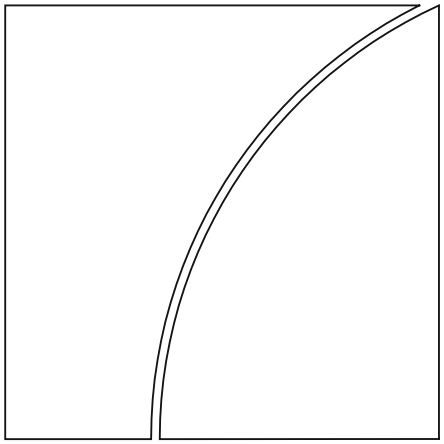
# Basel Committee on Banking Supervision



# Basel III: Finalising post-crisis reforms

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# Contents

# Introduction

1. This document sets out the Basel Committee's finalisation of the Basel III framework. It complements the initial phase of Basel III reforms previously finalised by the Committee. The Basel III framework is a central element of the Basel Committee's response to the global financial crisis. It addresses a number of shortcomings with the pre-crisis regulatory framework and provides a regulatory foundation for a resilient banking system that supports the real economy.

2. A key objective of the revisions in this document is to reduce excessive variability of risk-weighted assets (RWAs). At the peak of the global financial crises, a wide range of stakeholders – including academics, analysts and market participants – lost faith in banks' reported risk-weighted capital ratios. The Committee's own empirical analyses highlighted a worrying degree of variability in the calculation of RWAs by banks.

3. A prudent and credible calculation of RWAs is an integral element of the risk-weighted capital framework. Banks' reported risk-weighted capital ratios should be sufficiently transparent and comparable to permit stakeholders to assess their risk profile. The Committee's strategic review of the regulatory framework highlighted a number of fault lines with the existing architecture, particularly the extent to which it adequately balances simplicity, comparability and risk sensitivity.

4. The revisions to the regulatory framework set out in this document will help restore credibility in the calculation of RWAs by: (i) enhancing the robustness and risk sensitivity of the standardised approaches for credit risk and operational risk, which will facilitate the comparability of banks' capital ratios; (ii) constraining the use of internally-modelled approaches; and (iii) complementing the risk-weighted capital ratio with a finalised leverage ratio and a revised and robust capital floor. An accompanying document summarises the main features of these revisions.[1]

5. In finalising these reforms, the Committee was guided by three overarching principles. First, the Committee is firmly committed to its mandate of strengthening the regulation, supervision and practices of banks worldwide, with the purpose of enhancing financial stability. A banking system that is resilient will be able to support the real economy and contribute positively to sustainable economic growth over the medium term.

6. Second, the Committee actively seeks the views of stakeholders when developing standards. For these reforms, the Committee conducted an extensive consultation process with a wide range of stakeholders. The Committee thanks all stakeholders for their constructive contributions during this process.

7. Third, the Committee conducted a comprehensive and rigorous assessment of the impact of these revisions on the banking system and the wider macro economy. As a result of this assessment, the Committee focused on not significantly increasing overall capital requirements.[2] This is reflected in the design, calibration and transitional arrangements discussed below. The Committee will continue to monitor and evaluate the effectiveness of these reforms in reducing excessive RWA variability.

8. While the revised framework will continue to permit the use of internally-modelled approaches for certain risk categories (subject to supervisory approval), a jurisdiction which does not implement some or all of the internal-modelled approaches but instead only implements the standardised approaches is compliant with the Basel framework. More generally, jurisdictions may elect to implement more

[1] The summary of the main features of the Basel III reforms is available at www.bis.org/bcbs/publ/d424_hlsummary.pdf.

[2] The quantitative impact study is available at www.bis.org/bcbs/publ/d426.htm.

conservative requirements and/or accelerated transitional arrangements, as the Basel framework constitutes minimum standards only.

## Implementation dates and transitional arrangements

9. The Committee is introducing transitional arrangements to implement the new standards to ensure an orderly and timely implementation by jurisdictions and adjustment by banks. The main implementation dates are provided in the table below.

| Revision | Implementation date |
|---|---|
| Revisions to standardised approach for credit risk | • 1 January 2022 |
| Revisions to IRB framework | • 1 January 2022[3] |
| Revisions to CVA framework | • 1 January 2022 |
| Revisions to operational risk framework | • 1 January 2022 |
| Leverage ratio | • Existing exposure definition: 1 January 2018[4]<br>• Revised exposure definition: 1 January 2022[5]<br>• G-SIB buffer: 1 January 2022 |
| Output floor | • 1 January 2022: 50%<br>• 1 January 2023: 55%<br>• 1 January 2024: 60%<br>• 1 January 2025: 65%<br>• 1 January 2026: 70%<br>• 1 January 2027: 72.5% |

[3] On implementation of the revisions to the risk-weighted framework outlined in this standard and the revised output floor, the 1.06 scaling factor that applies to the RWA amounts for credit risk under the IRB approach will no longer apply. More specifically, the references to the scaling factor in paragraphs 14 and 44 of the Basel II framework (June 2006), and paragraphs 49, 88, 90 and 91 of the revised securitisation framework (July 2016) will no longer apply.

[4] Based on the January 2014 definition of the leverage ratio exposure measure. Jurisdictions are free to apply the revised definition of the exposure measure at an earlier date than 1 January 2022.

[5] Based on the revised leverage ratio exposure measure set out in this document.

# Standardised approach for credit risk

## Introduction

1. The Committee permits banks to choose between two broad methodologies for calculating their risk-based capital requirements for credit risk. The first, the standardised approach, assigns standardised risk weights to exposures as described in paragraphs 4 to 97. To determine the risk weights in the standardised approach for certain exposure classes, in jurisdictions that allow the use of external ratings for regulatory purposes, banks may, as a starting point, use assessments by external credit assessment institutions that are recognised as eligible for capital purposes by national supervisors, in accordance with paragraphs 98 to 116. Under the standardised approach, exposures should be risk-weighted net of specific provisions (including partial write-offs).

2. The second risk-weighted capital treatment for measuring credit risk, the internal ratings-based (IRB) approach, allows banks to use their internal rating systems for credit risk, subject to the explicit approval of the bank's supervisor.

3. Securitisation exposures are addressed in the securitisation standard.[1] Credit equivalent amounts of OTC derivatives, exchange traded derivatives and long-settlement transactions that expose a bank to counterparty credit risk[2] are to be calculated under the counterparty credit risk standards.[3] Equity investments in funds and exposures to central counterparties must be treated according to their own specific frameworks.[4]

[1] The securitisation standard is available at www.bis.org/bcbs/publ/d374.pdf.

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

[3] The counterparty credit risk standards are set out in Annex 4 of the Basel II framework (June 2006), amended to reflect the changes set out in: (i) *Basel III: A global regulatory framework for more resilient banks and banking systems (June 2011)*, available at www.bis.org/publ/bcbs189.pdf; (ii) *The standardised approach for measuring counterparty credit risk exposures (April 2014),* available at www.bis.org/publ/bcbs279.pdf; and (iii) *Capital requirements for bank exposures to central counterparties (April 2014)*, available at www.bis.org/publ/bcbs282.pdf.

[4] Standards on capital requirements for banks' equity investments in funds are available at www.bis.org/publ/bcbs266.pdf; and for capital requirements for bank exposures to central counterparties are set out in Section XI of the counterparty credit risk standards.

# A. Individual exposures

## Due diligence requirements

4. Consistent with the Committee's guidance on the assessment of credit risk[5] and paragraphs 733 to 735 of the Basel II framework (June 2006), banks must perform due diligence to ensure that they have an adequate understanding, at origination and thereafter on a regular basis (at least annually), of the risk profile and characteristics of their counterparties. In cases where ratings are used, due diligence is necessary to assess the risk of the exposure for risk management purposes and whether the risk weight applied is appropriate and prudent.[6] The sophistication of the due diligence should be appropriate to the size and complexity of banks' activities. Banks must take reasonable and adequate steps to assess the operating and financial performance levels and trends through internal credit analysis and/or other analytics outsourced to a third party, as appropriate for each counterparty. Banks must be able to access information about their counterparties on a regular basis to complete due diligence analyses.

5. For exposures to entities belonging to consolidated groups, due diligence should, to the extent possible, be performed at the solo entity level to which there is a credit exposure. In evaluating the repayment capacity of the solo entity, banks are expected to take into account the support of the group and the potential for it to be adversely impacted by problems in the group.

6. Banks should have in place effective internal policies, processes, systems and controls to ensure that the appropriate risk weights are assigned to counterparties. Banks must be able to demonstrate to their supervisors that their due diligence analyses are appropriate. As part of their supervisory review, supervisors should ensure that banks have appropriately performed their due diligence analyses, and should take supervisory measures where these have not been done.

## 1. Exposures to sovereigns

*(Treatment unchanged from the Basel II framework (June 2006))*

7. Exposures to sovereigns and their central banks will be risk-weighted as follows:

Risk weight table for sovereigns and central banks — Table 1

| External rating | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– | Unrated |
|---|---|---|---|---|---|---|
| Risk weight | 0% | 20% | 50% | 100% | 150% | 100% |

[5] Basel Committee on Banking Supervision, *Guidance on credit risk and accounting for expected credit losses*, December 2015, available at www.bis.org/bcbs/publ/d350.pdf.

[6] The due diligence requirements do not apply to the exposures set out in paragraphs 7 to 12.

8. At national discretion, a lower risk weight may be applied to banks' exposures to their sovereign (or central bank) of incorporation denominated in domestic currency and funded[7] in that currency.[8] Where this discretion is exercised, other national supervisors 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.

9. For the purpose of risk-weighting exposures to sovereigns, supervisors may recognise the country risk scores assigned by Export Credit Agencies (ECAs). To qualify, an ECA must publish its risk scores and subscribe to the OECD-agreed methodology. Banks may choose to use the risk scores published by individual ECAs that are recognised by their supervisor, or the consensus risk scores of ECAs participating in the "Arrangement on Officially Supported Export Credits".[9] The OECD-agreed methodology establishes eight risk score categories associated with minimum export insurance premiums. These ECA risk scores will correspond to risk weight categories as detailed below.

Risk weight table for sovereigns and central banks — Table 2

| ECA risk scores | 0 to 1 | 2 | 3 | 4 to 6 | 7 |
|---|---|---|---|---|---|
| Risk weight | 0% | 20% | 50% | 100% | 150% |

10. Exposures to the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism (ESM) and the European Financial Stability Facility (EFSF) may receive a 0% risk weight.

## 2. Exposures to non-central government public sector entities (PSEs)

*(Treatment unchanged from the Basel II framework (June 2006), only minor editorial changes have been made to remove reference to current options for banks.)*

11. Exposures to domestic PSEs will be risk-weighted at national discretion, according to either of the following two options.

Risk weight table for PSEs

Option 1: Based on external rating of sovereign — Table 3

| External rating of the sovereign | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– | Unrated |
|---|---|---|---|---|---|---|
| Risk weight under Option 1 | 20% | 50% | 100% | 100% | 150% | 100% |

7 This is to say that the bank would also have corresponding liabilities denominated in the domestic currency.

8 This lower risk weight may be extended to the risk-weighting of collateral and guarantees under the CRM framework.

9 The consensus country risk classification is available on the OECD's website (www.oecd.org) in the Export Credit Arrangement webpage of the Trade Directorate.

