. The bank obtaining the protection must deduct the junior tranche from its capital. The senior tranche transferred will be risk-weighted using a weighted average (depending on the proportion of the loan that is covered) of the risk weight of the original obligor and the protection provider. For the nominal amount of the senior tranche,  $G_S$ , the risk-weighted assets will therefore be:

$$G_S x [w x r + (1 - w) x g]$$

214. A bank providing protection to the senior tranche will have to hold capital against the full amount of the underlying assets less the amount of the junior tranche. However, the total capital requirement (including the capital deduction) will not exceed that on an otherwise identical loan on which there is no credit protection.

#### **(vii) Sovereign guarantees**

215. As specified in paragraph 14, a lower risk weight may be applied at national discretion to banks' exposures to the sovereign (or central bank) of incorporation denominated in domestic currency and funded<sup>30</sup> 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 domestic currency and the exposure is funded in that currency.

#### **(viii) The level of w**

##### *Guarantees*

216. Where the guarantor is a sovereign, central bank or bank,  $w$  will be zero.

217. For all other guarantees recognised as giving protection,  $w$  will be 0.15.

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<sup>30</sup> This is to say that the bank would also have liabilities denominated in the local currency.

218. For all credit derivatives recognised as giving protection,  $w$  will be 0.15.

## 5. MATURITY MISMATCHES

219. A maturity mismatch occurs when the residual maturity of a hedge is less than that of the underlying exposure. There may be sound economic reasons for acquiring a hedge with a maturity mismatch. For example, a bank may have only a short-term concern in respect of the credit quality of a particular counterparty. Therefore, it may seek to hedge only the 'front-end' credit risk – i.e. the counterparty risk in the first year or so of the exposure. The Committee does not wish to discourage such partial hedging but seeks to adopt a prudent approach to the maturity risks arising.

### (i) Definition of maturity

220. 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 obligor is scheduled to fulfil its obligation, while 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. For example, the effective maturity of a hedge with step-up and call features will be the remaining time to the first call.

### (ii) Risk weights for maturity mismatches

221. Maturity-mismatched hedges of less than one year residual maturity, which do not have matching maturities with the underlying exposures, will not be recognised. Where the residual maturity of the credit protection is one year or more, the value of the credit protection will be multiplied by the ratio of the residual maturity of the credit protection to the residual maturity of the underlying exposure. That is, the value of the credit protection will be multiplied by  $t/T$ , where  $t$  is the residual maturity of the credit risk mitigation technique and  $T$  is the residual maturity of the underlying exposure.

222. The adjusted risk weight for maturity-mismatched exposures will be as follows:

for  $t$  less than 1 year,  $r^{**} = r$

for  $1 \text{ year} \leq t \leq T$ , 
$$r^{**} = \left(1 - \frac{t}{T}\right)xr + \left(\frac{t}{T}\right)xr^*$$

or equivalently 
$$r^{**} = r - \left(\frac{t}{T}\right)x(r - r^*)$$

where:  $r^{**}$  is the risk weight of the mismatched position;

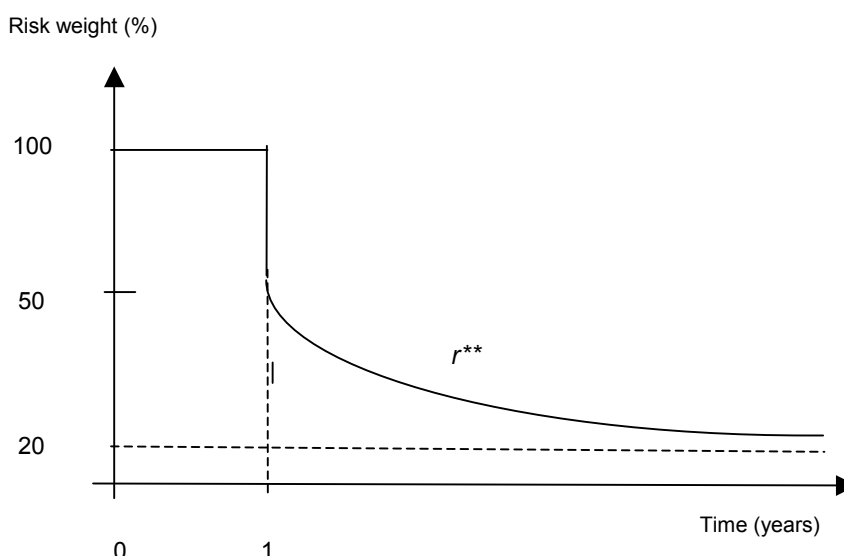
$r$  is the risk weight on the unhedged position;

$r^*$  is the risk weight if the position had been hedged without a maturity mismatch;

$t$  is the residual maturity of the credit risk mitigation technique; and

$T$  is the residual maturity of the exposure ( $t \leq T$ ).