Risk weight table for PSEs

Option 2: Based on external rating of PSE — Table 4

| External rating of the PSE | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– | Unrated |
|---|---|---|---|---|---|---|
| Risk weight under Option 2 | 20% | 50% | 50% | 100% | 150% | 50% |

12. Subject to national discretion, exposures to certain domestic PSEs[10] may also be treated as exposures to the sovereigns in whose jurisdictions the PSEs are established. Where this discretion is exercised, other national supervisors may allow their banks to risk-weight exposures to such PSEs in the same manner.

## 3. Exposures to multilateral development banks (MDBs)

13. For the purposes of calculating capital requirements, a Multilateral Development Bank (MDB) is an institution, created by a group of countries that provides financing and professional advice for economic and social development projects. MDBs have large sovereign memberships and may include both developed countries and/or developing countries. Each MDB has its own independent legal and operational status, but with a similar mandate and a considerable number of joint owners.

14. A 0% risk weight will be applied to exposures to MDBs that fulfil to the Committee's satisfaction the eligibility criteria provided below.[11] The Committee will continue to evaluate eligibility on a case-by-case basis. The eligibility criteria for MDBs risk-weighted at 0% are:

(i) very high-quality long-term issuer ratings, ie a majority of an MDB's external ratings must be AAA;[12]

[10] The following examples outline how PSEs might be categorised when focusing on one specific feature, namely revenue-raising powers. However, there may be other ways of determining the different treatments applicable to different types of PSEs, for instance by focusing on the extent of guarantees provided by the central government:

- Regional governments and local authorities could qualify for the same treatment as claims on their sovereign or 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 risk of default.
- 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 according to Option 1 or 2 for PSEs.
- Commercial undertakings owned by central governments, regional governments or by local authorities may be treated as normal commercial enterprises. However, 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 should decide to consider them as corporates and therefore attach to them the applicable risk weights.

[11] MDBs currently eligible for a 0% risk weight are: the World Bank Group comprising the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Development Association (IDA), 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 European Investment Fund (EIF), the Nordic Investment Bank (NIB), the Caribbean Development Bank (CDB), the Islamic Development Bank (IDB), the Council of Europe Development Bank (CEDB), the International Finance Facility for Immunization (IFFIm), and the Asian Infrastructure Investment Bank (AIIB).

[12] MDBs that request to be added to the list of MDBs eligible for a 0% risk weight must comply with the AAA rating criterion at the time of the application. Once included in the list of eligible MDBs, the rating may be downgraded, but in no case lower than AA–. Otherwise, exposures to such MDBs will be subject to the treatment set out in paragraph 15.

(ii) either the shareholder structure comprises a significant proportion of sovereigns with long-term issuer external ratings of AA– or better, or the majority of the MDB's fund-raising is in the form of paid-in equity/capital and there is little or no leverage;

(iii) strong shareholder support demonstrated by the amount of paid-in capital contributed by the shareholders; the amount of further capital the MDBs have the right to call, if required, to repay their liabilities; and continued capital contributions and new pledges from sovereign shareholders;

(iv) adequate level of capital and liquidity (a case-by-case approach is necessary in order to assess whether each MDB's capital and liquidity are adequate); and,

(v) 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.

15. For exposures to all other MDBs, banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes will assign to their MDB exposures the corresponding "base" risk weights determined by the external ratings according to Table 5. Banks incorporated in jurisdictions that do not allow external ratings for regulatory purposes will risk-weight such exposures at 50%.

Risk weight table for MDB exposures — Table 5

| External rating of counterparty | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– | Unrated |
|---|---|---|---|---|---|---|
| "Base" risk weight | 20% | 30% | 50% | 100% | 150% | 50% |

## 4. Exposures to banks

16. For the purposes of calculating capital requirements, a bank exposure is defined as a claim (including loans and senior debt instruments, unless considered as subordinated debt for the purposes of paragraph 53) on any financial institution that is licensed to take deposits from the public and is subject to appropriate prudential standards and level of supervision.[13] The treatment associated with subordinated bank debt and equities is addressed in paragraphs 49 to 53.

### Risk weight determination

17. Bank exposures will be risk-weighted based on the following hierarchy:[14]

[13] For internationally active banks, appropriate prudential standards (eg capital and liquidity requirements) and level of supervision should be in accordance with the Basel framework. For domestic banks, appropriate prudential standards are determined by the national supervisors but should include at least a minimum regulatory capital requirement.

[14] With the exception of exposures giving rise to Common Equity Tier 1, Additional Tier 1 and Tier 2 items, national supervisors may allow banks belonging to the same institutional protection scheme (such as mutual, cooperatives or savings institutions)

(a) External Credit Risk Assessment Approach (ECRA): This approach is for banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes. It applies to all their exposures to banks that are rated. Banks will apply paragraphs 98 to 116 to determine which rating can be used and for which exposures.

(b) Standardised Credit Risk Assessment Approach (SCRA): This approach is for all exposures of banks incorporated in jurisdictions that do not allow the use of external ratings for regulatory purposes. For exposures to banks that are unrated, this approach also applies to banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes.

### *(a) External Credit Risk Assessment Approach (ECRA)*

18. Banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes will assign to their rated bank exposures[15] the corresponding "base" risk weights determined by the external ratings according to Table 6. Such ratings must not incorporate assumptions of implicit government support, unless the rating refers to a public bank owned by its government.[16] Banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes must only apply SCRA for their unrated bank exposures, in accordance with paragraph 21.

Risk weight table for bank exposures

External Credit Risk Assessment Approach — Table 6

| External rating of counterparty | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– |
|---|---|---|---|---|---|
| "Base" risk weight | 20% | 30% | 50% | 100% | 150% |
| Risk weight for short-term exposures | 20% | 20% | 20% | 50% | 150% |

19. Exposures to banks with an original maturity of three months or less, as well as exposures to banks that arise from the movement of goods across national borders with an original maturity of six months or less[17] can be assigned a risk weight that correspond to the risk weights for short term exposures in Table 6.

in their jurisdictions to apply a lower risk weight than that indicated by the ECRA and SCRA to their intra-group or in-network exposures provided that both counterparties to the exposures are members of the same effective institutional protection scheme that is a contractual or statutory arrangement set up to protect those institutions and seeks to ensure their liquidity and solvency to avoid bankruptcy.

[15] An exposure is rated from the perspective of a bank if the exposure is rated by a recognised "eligible credit assessment institution" (ECAI) which has been nominated by the bank (ie the bank has informed its supervisor of its intention to use the ratings of such ECAI for regulatory purposes in a consistent manner (paragraphs 103). In other words, if an external rating exists but the credit rating agency is not a recognised ECAI by the national supervisor, or the rating has been issued by an ECAI which has not been nominated by the bank, the exposure would be considered as being unrated from the perspective of the bank.

[16] Implicit government support refers to the notion that the government would act to prevent bank creditors from incurring losses in the event of a bank default or bank distress. National supervisors may continue to allow banks to use external ratings which incorporate assumptions of implicit government support for up to a period of five years, from the date of implementation of this standard, when assigning the "base" risk weights in Table 6 to their bank exposures.

[17] This may include on-balance sheet exposures such as loans and off-balance sheet exposures such as self-liquidating trade-related contingent items.

20. Banks must perform due diligence to ensure that the external ratings appropriately and conservatively reflect the creditworthiness of the bank counterparties. If the due diligence analysis reflects higher risk characteristics than that implied by the external rating bucket of the exposure (ie AAA to AA–; A+ to A– etc), the bank must assign a risk weight at least one bucket higher than the "base" risk weight determined by the external rating. Due diligence analysis must never result in the application of a lower risk weight than that determined by the external rating.

### *(b) Standardised Credit Risk Assessment Approach (SCRA)*

21. Banks incorporated in jurisdictions that do not allow the use of external ratings for regulatory purposes will apply the SCRA to all their bank exposures. The SCRA also applies to unrated bank exposures for banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes. The SCRA requires bank to classify bank exposures into one of three risk-weight buckets (ie Grades A, B and C) and assign the corresponding risk weights in Table 7. For the purposes of the SCRA only, "published minimum regulatory requirements" in paragraphs 22 to 29 excludes liquidity standards.

Risk weight table for bank exposures

Standardised Credit Risk Assessment Approach — Table 7

| Credit risk assessment of counterparty | Grade A | Grade B | Grade C |
|---|---|---|---|
| "Base" risk weight | 40%[18] | 75% | 150% |
| Risk weight for short-term exposures | 20% | 50% | 150% |

### *Grade A*

22. Grade A refers to exposures to banks, where the counterparty bank has adequate capacity to meet their financial commitments (including repayments of principal and interest) in a timely manner, for the projected life of the assets or exposures and irrespective of the economic cycles and business conditions.

23. A counterparty bank classified into Grade A must meet or exceed the published minimum regulatory requirements and buffers established by its national supervisor as implemented in the jurisdiction where it is incorporated, except for bank-specific minimum regulatory requirements or buffers that may be imposed through supervisory actions (eg via Pillar 2) and not made public. If such minimum regulatory requirements and buffers (other than bank-specific minimum requirements or buffers) are not publicly disclosed or otherwise made available by the counterparty bank then the counterparty bank must be assessed as Grade B or lower.

24. If as part of its due diligence, a bank assesses that a counterparty bank does not meet the definition of Grade A in paragraphs 22 and 23, exposures to the counterparty bank must be classified as Grade B or Grade C.

### *Grade B*

25. Grade B refers to exposures to banks, where the counterparty bank is subject to substantial credit risk, such as repayment capacities that are dependent on stable or favourable economic or business conditions.

26. A counterparty bank classified into Grade B must meet or exceed the published minimum regulatory requirements (excluding buffers) established by its national supervisor as implemented in the

[18] Under the Standardised Credit Risk Assessment Approach, exposures to banks without an external credit rating may receive a risk weight of 30%, provided that the counterparty bank has a CET1 ratio which meets or exceeds 14% and a Tier 1 leverage ratio which meets or exceeds 5%. The counterparty bank must also satisfy all the requirements for Grade A classification.

jurisdiction where it is incorporated, except for bank-specific minimum regulatory requirements that may be imposed through supervisory actions (eg via Pillar 2) and not made public. If such minimum regulatory requirements are not publicly disclosed or otherwise made available by the counterparty bank then the counterparty bank must be assessed as Grade C.

27. Banks will classify all exposures that do not meet the requirements outlined in paragraphs 22 and 23 into Grade B, unless the exposure falls within Grade C under paragraphs 28 and 29.

*Grade C*

28. Grade C refers to higher credit risk exposures to banks, where the counterparty bank has material default risks and limited margins of safety. For these counterparties, adverse business, financial, or economic conditions are very likely to lead, or have led, to an inability to meet their financial commitments.

29. At a minimum, if any of the following triggers is breached, a bank must classify the exposure into Grade C:

- The counterparty bank does not meet the criteria for being classifed as Grade B with respect to its published minimum regulatory requirements, as set out in paragraphs 25 and 26; or
- Where audited financial statements are required, the external auditor has issued an adverse audit opinion or has expressed substantial doubt about the counterparty bank's ability to continue as a going concern in its financial statements or audited reports within the previous 12 months.

Even if these triggers are not breached, a bank may assess that the counterparty bank meets the definition in paragraph 28. In that case, the exposure to such counterparty bank must be classified into Grade C.

30. Exposures to banks with an original maturity of three months or less, as well as exposures to banks that arise from the movement of goods across national borders with an original maturity of six months or less,[19] can be assigned a risk weight that correspond to the risk weights for short term exposures in Table 7.

31. To reflect transfer and convertibility risk under the SCRA, a risk-weight floor based on the risk weight applicable to exposures to the sovereign of the country where the bank counterparty is incorporated will be applied to the risk weight assigned to bank exposures. The sovereign floor applies when the exposure is not in the local currency of the jurisdiction of incorporation of the debtor bank and for a borrowing booked in a branch of the debtor bank in a foreign jurisdiction, when the exposure is not in the local currency of the jurisdiction in which the branch operates. The sovereign floor will not apply to short-term (ie with a maturity below one year) self-liquidating, trade-related contingent items that arise from the movement of goods.[20]

## 5. Exposures to covered bonds

32. Covered bonds are bonds issued by a bank or mortgage institution that are subject by law to special public supervision designed to protect bond holders. Proceeds deriving from the issue of these bonds must be invested in conformity with the law in assets which, during the whole period of the validity of the bonds, are capable of covering claims attached to the bonds and which, in the event of the failure of the issuer, would be used on a priority basis for the reimbursement of the principal and payment of the accrued interest.

[19] This may include on-balance sheet exposures such as loans and off-balance sheet exposures such as self-liquidating trade-related contingent items.

[20] Basel Committee on Banking Supervision, *Treatment of trade finance under the Basel capital framework*, October 2011, available at http://www.bis.org/publ/bcbs205.pdf.

*Eligible assets*

33. In order to be eligible for the risk weights set out in paragraph 35, the underlying assets (the cover pool) of covered bonds as defined in paragraph 32 shall meet the requirements set out in paragraph 34 and shall include any of the following:

- claims on, or guaranteed by, sovereigns, their central banks, public sector entities or multilateral development banks;
- claims secured by residential real estate that meet the criteria set out in paragraph 60 and with a loan-to-value ratio of 80% or lower;
- claims secured by commercial real estate that meets the criteria set out in paragraph 60 and with a loan-to-value ratio of 60% or lower; or
- claims on, or guaranteed by banks that qualify for a 30% or lower risk weight. However, such assets cannot exceed 15% of covered bond issuances.

The nominal value of the pool of assets assigned to the covered bond instrument(s) by its issuer should exceed its nominal outstanding value by at least 10%. The value of the pool of assets for this purpose does not need to be that required by the legislative framework. However, if the legislative framework does not stipulate a requirement of at least 10%, the issuing bank needs to publicly disclose on a regular basis that their cover pool meets the 10% requirement in practice. In addition to the primary assets listed in this paragraph, additional collateral may include substitution assets (cash or short term liquid and secure assets held in substitution of the primary assets to top up the cover pool for management purposes) and derivatives entered into for the purposes of hedging the risks arising in the covered bond program.

The conditions set out in this paragraph must be satisfied at the inception of the covered bond and throughout its remaining maturity.

*Disclosure requirements*

34. Exposures in the form of covered bonds are eligible for the treatment set out in paragraph 35, provided that the bank investing in the covered bonds can demonstrate to its national supervisors that:

(a) it receives portfolio information at least on: (i) the value of the cover pool and outstanding covered bonds; (ii) the geographical distribution and type of cover assets, loan size, interest rate and currency risks; (iii) the maturity structure of cover assets and covered bonds; and (iv) the percentage of loans more than 90 days past due;

(b) the issuer makes the information referred to in point (a) available to the bank at least semi-annually.

35. Covered bonds that meet the criteria set out in the paragraphs 33 and 34 shall be risk-weighted based on the issue-specific rating or the issuer's risk weight according to the rules outlined in paragraphs 98 to 116. For covered bonds with issue-specific ratings,[21] the risk weight shall be determined according to Table 8. For unrated covered bonds, the risk weight would be inferred from the issuer's ECRA or SCRA risk weight according to Table 9.

[21] An exposure is rated from the perspective of a bank if the exposure is rated by a recognised "eligible credit assessment institution" (ECAI) which has been nominated by the bank (ie the bank has informed its supervisor of its intention to use the ratings of such ECAI for regulatory purposes in a consistent manner (see paragraphs 103). In other words, if an external rating exists but the credit rating agency is not a recognised ECAI by the national supervisor, or the rating has been issued by an ECAI which has not been nominated by the bank, the exposure would be considered as being unrated from the perspective of the bank.

Risk weight table for rated covered bond exposures Table 8

| Issue-specific rating of the covered bond | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to B– | Below B– |
|---|---|---|---|---|---|
| "Base" risk weight | 10% | 20% | 20% | 50% | 100% |

Risk weight table for unrated covered bond exposures Table 9

| Risk weight of the issuing bank | 20% | 30% | 40% | 50% | 75% | 100% | 150% |
|---|---|---|---|---|---|---|---|
| "Base" risk weight | 10% | 15% | 20% | 25% | 35% | 50% | 100% |

36. Banks must perform due diligence to ensure that the external ratings appropriately and conservatively reflect the creditworthiness of the covered bond and the issuing bank. If the due diligence analysis reflects higher risk characteristics than that implied by the external rating bucket of the exposure (ie AAA to AA–; A+ to A– etc), the bank must assign a risk weight at least one bucket higher than the "base" risk weight determined by the external rating. Due diligence analysis must never result in the application of a lower risk weight than that determined by the external rating.

## 6. Exposures to securities firms and other financial institutions

37. Exposures to securities firms and other financial institutions will be treated as exposures to banks provided that these firms are subject to prudential standards and a level of supervision equivalent to those applied to banks (including capital and liquidity requirements). National supervisors should determine whether the regulatory and supervisory framework governing securities firms and other financial institutions in their own jurisdictions is equivalent to that which is applied to banks in their own jurisdictions. Where the regulatory and supervisory framework governing securities firms and other financial institutions is determined to be equivalent to that applied to banks in a jurisdiction, other national supervisors may allow their banks to risk weight such exposures to securities firms and other financial institutions as exposures to banks. Exposures to all other securities firms and financial institutions will be treated as exposures to corporates.

## 7. Exposures to corporates

38. For the purposes of calculating capital requirements, exposures to corporates include exposures (loans, bonds, receivables, etc) to incorporated entities, associations, partnerships, proprietorships, trusts, funds and other entities with similar characteristics, except those which qualify for one of the other exposure classes. The treatment associated with subordinated debt and equities of these counterparties is addressed in paragraphs 49 to 53. The corporate exposure class includes exposures to insurance companies and other financial corporates that do not meet the definitions of exposures to banks, or securities firms and other financial institutions, as determined in paragraphs 16 and 37 respectively. The corporate exposure class does not include exposures to individuals. The corporate exposure class differentiates between the following subcategories:

(i) General corporate exposures;

(ii) Specialised lending exposures, as defined in paragraph 44.

## 7.1 General corporate exposures

*Risk weight determination*

39. For corporate exposures of banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes, banks will assign "base" risk weights according to Table 10.[22] Banks must perform due diligence to ensure that the external ratings appropriately and conservatively reflect the creditworthiness of the counterparties. Banks which have assigned risk weights to their rated bank exposures based on paragraph 18 must assign risk weights for all their corporate exposures according to Table 10. If the due diligence analysis reflects higher risk characteristics than that implied by the external rating bucket of the exposure (ie AAA to AA–; A+ to A– etc), the bank must assign a risk weight at least one bucket higher than the "base" risk weight determined by the external rating. Due diligence analysis must never result in the application of a lower risk weight than that determined by the external rating.

40. Unrated corporate exposures of banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes will receive a 100% risk weight, with the exception of unrated exposures to corporate small and medium entities (SMEs), as described in paragraph 43.

### Risk weight table for corporate exposures

Jurisdictions that use external ratings for regulatory purposes — Table 10

| External rating of counterparty | AAA to AA– | A+ to A– | BBB+ to BBB– | BB+ to BB– | Below BB– | Unrated |
|---|---|---|---|---|---|---|
| "Base" risk weight | 20% | 50% | 75% | 100% | 150% | 100% |

41. For corporate exposures of banks incorporated in jurisdictions that do not allow the use of external ratings for regulatory purposes, banks will assign a 100% risk weight to all corporate exposures, with the exception of:

- exposures to corporates identified as "investment grade" in paragraph 42; and
- exposures to corporate SMEs in paragraph 43.

Banks must apply the treatment set out in this paragraph to their corporate exposures if they have assigned risk weights to their rated bank exposures based on paragraph 21.

42. Banks in jurisdictions that do not allow the use of external ratings for regulatory purposes may assign a 65% risk weight to exposures to "investment grade" corporates. An "investment grade" corporate is a corporate entity that has adequate capacity to meet its financial commitments in a timely manner and its ability to do so is assessed to be robust against adverse changes in the economic cycle and business conditions. When making this determination, the bank should assess the corporate entity against the investment grade definition taking into account the complexity of its business model, performance against industry and peers, and risks posed by the entity's operating environment. Moreover, the corporate entity (or its parent company) must have securities outstanding on a recognised securities exchange.

43. For unrated exposures to corporate SMEs (defined as corporate exposures where the reported annual sales for the consolidated group of which the corporate counterparty is a part is less than or equal to €50 million for the most recent financial year), an 85% risk weight will be applied. Exposures to SMEs that meet the criteria in paragraph 55 will be treated as regulatory retail SME exposures and risk weighted at 75%.

[22] An exposure is rated from the perspective of a bank if the exposure is rated by a recognised "eligible credit assessment institution" (ECAI) which has been nominated by the bank (ie the bank has informed its supervisor of its intention to use the ratings of such ECAI for regulatory purposes in a consistent manner (paragraphs 103). In other words, if an external rating exists but the credit rating agency is not a recognised ECAI by the national supervisor, or the rating has been issued by an ECAI which has not been nominated by the bank, the exposure would be considered as being unrated from the perspective of the bank.

## 7.2 Specialised lending

44. A corporate exposure will be treated as a specialised lending exposure if such lending possesses some or all of the following characteristics, either in legal form or economic substance:

- The exposure is not related to real estate and is within the definitions of object finance, project finance or commodities finance under paragraph 45. If the activity is related to real estate, the treatment would be determined in accordance with paragraphs 59 to 75;
- The exposure is typically to an entity (often a special purpose vehicle (SPV)) that was created specifically to finance and/or operate physical assets;
- The borrowing entity has few or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed. The primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of the borrowing entity; and
- The terms of the obligation give the lender a substantial degree of control over the asset(s) and the income that it generates.

45. Exposures described in paragraph 44 will be classified in one of the following three subcategories of specialised lending:

(i) Project finance refers to the method of funding in which the lender looks primarily to the revenues generated by a single project, both as the source of repayment and as security for the loan. This type of financing is usually for large, complex and expensive installations such as power plants, chemical processing plants, mines, transportation infrastructure, environment, media, and telecoms. Project finance may take the form of financing the construction of a new capital installation, or refinancing of an existing installation, with or without improvements.