**Diagram 2:** Relationship between  $r^{**}$  and  $t$  ( $r = 100\%$ ,  $r^* = 20\%$ ,  $T$  is infinite)



## 6. CURRENCY MISMATCHES

223. Where the credit exposure is denominated in a currency that differs from that in which the underlying exposure is denominated, there is a currency mismatch. This currency mismatch is a contingent risk: for a bank to suffer loss, the borrower must fail to pay and the exchange rates must move adversely. This contingent risk should be distinguished from outright fx risk.

224. Whatever the form of the credit protection, the value of the credit protection is reduced by adding  $H_{FX}$  to any discount factor already applied to the value of the protection (see examples below). For banks using the standard supervisory haircuts, the standard ten-day haircut for fx risk is 8%.

225. In each case, the fx haircut must be scaled up according to the square root of time rule set out in section 2 of Part B. Where the credit protection documentation contains remargining, banks should use the capital market driven transactions formula and scale up using the frequency of remargining. For all other transactions, banks should use the formula for secured lending transactions and use the frequency of revaluation (or the maturity of the credit protection, where there is no revaluation).

### (i) Collateral

226. If there is a currency mismatch, the adjusted value of the collateral is

$$C_A = \frac{C}{1 + H_C + H_E + H_{FX}}$$

### (ii) On-balance sheet netting

227. For on-balance sheet netting with a currency mismatch, the liability (deposit received, or  $D$ ) should be discounted by  $H_{FX}$  to give the adjusted deposit value  $D_A$ .

$$D_A = \frac{D}{1 + H_{FX}}$$

**(iii) Guarantees/credit derivatives**

228. For guarantees and credit derivatives, the amount of the exposure deemed to be protected will be reduced by the application of a haircut  $H_{FX}$ , i.e.

$$G_A = \frac{G}{1 + H_{FX}}$$

## 7. DISCLOSURE REQUIREMENTS

229. In order to obtain any regulatory capital recognition for any credit risk mitigation technique, banks must fulfil the following disclosure requirements. Further disclosure recommendations are provided in the Supporting Document on the third pillar.

**(i) Collateral/on-balance sheet netting**

*Quantitative disclosures*

- A bank must disclose gross exposures, the amount of exposure secured by collateral and netted by on-balance sheet netting contracts, and risk-weighted assets excluding and including the effects of collateral/on-balance sheet netting. These aggregate values must be split into risk weight bucket/internal risk grade.
- A bank must disclose the methodologies used (i.e. simple/comprehensive, standard supervisory/own estimate haircuts).

*Qualitative disclosures*

230. A bank must describe its overall strategy and process for managing collateral including, in particular, the monitoring of collateral value over time. Key internal policies for the recognition of collateral, including, for example, the ratio of underlying exposure to collateral (i.e. LTV ratio) and maturity mismatches, must also be broadly described.

**(ii) Guarantees/credit derivatives**

*Quantitative disclosures*

231. A bank must disclose the amount of exposure covered by guarantees/credit derivatives and risk weighted assets excluding and including the effects of guarantees/credit derivatives. These values must be disclosed by risk weight bucket/internal risk grade and by type of guarantor/protection provider.

*Qualitative disclosures*

232. A bank must provide information on its strategy and process for monitoring the continuing credit worthiness of protection providers and administering the guarantees and credit derivatives along the lines required for collateralised transactions.

# Annex 1

## Disclosure requirements for eligible ECAs

### Qualitative information

1. The definition of default.
2. The time horizon ("point in time" or "through the cycle") on which the assessment is based.
3. The target of the rating; for example whether probability of default is targeted or whether it includes a measure for loss given default (and how the latter is defined).

*The disclosure of certain aspects of ECAs' methodologies and definitions is important where differences in methodologies present the opportunity of exploitation by individual banks.*

4. Information enabling users to separate out solicited from unsolicited ratings.<sup>31</sup> *Where ratings are compiled on the basis of public information only (as opposed to a more comprehensive rating, inclusive of "in-house" consultations) this should be disclosed.*
5. Further information on methodology, experience and structure.