(ii) Object finance refers to the method of funding the acquisition of equipment (eg ships, aircraft, satellites, railcars, and fleets) where the repayment of the loan is dependent on the cash flows generated by the specific assets that have been financed and pledged or assigned to the lender.

(iii) Commodities finance refers to short-term lending to finance reserves, inventories, or receivables of exchange-traded commodities (eg crude oil, metals, or crops), where the loan will be repaid from the proceeds of the sale of the commodity and the borrower has no independent capacity to repay the loan.

46. Banks incorporated in jurisdictions that allow the use of external ratings for regulatory purposes will assign to their specialised lending exposures the risk weights determined by the *issue-specific* external ratings, if these are available, according to Table 10. Issuer ratings must not be used (ie paragraph 107 does not apply in the case of specialised lending exposures).

47. For specialised lending exposures for which an issue-specific external rating is not available, and for all specialised lending exposures of banks incorporated in jurisdictions that do not allow the use of external ratings for regulatory purposes, the following risk weights will apply:

- Object and commodities finance exposures will be risk-weighted at 100%;
- Project finance exposures will be risk-weighted at 130% during the pre-operational phase and 100% during the operational phase. Project finance exposures in the operational phase which are deemed to be high quality, as described in paragraph 48, will be risk weighted at 80%. For this purpose, operational phase is defined as the phase in which the entity that was specifically created to finance the project has (i) a positive net cash flow that is sufficient to cover any remaining contractual obligation, and (ii) declining long term debt.

48. A high quality project finance exposure refers to an exposure to a project finance entity that is able to meet its financial commitments in a timely manner and its ability to do so is assessed to be robust

against adverse changes in the economic cycle and business conditions. The following conditions must also be met:

- The project finance entity is restricted from acting to the detriment of the creditors (eg by not being able to issue additional debt without the consent of existing creditors);
- The project finance entity has sufficient reserve funds or other financial arrangements to cover the contingency funding and working capital requirements of the project;
- The revenues are availability-based[23] or subject to a rate-of-return regulation or take-or-pay contract;
- The project finance entity's revenue depends on one main counterparty and this main counterparty shall be a central government, PSE or a corporate entity with a risk weight of 80% or lower;
- The contractual provisions governing the exposure to the project finance entity provide for a high degree of protection for creditors in case of a default of the project finance entity;
- The main counterparty or other counterparties which similarly comply with the eligibility criteria for the main counterparty will protect the creditors from the losses resulting from a termination of the project;
- All assets and contracts necessary to operate the project have been pledged to the creditors to the extent permitted by applicable law; and
- Creditors may assume control of the project finance entity in case of its default.

## 8. Subordinated debt, equity and other capital instruments

49. The treatment described in paragraphs 50 to 53 applies to subordinated debt, equity and other regulatory capital instruments issued by either corporates or banks, provided that such instruments are not deducted from regulatory capital or risk-weighted at 250% according to paragraphs 87 to 90 of the Basel III framework (June 2011). Equity exposures are defined on the basis of the economic substance of the instrument. They include both direct and indirect ownership interests,[24] whether voting or non-voting, in the assets and income of a commercial enterprise or of a financial institution that is not consolidated or deducted. An instrument is considered to be an equity exposure if it meets all of the following requirements:

- It is irredeemable in the sense that the return of invested funds can be achieved only by the sale of the investment or sale of the rights to the investment or by the liquidation of the issuer;
- It does not embody an obligation on the part of the issuer; and
- It conveys a residual claim on the assets or income of the issuer.

Additionally any of the following instruments must be categorised as an equity exposure:

[23] Availability-based revenues mean that once construction is completed, the project finance entity is entitled to payments from its contractual counterparties (eg the government), as long as contract conditions are fulfilled. Availability payments are sized to cover operating and maintenance costs, debt service costs and equity returns as the project finance entity operates the project. Availability payments are not subject to swings in demand, such as traffic levels, and are adjusted typically only for lack of performance or lack of availability of the asset to the public.

[24] Indirect equity interests include holdings of derivative instruments tied to equity interests, and holdings in corporations, partnerships, limited liability companies or other types of enterprises that issue ownership interests and are engaged principally in the business of investing in equity instruments.

- An instrument with the same structure as those permitted as Tier 1 capital for banking organisations.
- An instrument that embodies an obligation on the part of the issuer and meets any of the following conditions:

    1) The issuer may defer indefinitely the settlement of the obligation;

    2) The obligation requires (or permits at the issuer's discretion) settlement by issuance of a fixed number of the issuer's equity shares;

    3) The obligation requires (or permits at the issuer's discretion) settlement by issuance of a variable number of the issuer's equity shares and (ceteris paribus) any change in the value of the obligation is attributable to, comparable to, and in the same direction as, the change in the value of a fixed number of the issuer's equity shares;[25] or,

    4) The holder has the option to require that the obligation be settled in equity shares, unless either (i) in the case of a traded instrument, the supervisor is content that the bank has demonstrated that the instrument trades more like the debt of the issuer than like its equity, or (ii) in the case of non-traded instruments, the supervisor is content that the bank has demonstrated that the instrument should be treated as a debt position. In cases (i) and (ii), the bank may decompose the risks for regulatory purposes, with the consent of the supervisor.

Debt obligations and other securities, partnerships, derivatives or other vehicles structured with the intent of conveying the economic substance of equity ownership are considered an equity holding.[26] This includes liabilities from which the return is linked to that of equities.[27] Conversely, equity investments that are structured with the intent of conveying the economic substance of debt holdings or securitisation exposures would not be considered an equity holding.[28]

[25] For certain obligations that require or permit settlement by issuance of a variable number of the issuer's equity shares, the change in the monetary value of the obligation is equal to the change in the fair value of a fixed number of equity shares multiplied by a specified factor. Those obligations meet the conditions of item 3 if both the factor and the referenced number of shares are fixed. For example, an issuer may be required to settle an obligation by issuing shares with a value equal to three times the appreciation in the fair value of 1,000 equity shares. That obligation is considered to be the same as an obligation that requires settlement by issuance of shares equal to the appreciation in the fair value of 3,000 equity shares.

[26] Equities that are recorded as a loan but arise from a debt/equity swap made as part of the orderly realisation or restructuring of the debt are included in the definition of equity holdings. However, these instruments may not attract a lower capital charge than would apply if the holdings remained in the debt portfolio.

[27] Supervisors may decide not to require that such liabilities be included where they are directly hedged by an equity holding, such that the net position does not involve material risk.

[28] The national supervisor has the discretion to re-characterise debt holdings as equites for regulatory purposes and to otherwise ensure the proper treatment of holdings under Pillar 2.

50. Banks will assign a risk weight of 400% to speculative unlisted equity exposures described in paragraph 51 and a risk weight of 250% to all other equity holdings, with the exception of those equity holdings referred to in paragraph 52.[29]

51. Speculative unlisted equity exposures are defined as equity investments in unlisted companies that are invested for short-term resale purposes or are considered venture capital or similar investments which are subject to price volatility and are acquired in anticipation of significant future capital gains.[30]

52. National supervisors may allow banks to assign a risk weight of 100% to equity holdings made pursuant to national legislated programmes that provide significant subsidies for the investment to the bank and involve government oversight and restrictions on the equity investments. Such treatment can only be accorded to equity holdings up to an aggregate of 10% of the bank's combined Tier 1 and Tier 2 capital. Example of restrictions are limitations on the size and types of businesses in which the bank is investing, allowable amounts of ownership interests, geographical location and other pertinent factors that limit the potential risk of the investment to the bank.

53. Banks will assign a risk weight of 150% to subordinated debt and capital instruments other than equities. Any liabilities that meet the definition of "other TLAC liabilities" in paragraphs 66b and 66c of the amended version of Basel III set out in the TLAC holdings standard (October 2016) and that are not deducted from regulatory capital are considered to be subordinated debt for the purposes of this paragraph.

## 9. Retail exposures

54. Retail exposures are exposures to an individual person or persons, or to regulatory retail SMEs.[31] Retail exposures secured by real estate will be treated according to paragraphs 59 to 75. All other retail exposures will be treated as outlined in paragraphs 55 to 58.

55. Retail exposures that meet all of the criteria listed below will be classified as "regulatory retail" exposures and risk-weighted at 75%. Defaulted retail exposures are to be excluded from the overall regulatory retail portfolio when assessing the granularity criterion.

- Product criterion: the exposure takes the form of any of the following: revolving credits and lines of credit (including credit cards, charge cards and overdrafts), personal term loans and leases (eg instalment loans, auto loans and leases, student and educational loans, personal finance) and

[29] The risk weight treatment described in paragraph 50, excluding equity holdings referred to in paragraph 52, will be subject to a five-year linear phase-in arrangement from the date of implementation of this standard. For speculative unlisted equity exposures, the applicable risk weight will start at 100% and increase by 60 percentage points at the end of each year until the end of Year 5. For all other equity holdings, the applicable risk weight will start at 100% and increase by 30 percentage points at the end of each year until the end of Year 5.

[30] For example, investments in unlisted equities of corporate clients with which the bank has or intends to establish a long-term business relationship and debt-equity swaps for corporate restructuring purposes would be excluded.

[31] Regulatory retail SMEs are SMEs, defined in accordance to paragraph 43, that meet the requirements set out in paragraph 55. In some jurisdictions (eg emerging economies), national supervisors might deem it appropriate to define SMEs in a more conservative manner (ie with a lower level of sales).

small business facilities and commitments. Mortgage loans, derivatives and other securities (such as bonds and equities), whether listed or not, are specifically excluded from this category.

- Low value of individual exposures: the maximum aggregated exposure to one counterparty cannot exceed an absolute threshold of €1 million.
- Granularity criterion: no aggregated exposure to one counterparty[32] can exceed 0.2%[33] of the overall regulatory retail portfolio, unless national supervisors have determined another method to ensure satisfactory diversification of the regulatory retail portfolio.

56. "Regulatory retail" exposures which meet the criteria in paragraph 55 that arise from obligors who qualify as transactors will be risk-weighted at 45%. Transactors are obligors in relation to facilities such as credit cards and charge cards where the balance has been repaid in full at each scheduled repayment date for the previous 12 months. Obligors in relation to overdraft facilities would also be considered as transactors if there has been no drawdowns over the previous 12 months.

57. "Other retail": exposures to an individual person or persons that do not meet all of the criteria in paragraph 55 will be risk-weighted at 100%.

58. Exposures to SMEs that do not meet all of the criteria in paragraph 55 will be treated as corporate SMEs exposures under paragraph 43, unless secured by real estate.

## 10. Real estate exposure class

59. The risk weights in Tables 11, 12, 13 and 14 and the approaches set out in paragraphs 65 and 71 will apply to jurisdictions where structural factors result in sustainably low credit losses associated with the exposures to the real estate market. National supervisors should evaluate whether the risk weights in the corresponding risk weight tables are too low for these types of exposures in their jurisdictions based on default experience and other factors such as market price stability. Supervisors may require banks in their jurisdictions to increase these risk weights as appropriate.

60. To apply the risk-weights in Tables 11, 12, 13 and 14 and the approaches set out in paragraphs 65 and 71, the loan must meet the following requirements:

- Finished property: the property securing the exposure must be fully completed. This requirement does not apply to forest and agricultural land. Subject to national discretion, supervisors may apply the risk-weight treatment described in paragraphs 64 and 65 for loans to individuals that are secured by residential property under construction or land upon which residential property would be constructed, provided that: (i) the property is a one-to-four family residential housing unit that will be the primary residence of the borrower and the lending to the individual is not, in

[32] Aggregated exposure means gross amount (ie not taking any credit risk mitigation into account) of all forms of retail exposures, excluding residential real estate exposures. In case of off-balance sheet claims, the gross amount would be calculated after applying credit conversion factors. In addition, "to one counterparty" means one or several entities that may be considered as a single beneficiary (eg in the case of a small business that is affiliated to another small business, the limit would apply to the bank's aggregated exposure on both businesses).

[33] To avoid circular calculations, the granularity criterion will be verified only once. The calculation must be done on the portfolio of retail exposures that meet the product and orientation criteria as well as the low value of the exposure.

effect, indirectly financing land acquisition, development and construction exposures described in paragraph 74; or (ii) where the sovereign or PSEs involved have the legal powers and ability to ensure that the property under construction will be finished.

- Legal enforceability: any claim on the property taken must be legally enforceable in all relevant jurisdictions. The collateral agreement and the legal process underpinning it must be such that they provide for the bank to realise the value of the property within a reasonable time frame.
- Claims over the property: the loan is a claim over the property where the lender bank holds a first lien over the property, or a single bank holds the first lien and any sequentially lower ranking lien(s) (ie there is no intermediate lien from another bank) over the same property. However, in jurisdictions where junior liens provide the holder with a claim for collateral that is legally enforceable and constitute an effective credit risk mitigant, junior liens held by a different bank than the one holding the senior lien may also be recognised.[34] In order to meet the above requirements, the national frameworks governing liens should ensure the following: (i) each bank holding a lien on a property can initiate the sale of the property independently from other entities holding a lien on the property; and (ii) where the sale of the property is not carried out by means of a public auction, entities holding a senior lien take reasonable steps to obtain a fair market value or the best price that may be obtained in the circumstances when exercising any power of sale on their own (ie it is not possible for the entity holding the senior lien to sell the property on its own at a discounted value in detriment of the junior lien).[35]
- Ability of the borrower to repay: the borrower must meet the requirements set according to paragraph 61.
- Prudent value of property: the property must be valued according to the criteria in paragraph 62 for determining the value in the loan to value (LTV) ratio. Moreover, the value of the property must not depend materially on the performance of the borrower.

[34] Likewise, this would apply to junior liens held by the same bank that holds the senior lien in case there is an intermediate lien from another bank (ie the senior and junior liens held by the bank are not in sequential ranking order).

[35] In certain jurisdictions, the majority of bank loans to individuals for the purchase of residential property are not provided as mortgages in legal form. Instead, they are typically provided as loans that are guaranteed by a highly rated monoline guarantor that is required to repay the bank in full if the borrower defaults, and where the bank has legal right to take a mortgage on the property in the event that the guarantor fails. These loans may be treated as residential real estate exposures (rather than guaranteed loans) if the following additional conditions are met:

(i) the borrower shall be contractually committed not to grant any mortgage lien without the consent of the bank that granted the loan;

(ii) the guarantor shall be either a bank or a financial institution subject to capital requirements comparable to those applied to banks or an insurance undertaking;

(iii) the guarantor shall establish a fully-funded mutual guarantee fund or equivalent protection for insurance undertakings to absorb credit risk losses, whose calibration shall be periodically reviewed by its supervisors and subject to periodic stress testing; and

(iv) the bank shall be contractually and legally allowed to take a mortgage on the property in the event that the guarantor fails.

- Required documentation: all the information required at loan origination and for monitoring purposes must be properly documented, including information on the ability of the borrower to repay and on the valuation of the property.

61. National supervisors should ensure that banks put in place underwriting policies with respect to the granting of mortgage loans that include the assessment of the ability of the borrower to repay. Underwriting policies must define a metric(s) (such as the loan's debt service coverage ratio) and specify its (their) corresponding relevant level(s) to conduct such assessment.[36] Underwriting policies must also be appropriate when the repayment of the mortgage loan depends materially on the cash flows generated by the property, including relevant metrics (such as an occupancy rate of the property). National supervisors may provide guidance on appropriate definitions and levels for these metrics in their jurisdictions.

62. The LTV ratio is the amount of the loan divided by the value of the property. The value of the property will be maintained at the value measured at origination unless national supervisors elect to require banks to revise the property value downward.[37] The value must be adjusted if an extraordinary, idiosyncratic event occurs resulting in a permanent reduction of the property value. Modifications made to the property that unequivocally increase its value could also be considered in the LTV. When calculating the LTV ratio, the loan amount will be reduced as the loan amortises.

The LTV ratio must be prudently calculated in accordance with the following requirements:

- Amount of the loan: includes the outstanding loan amount and any undrawn committed amount of the mortgage loan.[38] The loan amount must be calculated gross of any provisions and other risk mitigants, except for pledged deposits accounts with the lending bank that meet all requirements for on-balance sheet netting and have been unconditionally and irrevocably pledged for the sole purposes of redemption of the mortgage loan.[39]

[36] Metrics and levels for measuring the ability to repay should mirror the FSB *Principles for sound residential mortgage underwriting practices (April 2012)*.

[37] If the value has been adjusted downwards, a subsequent upwards adjustment can be made but not to a higher value than the value at origination.

[38] If a bank grants different loans secured by the same property and they are sequential in ranking order (ie there is no intermediate lien from another bank), the different loans should be considered as a single exposure for risk-weighting purposes, and the amount of the loans should be added to calculate the LTV ratio.

[39] In jurisdictions where junior liens held by a different bank than that holding the senior lien are recognised (in accordance with paragraph 60), the loan amount of the junior liens must include all other loans secured with liens of equal or higher ranking than the bank's lien securing the loan for purposes of defining the LTV bucket and risk weight for the junior lien. If there is insufficient information for ascertaining the ranking of the other liens, the bank should assume that these liens rank pari passu with the junior lien held by the bank. This treatment does not apply to exposures that are risk weighted according to paragraphs 65 and 71, where the junior lien would be taken into account in the calculation of the value of the property. The bank will first determine the "base" risk weight based on Tables 11, 12, 13 or 14 as applicable and adjust the "base" risk weight by a multiplier of 1.25, for application to the loan amount of the junior lien. If the "base" risk weight corresponds to the lowest LTV bucket, the multiplier will not be applied. The resulting risk weight of multiplying the "base" risk weight by 1.25 will be capped at the risk weight applied to the exposure when the requirements in paragraph 60 are not met.

- Value of the property: the valuation must be appraised independently [40] using prudently conservative valuation criteria. To ensure that the value of the property is appraised in a prudently conservative manner, the valuation must exclude expectations on price increases and must be adjusted to take into account the potential for the current market price to be significantly above the value that would be sustainable over the life of the loan. National supervisors should provide guidance setting out prudent valuation criteria where such guidance does not already exist under national law. If a market value can be determined, the valuation should not be higher than the market value.[41]

A guarantee or financial collateral may be recognised as a credit risk mitigant in relation to exposures secured by real estate if it qualifies as eligible collateral under the credit risk mitigation framework. This may include mortgage insurance[42] if it meets the operational requirements of the credit risk mitigation framework for a guarantee. Banks may recognise these risk mitigants in calculating the exposure amount; however, the LTV bucket and risk weight to be applied to the exposure amount must be determined before the application of the appropriate credit risk mitigation technique.

## 10.1 Exposures secured by residential real estate

63. A residential real estate exposure is an exposure secured by an immovable property that has the nature of a dwelling and satisfies all applicable laws and regulations enabling the property to be occupied for housing purposes (ie residential property).[43]

64. Where the requirements in paragraph 60 are met and provided that paragraphs 67, 74 and 75 are not applicable, the risk weight to be assigned to the total exposure amount will be determined based on the exposure's LTV ratio in Table 11.

### Risk weight table for residential real estate exposures

(Repayment is not materially dependent on cash flows generated by property) Table 11

| | LTV ≤ 50% | 50% < LTV ≤ 60% | 60% < LTV ≤ 80% | 80% < LTV ≤ 90% | 90% < LTV ≤ 100% | LTV > 100% |
|---|---|---|---|---|---|---|
| Risk weight | 20% | 25% | 30% | 40% | 50% | 70% |

65. As an alternative to the approach in paragraph 64, where the requirements in paragraph 60 are met and provided that paragraphs 67, 74 and 75 are not applicable, jurisdictions may apply a risk weight of 20% to the part of the exposure up to 55% of the property value and the risk weight of the counterparty as prescribed in footnote 45 to the residual exposure. [44] Where there are liens on the property that are not held by the bank, the treatment is as follows:

- Case 1: the bank holds the junior lien and there are senior liens not held by the bank. When the value of all liens exceeds 55% of the property value, the amount of the bank's lien that is eligible for the 20% risk weight should be calculated as the maximum of: (i) 55% of the property value minus the amount of the senior liens; and (ii) zero. For example, for a loan of €70,000 to an

[40] The valuation must be done independently from the bank's mortgage acquisition, loan processing and loan decision process.

[41] In the case where the mortgage loan is financing the purchase of the property, the value of the property for LTV purposes will not be higher than the effective purchase price.

[42] A bank's use of mortgage insurance should mirror the *FSB Principles for sound residential mortgage underwriting* (April 2012).

[43] For residential property under construction described in paragraph 60, this means there should be an expectation that the property will satisfy all applicable laws and regulations enabling the property to be occupied for housing purposes

[44] For example, for a loan of €70,000 to an individual secured on a property valued at €100,000, the bank will apply a risk weight of 20% to €55,000 of the exposure and, according to footnote 45, a risk weight of 75% to the residual exposure of €15,000. This gives total risk weighted assets for the exposure of €22,250 =(0.20 * €55,000) + (0.75 * €15,000).

individual secured on a property valued at €100,000, where there is also a senior ranking lien of €10,000 held by another institution, the bank will apply a risk weight of 20% to €45,000 (=max(€55,000 - €10,000, 0)) of the exposure and, according to footnote 45, a risk weight of 75% to the residual exposure of €25,000. When the value of all liens does not exceed 55% of the property value, a risk weight of 20% will be applied to the bank's exposure.

- Case 2: there are liens not held by the bank that rank pari passu with the bank's lien and there are no other senior or junior liens. When the value of all liens exceeds 55% of the property value, the part of the bank's exposure that is eligible for the 20% risk weight should be calculated as the product of: (i) 55% of the property value; and (ii) the bank's exposure divided by the sum of all pari passu liens. For example, for a loan of €70,000 to an individual secured on a property valued at €100,000, where there is also a pari passu ranking lien of €10,000 held by another institution, the bank will apply a risk weight of 20% to €48,125 (=€55,000 * €70,000/€80,000) of the exposure and, according to footnote 45, a risk weight of 75% to the residual exposure of €21,875. When the value of all liens does not exceed 55% of the property value, a risk weight of 20% will be applied to the bank's exposure.