### Quantitative information

1. Cumulative annual default rates experienced in each of their rating categories. *This would allow market discipline to assign credibility and hence reputability to a given agency. (Template)*
2. Information on rating transitions – i.e. the likelihood of an AAA credit transiting to AA etc over time.

#### Template Cumulative default rates experienced by ECAI in each rating category (%)

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 10	Year 15	Year 20
AAA									
AA									
A									
BBB									
BB									
B etc									

<sup>31</sup> For example, S&P issues "pi" ratings, which are in effect unsolicited, but are explicitly labelled as being derived from public information only.

## Annex 2

### Worked examples of multiple ratings

*Case 1: 2 assessments on the corporate (ranking in the order of the assessment)*

ECAI	assessment	corresponding risk weight
1	A	50%
2	BBB	100%

**The resultant risk weight:** since there are two assessments corresponding to different risk weights, the higher risk weight, i.e. **100%**, will be applied.

*Case 2: 3 assessments on the corporate (ranking in the order of the assessment)*

ECAI	assessment	corresponding risk weight
1	A	50%
2	A	50%
3	BBB	100%

**The resultant risk weight:** referring to the two highest (best) assessments, as they both correspond to the same risk weight of **50%**, this risk weight will be applied.

*Case 3: 4 assessments on the corporate (ranking in the order of the assessment)*

ECAI	assessment	corresponding risk weight
1	AA	20%
2	A	50%
3	BBB	100%
4	BBB	100%

**The resultant risk weight:** referring to the two highest (best) assessments, and as they differ, the assessment corresponding to the higher risk weight, i.e. **50%**, will be applied.

Case 4: 5 or more assessments on the corporate (ranking in the order of the assessment)

ECAI	assessment	corresponding risk weight
1	AA	20%
2	A	50%
3	BBB	100%
4	BBB	100%
5	BB	150%
...	...	...

**The resultant risk weight:** referring to the two highest (best) assessments, and as they differ, the assessment corresponding to the higher risk weight, i.e. **50%**, will be applied

## Annex 3

### Standardised supervisory haircuts

#### A. 10-business day haircuts

These are the 10-business day haircuts ( $H_{10}$ ) assuming daily mark-to-market and daily remargining to be applied in the standardised supervisory haircuts approach, expressed as percentages of the market value:

Issue rating for debt securities	Residual Maturity	Sovereigns <sup>32</sup>	Banks/Corporates <sup>33</sup>
<b>AAA/AA</b>	≤ 1 year	0.5	1
	>1 year, ≤ 5 years	2	4
	> 5 years	4	8
<b>A/BBB</b>	≤ 1 year	1	2
	>1 year, ≤ 5 years	3	6
	> 5 years	6	12
<b>BB</b>	≤ 1 year	20	
	>1 year, ≤ 5 years	20	
	> 5 years	20	
<b>Main index equities</b>		20	
<b>Other equities listed on a recognised exchange</b>		30	
<b>Cash</b>		0	
<b>Gold</b>		15	
<b>Surcharge for fx risk</b>		8	

Certain UCITS/units in mutual funds that may only invest in the eligible assets listed above are also eligible. The haircut to be applied to such a unit is the highest haircut that would be applicable to any of the assets in which the fund has the right to invest.

Bonds issued by banks which are not rated by a recognised external credit assessment institution but which fulfil the eligibility criteria set out in paragraph 113 may be treated equivalently to those rated A/BBB.

<sup>32</sup> Includes PSEs which are treated as sovereigns by the national supervisor.

<sup>33</sup> Includes PSEs which are **not** treated as sovereigns by the national supervisor.



## B. 20-business day haircuts

The following are the benchmark haircuts for secured lending where daily revaluation is conducted but where remarking is not conducted. These numbers have been calculated by inserting the numbers in Table A into the formula in paragraph 152.

Issue rating for debt securities	Residual Maturity	Sovereigns <sup>34</sup>	Banks/Corporates <sup>35</sup>
AAA/AA	≤ 1 year	0.7	1.4
	>1 year, ≤ 5 years	2.8	5.7
	> 5 years	5.7	11.3
A/BBB	≤ 1 year	1.4	2.8
	>1 year, ≤ 5 years	4.2	8.5
	> 5 years	8.5	17
BB	≤ 1 year	28.3	
	>1 year, ≤ 5 years	28.3	
	> 5 years	28.3	
<b>Main index equities</b>		28.3	
<b>Other equities listed on a recognised exchange</b>		42.4	
<b>Cash</b>		0	
<b>Gold</b>		21.2	
<b>Surcharge for fx risk</b>		11.3	

<sup>34</sup> Includes PSEs which are treated as sovereigns by the national supervisor.