66. For exposures where any of the requirements in paragraph 60 are not met and paragraphs 67, 74 and 75 are not applicable, the risk weight applicable will be the risk weight of the counterparty.[45]

67. When the prospects for servicing the loan materially depend[46] on the cash flows generated by the property securing the loan rather than on the underlying capacity of the borrower to service the debt from other sources, and provided that paragraphs 74 and 75 are not applicable, the exposure will be risk-weighted as follows:

- if the requirements in paragraph 60 are met, according to the LTV ratio as set out in Table 12 below; and
- if any of the requirements of paragraph 60 are not met, at 150%.

The primary source of these cash flows would generally be lease or rental payments, or the sale of the residential property. The distinguishing characteristic of these exposures compared to other residential real estate exposures is that both the servicing of the loan and the prospects for recovery in the event of default depend materially on the cash flows generated by the property securing the exposure.

Risk weight table for residential real estate exposures

(Repayment is materially dependent on cash flows generated by property) Table 12

| | LTV ≤ 50% | 50% < LTV ≤ 60% | 60% < LTV ≤ 80% | 80% < LTV ≤ 90% | 90% < LTV ≤ 100% | LTV > 100% |
|---|---|---|---|---|---|---|
| Risk weight | 30% | 35% | 45% | 60% | 75% | 105% |

68. The following types of exposures are excluded from the treatment described in paragraph 67 and instead, subject to the treatment described in paragraphs 64 to 66:

- An exposure secured by a property that is the borrower's primary residence;

[45] For exposures to individuals the risk weight applied will be 75%. For exposures to SMEs, the risk weight applied will be 85%. For exposures to other counterparties, the risk weight applied is the risk weight that would be assigned to an unsecured exposure to that counterparty.

[46] It is expected that the material dependence condition would predominantly apply to loans to corporates, SMEs or SPVs, but is not restricted to those borrower types. As an example, a loan may be considered materially dependent if more than 50% of the income from the borrower used in the bank's assessment of its ability to service the loan is from cash flows generated by the residential property. National supervisors may provide further guidance setting out criteria on how material dependence should be assessed for specific exposure types.

- An exposure secured by an income-producing residential housing unit, to an individual who has mortgaged less than a certain number of properties or housing units, as specified by national supervisors;
- An exposure secured by residential real estate property to associations or cooperatives of individuals that are regulated under national law and exist with the only purpose of granting its members the use of a primary residence in the property securing the loans; and
- An exposure secured by residential real estate property to public housing companies and not-for-profit associations regulated under national law that exist to serve social purposes and to offer tenants long-term housing.

## 10.2 Exposures secured by commercial real estate

69. A commercial real estate exposure is an exposure secured by any immovable property that is not a residential real estate as defined in paragraph 63.

70. Where the requirements in paragraph 60 are met and provided that paragraphs 73, 74 and 75 are not applicable, the risk weight to be assigned to the total exposure amount will be determined based on the exposure's LTV ratio in Table 13. For the purpose of paragraphs 70 to 72, "risk weight of the counterparty" refers to 75% for exposures to individuals, 85% for exposures to SMEs and for exposures to other counterparties, the risk weight applied is the risk weight that would be assigned to an unsecured exposure to that counterparty.

Risk weight table for commercial real estate exposures

(Repayment is not materially dependent on cash flows generated by property) Table 13

| | LTV ≤ 60% | LTV > 60% |
|---|---|---|
| Risk weight | Min (60%, RW of counterparty) | RW of counterparty |

71. As an alternative to the approach in paragraph 70, where the requirements in paragraph 60 are met and provided that paragraphs 73, 74 and 75 are not applicable, jurisdictions may apply a risk weight of 60% or the risk weight of the counterparty, whichever is lower, to the part of the exposure up to 55% of the property value[47], and the risk weight of the counterparty to the residual exposure.

72. Where any of the requirements in paragraph 60 are not met and paragraphs 73, 74 and 75 are not applicable, the risk weight applied will be the risk weight of the counterparty.

73. When the prospects for servicing the loan materially depend[48] on the cash flows generated by the property securing the loan rather than on the underlying capacity of the borrower to service the debt

[47] Where there are liens on the property that are not held by the bank, the part of the exposure up to 55% of the property value should be reduced by the amount of the senior liens not held by the bank and by a pro-rata percentage of any liens pari passu with the bank's lien but not held by the bank. See paragraph 65 for examples of how this methodology applies in the case of residential retail exposures.

[48] It is expected that the material dependence condition would predominantly apply to loans to corporates, SMEs or SPVs, but is not restricted to those borrower types. As an example: a loan may be considered materially dependent if more than 50% of the income from the borrower used in the bank's assessment of its ability to service the loan is from cash flows generated by the

from other sources,[49] and provided that paragraphs 74 and 75 is not applicable, the exposure will be risk-weighted as follows:[50]

- if the requirements in paragraph 60 are met, according to the LTV ratio as set out in the risk-weight Table 14 below; and
- if any of the requirements of paragraph 60 are not met, at 150%.

The primary source of these cash flows would generally be lease or rental payments, or the sale, of the commercial property. The distinguishing characteristic of these exposures compared to other commercial real estate exposures is that both the servicing of the loan and the recovery in the event of default depend materially on the cash flows generated by the property securing the exposure.

Risk weight table for commercial real estate exposures

(Repayment is materially dependent on cash flows generated by property) Table 14

| | LTV ≤ 60% | 60% < LTV ≤ 80% | LTV > 80% |
|---|---|---|---|
| Risk weight | 70% | 90% | 110% |

## 10.3 Land acquisition, development and construction exposures

74. Land acquisition, development and construction (ADC) exposures[51] refers to loans to companies or SPVs financing any of the land acquisition for development and construction purposes, or development and construction of any residential or commercial property. ADC exposures will be risk-weighted at 150%, unless they meet the criteria in paragraph 75.

75. ADC exposures to residential real estate may be risk weighted at 100%, provided that the following criteria are met:

- prudential underwriting standards meet the requirements in paragraph 60 where applicable;
- pre-sale or pre-lease contracts amount to a signficant portion of total contracts or substantial equity at risk.[52] Pre-sale or pre-lease contracts must be legally binding written contracts and the purchaser/renter must have made a substantial cash deposit which is subject to forfeiture if the contract is terminated. Equity at risk should be determined as an appropriate amount of borrower-contributed equity to the real estate's appraised as-completed value.

commercial property. National supervisors may provide further guidance setting out criteria on how material dependence should be assessed for specific exposure types.

[49] For such exposures, national supervisors may allow banks to apply the treatment described in paragraphs 70 to 71 subject to the following conditions: (i) the losses stemming from commercial real estate lending up to 60% of LTV must not exceed 0.3% of the outstanding loans in any given year and (ii) overall losses stemming from commercial real estate lending must not exceed 0.5% of the outstanding loans in any given year. If either of these tests are not satisfied in a given year, the eligibility of the exemption will cease and the exposures where the prospect for servicing the loan materially depend on cash flows generated by the property securing the loan rather than the underlying capacity of the borrower to service the debt from other sources will again be risk weighted according to paragraph 73 until both tests are satisfied again in the future. Jurisdictions applying such treatment must publicly disclose whether these conditions are met.

[50] National supervisors may require that the risk weight treatment described in paragraph 73 be applied to exposures where the servicing of the loan materially depends on the cash flows generated by a portfolio of properties owned by the borrower.

[51] ADC exposures do not include the acquisition of forest or agricultural land, where there is no planning consent or intention to apply for planning consent.

[52] National supervisors will give further guidance on the appropriate levels of pre-sale or pre-lease contracts and/or equity at risk to be applied in their jurisdictions.

## 11. Risk weight multiplier to certain exposures with currency mismatch

76. For unhedged retail and residential real estate exposures to individuals where the lending currency differs from the currency of the borrower's source of income, banks will apply a 1.5 times multiplier to the applicable risk weight according to paragraphs 54 to 58 and 63 to 68, subject to a maximum risk weight of 150%.

77. For the purposes of paragraph 76, an unhedged exposure refers to an exposure to a borrower that has no natural or financial hedge against the foreign exchange risk resulting from the currency mismatch between the currency of the borrower's income and the currency of the loan. A natural hedge exists where the borrower, in its normal operating procedures, receives foreign currency income that matches the currency of a given loan (eg remittances, rental incomes, salaries). A financial hedge generally includes a legal contract with a financial institution (eg forward contract). For the purposes of application of the multiplier, only these natural or financial hedges are considered sufficient where they cover at least 90% of the loan instalment, regardless of the number of hedges.

## 12. Off-balance sheet items

78. Off-balance sheet items will be converted into credit exposure equivalents through the use of credit conversion factors (CCF). In the case of commitments, the committed but undrawn amount of the exposure would be multiplied by the CCF. For these purposes, commitment means any contractual arrangement that has been offered by the bank and accepted by the client to extend credit, purchase assets or issue credit substitutes.[53] It includes any such arrangement that can be unconditionally cancelled by the bank at any time without prior notice to the obligor. It also includes any such arrangement that can be cancelled by the bank if the obligor fails to meet conditions set out in the facility documentation, including conditions that must be met by the obligor prior to any initial or subsequent drawdown under the arrangement. Counterparty risk weightings for OTC derivative transactions will not be subject to any specific ceiling.

79. A 100% CCF will be applied to the following items:

- Direct credit substitutes, eg general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptances).

[53] At national discretion, a jurisdiction may exempt certain arrangements from the definition of commitments provided that the following conditions are met: (i) the bank receives no fees or commissions to establish or maintain the arrangements; (ii) the client is required to apply to the bank for the initial and each subsequent drawdown; (iii) the bank has full authority, regardless of the fulfilment by the client of the conditions set out in the facility documentation, over the execution of each drawdown; and (iv) the bank's decision on the execution of each drawdown is only made after assessing the creditworthiness of the client immediately prior to drawdown. Exempted arrangements that meet the above criteria are limited to certain arrangements for corporates and SMEs, where counterparties are closely monitored on an ongoing basis.

- Sale and repurchase agreements and asset sales with recourse[54] where the credit risk remains with the bank.
- The lending of banks' securities or the posting of securities as collateral by banks, including instances where these arise out of repo-style transactions (ie repurchase/reverse repurchase and securities lending/securities borrowing transactions). The risk-weighting treatment for counterparty credit risk must be applied in addition to the credit risk charge on the securities or posted collateral, where the credit risk of the securities lent or posted as collateral remains with the bank. This paragraph does not apply to posted collateral related to derivative transactions that is treated in accordance with the counterparty credit risk standards.
- Forward asset purchases, forward forward deposits and partly paid shares and securities,[55] which represent commitments with certain drawdown.
- Off-balance sheet items that are credit substitutes not explicitly included in any other category.

80. A 50% CCF will be applied to note issuance facilities (NIFs) and revolving underwriting facilities (RUFs) regardless of the maturity of the underlying facility.

81. A 50% CCF will be applied to certain transaction-related contingent items (eg performance bonds, bid bonds, warranties and standby letters of credit related to particular transactions).

82. A 40% CCF will be applied to commitments, regardless of the maturity of the underlying facility, unless they qualify for a lower CCF.

83. A 20% CCF will be applied to both the issuing and confirming banks of short-term[56] self-liquidating trade letters of credit arising from the movement of goods (eg documentary credits collateralised by the underlying shipment).