<sup>35</sup> Includes PSEs which are **not** treated as sovereigns by the national supervisor.

## Annex 4

### Worked examples of credit risk mitigation treatments

#### Collateralised transactions

**Example 1: Flat repo with a bank counterparty, not satisfying the conditions for zero  $w$ .**

Bank A repos out \$1,000-worth of 10-year AAA-rated sovereign securities to Bank B (risk weighted at 20%) and receives \$1,000 in cash collateral. Revaluation and remargining are conducted daily. There is no currency mismatch or maturity mismatch.

In this case a haircut of 4% (see table A in Annex 3) is applied to the sovereign securities lent out while there is no haircut for the collateral received, since it is cash.

Then the adjusted value of the collateral,  $C_A$ , is

$$\begin{aligned} C_A &= \frac{C}{1 + H_E + H_C + H_{FX}} \\ &= \$1,000 / (1 + 0.04 + 0 + 0) \\ &= \$962. \end{aligned}$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of counterparty ( $r=0.2$ ) are inserted into the equation below. Note that the exposure (\$1,000) exceeds the adjusted value of collateral (\$962).

$$\begin{aligned} r^* \times E &= r \times [E - (1-w) \times C_A] \\ r^* \times 1,000 &= 0.2 [1000 - (1-0.15) \times 962] \\ r^* &= 3.65\% \end{aligned}$$

and so the risk weighted assets will be \$36.50.

**Example 2: Flat reverse repo with a bank counterparty**

This is the opposite side of the transaction in Example 1. Bank B takes in \$1,000 worth of 10-year AAA-rated sovereign securities (from this bank's perspective these securities are the collateral received) and provides \$1,000 in cash to Bank A (counterparty risk weight 50%). Revaluation and remargining are conducted daily. There is no currency mismatch or maturity mismatch.

In this case a haircut of 4% is applied to the sovereign securities reverse repoed in (i.e. taken as collateral) while there is no haircut for the cash posted.

Then the adjusted value of the collateral,  $C_A$ , is

$$C_A = \frac{C}{1 + H_E + H_C + H_{FX}}$$

$$= \$1,000 / (1 + 0 + 0.04 + 0)$$

$$= \$962.$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of Bank A ( $r=0.5$ ) are inserted into the equation below. Note that for Bank B, too, the exposure (\$1,000) exceeds the adjusted value of collateral (\$962).

$$r^* \times E = r \times [E - (1-w) \times C_A]$$

$$r^* \times 1,000 = 0.5 [1000 - (1-0.15) \times 962]$$

$$r^* = 9.12\%$$

and so the risk weighted assets will be \$91.20.

**Example 3: Undercollateralised repo with a bank counterparty, not satisfying the conditions for zero  $w$**

Bank A repos out \$1,000-worth of 10-year AAA-rated government securities to Bank B (risk weighted at 20%) and receives \$950 in cash collateral. Revaluation and remarking are conducted daily. There is no currency mismatch or maturity mismatch.

In this case a haircut of 4% is applied to the government securities lent out while there is no haircut for the collateral received since it is cash.

Then the adjusted value of the collateral,  $C_A$ , is

$$C_A = \frac{C}{1 + H_E + H_C + H_{FX}}$$

$$= \$950 / (1 + 0.04 + 0 + 0)$$

$$= \$913.$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of counterparty ( $r=0.2$ ) are inserted into the equation below. Note that the exposure (\$1,000) exceeds the adjusted value of collateral (\$913).

$$r^* \times E = r \times [E - (1-w) \times C_A]$$

$$r^* \times 1,000 = 0.2 [1000 - (1-0.15) \times 913]$$

$$r^* = 4.47\%$$

and so the risk weighted assets will be \$44.71.

**Example 4: Reverse repo with a bank counterparty, overcollateralised**

Bank B reverse repos in \$1,000-worth of 10-year AAA-rated sovereign securities from Bank A (risk weighted at 50%) and posts \$950 in cash collateral. Revaluation and remargining are conducted daily. There is no currency mismatch or maturity mismatch.

In this case a haircut of 4% is applied to the government securities reverse repoed in while there is no haircut for the collateral posted since it is cash.

Then the adjusted value of the collateral received,  $C_A$ , is

$$\begin{aligned} C_A &= \frac{C}{1 + H_E + H_C + H_{FX}} \\ &= \$1,000 / (1 + 0 + 0.04 + 0) \\ &= \$962. \end{aligned}$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of counterparty ( $r=0.5$ ) are inserted into the equation below. Note that the adjusted value of collateral (\$962) exceeds the exposure (\$950).

$$r^* \times E = r \times w \times E$$

$$r^* \times 950 = 0.5 \times 0.15 \times \$950$$

$$r^* = 7.50\%$$

and so the risk weighted assets will be \$71.25.

**Example 5: flat repo with an non-bank finance company, zero w**

Bank repos out \$1,000-worth of 10-year AAA-rated sovereign securities to finance company (risk weighted at 100%) and receives \$1,000 in cash collateral. Revaluation and remargining are conducted daily. There is no currency mismatch or maturity mismatch and the conditions for a zero  $w$  are satisfied.

A haircut of 4% is applied to the sovereign securities lent out while there is no haircut for the cash collateral received.

Then the adjusted value of the collateral,  $C_A$ , is

$$\begin{aligned} C_A &= \frac{C}{1 + H_E + H_C + H_{FX}} \\ &= \$1,000 / (1 + 0.04 + 0 + 0) \\ &= \$962. \end{aligned}$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0$ ), and the risk weight of counterparty ( $r=1.0$ ) are inserted into the equation below. Note that the exposure (\$1,000) exceeds the adjusted value of collateral (\$962).

$$r^* \times E = r \times [E - (1-w) \times C_A]$$

$$r^* \times 1,000 = 1.0 \times [1000 - 962]$$

$$r^* = 3.85\%$$

and so the risk weighted assets will be \$38.50.

**Example 6: securities lending transaction**

Bank A lends out \$1,000 in 10-year AA-rated sovereign securities to Bank B (risk weight 20%) and receives \$1,000 in 7-year AAA-rated corporate securities. Daily mark-to-market and daily remargining are conducted. There is no currency mismatch or maturity mismatch.

A haircut of 4% is applied to the government securities lent out while a haircut of 8% (see table A in Annex 3) is also applied to the corporate securities taken as collateral.

The adjusted value of the collateral  $C_A$  is

$$C_A = \frac{C}{1 + H_E + H_C + H_{FX}}$$

$$= 1,000 / (1 + 0.04 + 0.08 + 0)$$

$$= \$893.$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of counterparty Bank B ( $r=0.2$ ) are inserted into the equation below. Note that  $E$  (\$1,000) exceeds  $C_A$  (\$893).

$$r^* \times E = r \times [E - (1-w) \times C_A]$$

$$r^* \times 1,000 = 0.2 [1000 - (1-0.15) \times 893]$$

$$r^* = 4.82\%$$

and

as a result the risk weighted assets for Bank A in this securities lending transaction will be \$48.20.

**Example 7: Secured lending to an unrated corporate, cash against main index equities, with a currency mismatch and revaluation every 90 business days**

A bank lends \$950 to an unrated corporate and receives as collateral main index equities denominated in a different currency and currently worth \$1000. The equity collateral is revalued every 90 business days and there is no remargining. The collateral is pledged for the life of the exposure.

With daily remargining, a haircut of 20% (see table in Annex 3) would be applied to the equity collateral while there is no haircut for the lending since it is cash. The ten-day standard supervisory haircut for currency mismatch is 8%. Since the frequency of revaluation is once every 90 days, both of these haircuts need to be increased, according to the following formula for secured lending transactions:

$$H = H_{10} \sqrt{\frac{N_{RV} + 19}{10}}$$

where:

$H$  = haircut

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

$N_{RV}$  = actual number of days between revaluations.

Then  $H_{FX} = 26.2\%$  and  $H_C = 66.0\%$ , and the adjusted value of the collateral received,  $C_A$ , is

$$\begin{aligned} C_A &= \frac{C}{1 + H_E + H_C + H_{FX}} \\ &= \$1000 / (1 + 0 + 0.26 + 0.66) \\ &= \$520. \end{aligned}$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , the weight for remaining risks ( $w=0.15$ ), and the risk weight of counterparty ( $r=1.0$ ) are inserted into the equation below. Note that the exposure (\$950) exceeds the adjusted value of collateral (\$520).

$$\begin{aligned} r^* \times E &= r \times [E - (1-w) \times C_A] \\ r^* \times 950 &= 100\% \times [\$950 - (1-0.15) \times \$520] \\ r^* &= 53.51\% \end{aligned}$$

and so the risk-weighted assets will be \$508.31.