84. A 10% CCF will be applied to commitments that are unconditionally cancellable at any time by the bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness. National supervisors should evaluate various factors in the jurisdiction, which may constrain banks' ability to cancel the commitment in practice, and consider applying a higher CCF to certain commitments as appropriate.

85. Where there is an undertaking to provide a commitment on an off-balance sheet item, banks are to apply the lower of the two applicable CCFs.[57]

86. The credit equivalent amount of SFTs that expose a bank to counterparty credit risk is to be calculated under the comprehensive approach in paragraphs 155 to 178. The credit equivalent amount of OTC derivatives that expose a bank to counterparty credit risk is to be calculated under the rules for counterparty credit risk in paragraph 189. As an alternative for both SFTs and OTC derivatives, banks may use the Internal Model Method as set out the counterparty credit risk standards for calculating the credit equivalent amount, subject to supervisory approval.

[54] These items are to be weighted according to the type of asset and not according to the type of counterparty with whom the transaction has been entered into.

[55] These items are to be weighted according to the type of asset and not according to the type of counterparty with whom the transaction has been entered into.

[56] That is, with a maturity below one year. For further details see Basel Committee on Banking Supervision, *Treatment of trade finance under the Basel capital framework*, October 2011, www.bis.org/publ/bcbs205.pdf.

[57] For example, if a bank has a commitment to open short-term self-liquidating trade letters of credit arising from the movement of goods, a 20% CCF will be applied (instead of a 40% CCF); and if a bank has an unconditionally cancellable commitment described in paragraph 84 to issue direct credit substitutes, a 10% CCF will be applied (instead of a 100% CCF).

87. Banks must closely monitor securities, commodities and foreign exchange transactions that have failed, starting from the first day they fail. A capital charge on failed transactions must be calculated in accordance with Annex 3 of the Basel II framework (June 2006).

88. Banks are exposed to the risk associated with unsettled securities, commodities, and foreign exchange transactions from trade date. Irrespective of the booking or the accounting of the transaction, unsettled transactions must be taken into account for regulatory capital requirements purposes. Where they do not appear on the balance sheet (ie settlement date accounting), the unsettled exposure amount will receive a 100% CCF. Banks are encouraged to develop, implement and improve systems for tracking and monitoring the credit risk exposure arising from unsettled transactions as appropriate so that they can produce management information that facilitates timely action. Furthermore, when such transactions are not processed through a delivery-versus-payment (DvP) or payment-versus-payment (PvP) mechanism, banks must calculate a capital charge as set forth in Annex 3 of the Basel II framework (June 2006).

89. A bank providing credit protection through a first-to-default or second-to-default credit derivative is subject to capital requirements on such instruments. For first-to-default credit derivatives, the risk weights of the assets included in the basket must be aggregated up to a maximum of 1250% and multiplied by the nominal amount of the protection provided by the credit derivative to obtain the risk-weighted asset amount. For second-to-default credit derivatives, the treatment is similar; however, in aggregating the risk weights, the asset with the lowest risk-weighted amount can be excluded from the calculation. This treatment applies respectively for $n^{th}$-to-default credit derivatives, for which the n-1 assets with the lowest risk-weighted amounts can be excluded from the calculation.

## 13. Defaulted exposures

90. For risk-weighting purposes under the standardised approach, a defaulted exposure is defined as one that is past due for more than 90 days, or is an exposure to a defaulted borrower. A defaulted borrower is a borrower in respect of whom any of the following events have occurred:

- Any material credit obligation that is past due for more than 90 days. Overdrafts will be considered as being past due once the customer has breached an advised limit or been advised of a limit smaller than current outstandings;
- Any material credit obligation is on non-accrued status (eg the lending bank no longer recognises accrued interest as income or, if recognised, makes an equivalent amount of provisions);
- A write-off or account-specific provision is made as a result of a significant perceived decline in credit quality subsequent to the bank taking on any credit exposure to the borrower;
- Any credit obligation is sold at a material credit-related economic loss;
- A distressed restructuring of any credit obligation (ie a restructuring that may result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or (where relevant) fees) is agreed by the bank;
- The borrower's bankruptcy or a similar order in respect of any of the borrower's credit obligations to the banking group has been filed;
- The borrower has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of any of the credit obligations to the banking group; or
- Any other situation where the bank considers that the borrower is unlikely to pay its credit obligations in full without recourse by the bank to actions such as realising security.

91. For retail exposures, the definition of default can be applied at the level of a particular credit obligation, rather than at the level of the borrower. As such, default by a borrower on one obligation does not require a bank to treat all other obligations to the banking group as defaulted.

92. With the exception of residential real estate exposures treated under paragraph 93, the unsecured or unguaranteed portion of a defaulted exposure shall be risk-weighted net of specific provisions and partial write-offs as follows:

- 150% risk weight when specific provisions are less than 20% of the outstanding amount of the loan; and
- 100% risk weight when specific provisions are equal or greater than 20% of the outstanding amount of the loan.[58]

93. Defaulted residential real estate exposures where repayments do not materially depend on cash flows generated by the property securing the loan shall be risk-weighted net of specific provisions and partial write-offs at 100%. Guarantees or financial collateral which are eligible according to the credit risk mitigation framework might be taken into account in the calculation of the exposure in accordance with paragraph 62.

94. For the purpose of defining the secured or guaranteed portion of the defaulted exposure, eligible collateral and guarantees will be the same as for credit risk mitigation purposes (see Section D).

### 14. Other assets

95. The standard risk weight for all other assets will be 100%, with the exception of exposures mentioned in paragraphs 96 and 97.

96. A 0% risk weight will apply to (i) cash owned and held at the bank or in transit; and (ii) gold bullion held at the bank or held in another bank on an allocated basis, to the extent the gold bullion assets are backed by gold bullion liabilities.

97. A 20% risk weight will apply to cash items in the process of collection.

## B. Recognition of external ratings by national supervisors

### 1. The recognition process

98. In jurisdictions that allow the use of external ratings for regulatory purposes, only credit assessments from credit rating agencies recognised as external credit assessment institutions (ECAIs) will be allowed. National supervisors are responsible for determining on a continuous basis whether an ECAI meets the criteria listed in paragraph 99 and recognition should only be provided in respect of ECAI ratings for types of claim where all criteria and conditions are met. National supervisors should also take into account the criteria and conditions provided in the IOSCO *Code of Conduct Fundamentals for Credit Rating Agencies*[59] when determining ECAI eligibility. The supervisory process for recognising ECAIs should be made public to avoid unnecessary barriers to entry.

[58] National supervisors have discretion to reduce the risk weight to 50% when specific provisions are no less than 50% of the outstanding amount of the loan.

[59] Available at www.iosco.org/library/pubdocs/pdf/IOSCOPD482.pdf.

## 2. Eligibility criteria

99. An ECAI must satisfy each of the following eight criteria.

- ***Objectivity***: The methodology for assigning external ratings must be rigorous, systematic, and subject to some form of validation based on historical experience. Moreover, external ratings must be subject to ongoing review and responsive to changes in financial condition. Before being recognised by supervisors, a rating methodology for each market segment, including rigorous backtesting, must have been established for at least one year and preferably three years.
- ***Independence***: An ECAI should be independent and should not be subject to political or economic pressures that may influence the rating. In particular, an ECAI should not delay or refrain from taking a rating action based on its potential effect (economic, political or otherwise). The rating 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 CRA may be seen as creating a conflict of interest. Furthermore, an ECAI should separate operationally, legally and, if practicable, physically its rating business from other businesses and analysts.
- ***International access/transparency***: The individual ratings, the key elements underlining the assessments and whether the issuer participated in the rating process should be publicly available on a non-selective basis, unless they are private ratings, which should be at least available to both domestic and foreign insitutions with legitimate interest and on equivalent terms. In addition, the ECAI's general procedures, methodologies and assumptions for arriving at ratings should be publicly available.
- ***Disclosure***: An ECAI should disclose the following information: its code of conduct; the general nature of its compensation arrangements with assessed entities; any conflict of interest,[60] the ECAI's compensation arrangements,[61] its assessment methodologies, including the definition of default, the time horizon, and the meaning of each rating; the actual default rates experienced in each assessment category; and the transitions of the ratings, eg the likelihood of AA ratings becoming A over time. A rating should be disclosed as soon as practicably possible after issuance.

[60] At a minimum, the following situations and their influence on the ECAI's credit rating methodologies or credit rating actions shall be disclosed:

- The ECAI is being paid to issue a credit rating by the rated entity or by the obligor, originator, underwriter, or arranger of the rated obligation;
- The ECAI is being paid by subscribers with a financial interest that could be affected by a credit rating action of the ECAI;
- The ECAI is being paid by rated entities, obligors, originators, underwriters, arrangers, or subscribers for services other than issuing credit ratings or providing access to the ECAI's credit ratings;
- The ECAI is providing a preliminary indication or similar indication of credit quality to an entity, obligor, originator, underwriter, or arranger prior to being hired to determine the final credit rating for the entity, obligor, originator, underwriter, or arranger; and
- The ECAI has a direct or indirect ownership interest in a rated entity or obligor, or a rated entity or obligor has a direct or indirect ownership interest in the ECAI.

[61] An ECAI should disclose the general nature of its compensation arrangements with rated entities, obligors, lead underwriters, or arrangers.

When the ECAI receives from a rated entity, obligor, originator, lead underwriter, or arranger compensation unrelated to its credit rating services, the ECAI should disclose such unrelated compensation as a percentage of total annual compensation received from such rated entity, obligor, lead underwriter, or arranger in the relevant credit rating report or elsewhere, as appropriate.

An ECAI should disclose in the relevant credit rating report or elsewhere, as appropriate, if it receives 10% or more of its annual revenue from a single client (eg a rated entity, obligor, originator, lead underwriter, arranger, or subscriber, or any of their affiliates).

When disclosing a rating, the information should be provided in plain language, indicating the nature and limitation of credit ratings and the risk of unduly relying on them to make investments.

- ***Resources***: An ECAI should have sufficient resources to carry out high-quality credit assessments. These resources should allow for substantial ongoing contact with senior and operational levels within the entities assessed in order to add value to the credit assessments. In particular, ECAIs should assign analysts with appropriate knowledge and experience to assess the creditworthiness of the type of entity or obligation being rated. Such assessments should be based on methodologies combining qualitative and quantitative approaches.
- ***Credibility***: To some extent, credibility is derived from the criteria above. In addition, the reliance on an ECAI's external ratings by independent parties (investors, insurers, trading partners) is evidence of the credibility of the ratings 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.
- ***No abuse of unsolicited ratings***: ECAIs must not use unsolicited ratings to put pressure on entities to obtain solicited ratings. Supervisors should consider whether to continue recognising such ECAIs as eligible for capital adequacy purposes, if such behaviour is identified.
- ***Cooperation with the supervisor:*** ECAIs should notify the supervisor of significant changes to methodologies and provide access to external ratings and other relevant data in order to support intial and continued determination of eligibility.

# C. Implementation considerations in jurisdictions that allow use of external ratings for regulatory purposes

## 1. The mapping process

100. Supervisors will be responsible for assigning eligible ECAIs' ratings to the risk weights available under the standardised risk weighting framework, ie deciding which rating 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. It should cover the full spectrum of risk weights.