## On-balance sheet netting

### **Example 8: netting of interbank loans and deposits with a maturity and currency mismatch**

A bank lends \$1000 to another bank (eligible for a risk weight of 20%) with a maturity of three years. The same bank counterparty places a two-year deposit in Euros currently worth \$950, revalued every 250 business days. The conditions for on-balance sheet netting are satisfied. There is a currency mismatch and a maturity mismatch. For on-balance sheet netting,  $w$  is zero.

Both loan and deposit are cash, which attracts a zero haircut. The ten-day standard supervisory haircut for currency mismatch is 8%. Since the frequency of revaluation is once every 250 business days, this haircut needs to be increased, according to the following formula for secured lending transactions:

$$H = H_{10} \sqrt{\frac{N_{RV} + 19}{10}}$$

where:

$H$  = haircut

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

$N_{RV}$  = actual number of days between revaluations.

Then  $H_{FX} = 41.5\%$ , and the adjusted value of the collateral received,  $C_A$ , is

$$\begin{aligned} C_A &= \frac{C}{1 + H_E + H_C + H_{FX}} \\ &= \$950 / (1 + 0.42) \\ &= \$671. \end{aligned}$$

In order to calculate the risk weighted assets, the exposure  $E$ ,  $C_A$ , and the risk weight of counterparty ( $w=0.2$ ) are inserted into the equation below. Note that the exposure (\$1,000) exceeds the adjusted value of collateral (\$671).

$$\begin{aligned} r^* \times E &= r \times [E - (1-w) \times C_A] \\ r^* \times 1,000 &= 0.2 \times [1000 - 671] \\ r^* &= 6.57\%. \end{aligned}$$

Finally, there is a maturity mismatch, so  $r^*$  needs to be adjusted according to the following formula, where  $t = 2$  years and  $T = 3$  years.

$$r^{**} = \left(1 - \frac{t}{T}\right)r + \left(\frac{t}{T}\right)r^*$$

So the adjusted risk weight  $r^{**} = 1/3 \times 20\% + 2/3 \times 6.57\% = 11.05\%$ .

Risk-weighted assets are  $Exr^{**} = \$110.48$ .

## Guarantees/credit derivatives

### **Example 9: Loan to an unrated corporate fully guaranteed by a third-party corporate eligible for a 20% risk weight**

A bank has lent \$1000 to an unrated corporate and has obtained a guarantee for the full amount from a third-party corporate (20% counterparty risk weight).

The formula is

$$E x r^* = E x [w x r + (1 - w) x g].$$

Here

$E = \$1000$ ,  $r = 100\%$ ,  $g = 20\%$ ,  $w = 0.15$  and so the risk-weighted assets are

$$\$1000 x [0.15 x 100\% + (1-0.15) x 20\%] = \$320.$$

**Example 10: Loan to an unrated corporate fully protected by a guarantee with a third-party bank eligible for a 20% risk weight**

A bank has lent \$1000 to an unrated corporate and has obtained a guarantee for the full amount from a third-party bank (20% counterparty risk weight). Since the guarantor is a bank, a zero  $w$  applies.

The formula is  $Exr^* = Ex[wxr + (1 - w) xg]$ , where

$E = \$1000$ ,  $r = 100\%$ ,  $g = 20\%$ ,  $w = 0$  and so the risk-weighted assets are

$$\$1000 x 20\% = \$200.$$

Note that this result is equivalent to the present substitution approach.

**Example 11: Pro rata guarantee from bank**

Bank A has an exposure of \$1000 with a three-year residual maturity, and has obtained a pro rata guarantee of \$500 of this exposure, also with a three-year residual maturity.

The formula for  $r^*$  is

$$E x r^* = E x r - (1 - w) x G_A x (r - g).$$

Here  $E = \$1000$ ,  $G_A = \$500$ ,  $r = 100\%$ ,  $g = 20\%$ ,  $w = 0$  and so

$$E x r^* = \$1000 x 100\% - \$500 x (100\% - 20\%),$$

So the risk-weighted assets are  $E x r^* = \$600$ .