101. When conducting such a mapping process, factors that supervisors should assess include, among others, the size and scope of the pool of issuers that each ECAI covers, the range and meaning of the ratings that it assigns, and the definition of default used by the ECAI.

102. In order to promote a more consistent mapping of ratings into the available risk weights and help supervisors in conducting such a process, Annex 2 of the Basel II framework (June 2006) provides guidance as to how such a mapping process may be conducted.

103. Banks must use the chosen ECAIs and their ratings consistently for all types of claim where they have been recognised by their supervisor as an eligible ECAI, for both risk-weighting and risk management purposes. Banks will not be allowed to "cherry-pick" the ratings provided by different ECAIs and to arbitrarily change the use of ECAIs.

## 2. Multiple external ratings

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

105. If there are two ratings by ECAIs chosen by a bank that map into different risk weights, the higher risk weight will be applied.

106. If there are three or more ratings with different risk weights, the two ratings that correspond to the lowest risk weights should be referred to. If these give rise to the same risk weight, that risk weight should be applied. If different, the higher risk weight should be applied.

## 3. Determination of whether an exposure is rated: Issue-specific and issuer ratings

107. Where a bank invests in a particular issue that has an issue-specific rating, the risk weight of the exposure will be based on this rating. Where the bank's exposure is not an investment in a specific rated issue, the following general principles apply.

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

108. Whether the bank intends to rely on an issuer- or an issue-specific rating, the rating must take into account and reflect the entire amount of credit risk exposure the bank has with regard to all payments owed to it.[62]

[62] For example, if a bank is owed both principal and interest, the assessment must fully take into account and reflect the credit risk associated with repayment of both principal and interest.

109. 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 121).

## 4. Domestic currency and foreign currency ratings

110. Where exposures are risk-weighted based on the rating of an equivalent exposure to that borrower, the general rule is that foreign currency ratings would be used for exposures in foreign currency. Domestic currency ratings, if separate, would only be used to risk-weight exposures denominated in the domestic currency.[63]

## 5. Short-term/long-term ratings

111. For risk-weighting purposes, short-term ratings are deemed to be issue-specific. They can only be used to derive risk weights for exposures arising from the rated facility. They cannot be generalised to other short-term exposures, except under the conditions of paragraph 113. In no event can a short-term rating be used to support a risk weight for an unrated long-term exposure. Short-term ratings may only be used for short-term exposures against banks and corporates. The table below provides a framework for banks' exposures to specific short-term facilities, such as a particular issuance of commercial paper:

Risk weight table for specific short-term ratings — Table 15

| External rating | A-1/P-1[64] | A-2/P-2 | A-3/P-3 | Others[65] |
|---|---|---|---|---|
| Risk weight | 20% | 50% | 100% | 150% |

112. If a short-term rated facility attracts a 50% risk-weight, unrated short-term exposures cannot attract a risk weight lower than 100%. If an issuer has a short-term facility with an external rating that warrants a risk weight of 150%, all unrated exposures, whether long-term or short-term, should also receive a 150% risk weight, unless the bank uses recognised credit risk mitigation techniques for such exposures.

113. In cases where short-term ratings are available, the following interaction with the general preferential treatment for short-term exposures to banks as described in paragraph 19 will apply:

- The general preferential treatment for short-term exposures applies to all exposures to banks of up to three months original maturity when there is no specific short-term claim assessment.
- When there is a short-term rating and such a rating maps into a risk weight that is more favourable (ie lower) or identical to that derived from the general preferential treatment, the short-term rating should be used for the specific exposure only. Other short-term exposures would benefit from the general preferential treatment.

[63] However, when an exposure arises through a bank's participation in a loan that has been extended, or has been guaranteed against convertibility and transfer risk, by certain MDBs, its convertibility and transfer risk can be considered by national supervisors to be effectively mitigated. To qualify, MDBs must have preferred creditor status recognised in the market and be included in footnote 11 (in paragraph 14). In such cases, for risk-weighting purposes, the borrower's domestic currency rating may be used instead of its foreign currency rating. In the case of a guarantee against convertibility and transfer risk, the local currency rating can be used only for the portion that has been guaranteed. The portion of the loan not benefiting from such a guarantee will be risk-weighted based on the foreign currency rating.

[64] The notations follow the methodology used by Standard & Poor's and by Moody's Investors Service. The A-1 rating of Standard & Poor's includes both A-1+ and A-1–.

[65] This category includes all non-prime and B or C ratings.

- When a specific short-term rating for a short term exposure to a bank maps into a less favourable (higher) risk weight, the general short-term preferential treatment for interbank exposures cannot be used. All unrated short-term exposures should receive the same risk weighting as that implied by the specific short-term rating.

114. When a short-term rating is to be used, the institution making the assessment needs to meet all of the eligibility criteria for recognising ECAIs, as described in paragraph 99, in terms of its short-term ratings.

### 6. Level of application of the rating

115. External ratings for one entity within a corporate group cannot be used to risk-weight other entities within the same group.

### 7. Use of unsolicited ratings

116. As a general rule, banks should use solicited ratings from eligible ECAIs. National supervisors may allow banks to use *unsolicited* ratings in the same way as solicited ratings if they are satisfied that the credit assessments of unsolicited ratings are not inferior in quality to the general quality of solicited ratings.

## D. Credit risk mitigation techniques for exposures risk-weighted under the standardised approach

### 1. Overarching issues

#### (i) Introduction

117. Banks use a number of techniques to mitigate the credit risks to which they are exposed. For example, exposures may be collateralised by first-priority claims, in whole or in part with cash or securities, a loan exposure may be guaranteed by a third party, or a bank may buy a credit derivative to offset various forms of credit risk. Additionally banks may agree to net loans owed to them against deposits from the same counterparty.[66]

118. The framework set out in this section is applicable to banking book exposures that are risk-weighted under the standardised approach.

#### (ii) General requirements

119. No transaction in which CRM techniques are used shall receive a higher capital requirement than an otherwise identical transaction where such techniques are not used.

120. The Pillar 3 requirements must be fulfilled for banks to obtain capital relief in respect of any CRM techniques.

121. The effects of CRM must not be double-counted. Therefore, no additional supervisory recognition of CRM for regulatory capital purposes will be granted on exposures for which the risk weight already

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

reflects that CRM. Consistent with paragraph 108, principal-only ratings will also not be allowed within the CRM framework.

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

123. In order for CRM techniques to provide protection, the credit quality of the counterparty must not have a material positive correlation with the employed CRM technique or with the resulting residual risks (as defined in paragraph 122). For example, securities issued by the counterparty (or by any counterparty-related entity) provide little protection as collateral and are thus ineligible.

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

### (iii) Legal requirements

125. In order for banks to obtain capital relief for any use of CRM techniques, all documentation used in collateralised transactions, on-balance sheet netting agreements, guarantees and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well-founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability.

### (iv) General treatment of maturity mismatches

126. For the purposes of calculating risk-weighted assets, a maturity mismatch occurs when the residual maturity of a credit protection arrangement (eg hedge) is less than that of the underlying exposure.

127. In the case of financial collateral, maturity mismatches are not allowed under the simple approach (see paragraph 147).

128. Under the other approaches, when there is a maturity mismatch the credit protection arrangement may only be recognised if the original maturity of the arrangement is greater than or equal to one year, and its residual maturity is greater than or equal to three months. In such cases, credit risk mitigation may be partially recognised as detailed below in paragraph 129.

129. When there is a maturity mismatch with recognised credit risk mitigants, the following adjustment applies

$$P_a = P \cdot \frac{t - 0.25}{T - 0.25}$$

where:

- $P_a$= value of the credit protection adjusted for maturity mismatch
- P = credit protection amount (eg collateral amount, guarantee amount) adjusted for any haircuts
- t = min {T, residual maturity of the credit protection arrangement expressed in years}

- T =min {five years, residual maturity of the exposure expressed in years}

130. The maturity of the underlying exposure and the maturity of the hedge must both be defined conservatively. The effective maturity of the underlying must be gauged as the longest possible remaining time before the counterparty is scheduled to fulfil its obligation, taking into account any applicable grace period. For the hedge, (embedded) options that may reduce the term of the hedge must be taken into account so that the shortest possible effective maturity is used. For example: where, in the case of a credit derivative, the protection seller has a call option, the maturity is the first call date. Likewise, if the protection buyer owns the call option and has a strong incentive to call the transaction at the first call date, for example because of a step-up in cost from this date on, the effective maturity is the remaining time to the first call date.

### (v) Currency mismatches

131. Currency mismatches are allowed under all approaches. Under the simple approach there is no specific treatment for currency mismatches, given that a minimum risk weight of 20% (floor) is generally applied. Under the comprehensive approach and in case of guarantees and credit derivatives, a specific adjustment for currency mismatches is prescribed in paragraphs 165 and 204, respectively.

## 2. Overview of credit risk mitigation techniques[67]

### (i) Collateralised transactions

132. A collateralised transaction is one in which:

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

Where banks take eligible financial collateral, they may reduce their regulatory capital requirements through the application of CRM techniques.[68]

133. Banks may opt for either:

(i) The simple approach, which replaces the risk weight of the counterparty with the risk weight of the collateral for the collateralised portion of the exposure (generally subject to a 20% floor); or

(ii) The comprehensive approach, which allows a more precise offset of collateral against exposures, by effectively reducing the exposure amount by a volatility-adjusted value ascribed to the collateral.

Detailed operational requirements for both approaches are given in paragraphs 146 to 178. Banks may operate under either, but not both, approaches in the banking book.

134. For collateralised OTC transactions, exchange traded derivatives and long settlement transactions, banks may use the standardised approach for counterparty credit risk (SA-CCR) or the Internal Model Method to calculate the exposure amount, in accordance with paragraph 189.

[67] See Annex 10 of Basel II (June 2006) for an overview of methodologies for the capital treatment of transactions secured by financial collateral under the standardised and IRB approaches.

[68] Alternatively, banks with appropriate supervisory approval may instead use the Internal Model Method to determine the exposure amount, taking into account collateral.

### (ii) On-balance sheet netting

135. Where banks have legally enforceable netting arrangements for loans and deposits that meet the conditions in paragraph 190 they may calculate capital requirements on the basis of net credit exposures as set out in that paragraph.

### (iii) Guarantees and credit derivatives

136. Where guarantees or credit derivatives fulfil the minimum operational conditions set out in paragraphs 191 to 193, banks may take account of the credit protection offered by such credit risk mitigation techniques in calculating capital requirements.

137. A range of guarantors and protection providers are recognised and a substitution approach applies for capital requirement calculations. Only guarantees issued by or protection provided by entities with a lower risk weight than the counterparty lead to reduced capital charges for the guaranteed exposure, since the protected portion of the counterparty exposure is assigned the risk weight of the guarantor or protection provider, whereas the uncovered portion retains the risk weight of the underlying counterparty.

138. Detailed conditions and operational requirements for guarantees and credit derivatives are given in paragraphs 191 to 205.

## 3. Collateralised transactions

### (i) General requirements

139. Before capital relief is granted in respect of any form of collateral, the standards set out below in paragraphs 140 to 145 must be met, irrespective of whether the simple or the comprehensive approach is used. Banks that lend securities or post collateral must calculate capital requirements for both of the following: (i) the credit risk or market risk of the securities, if this remains with the bank; and (ii) the counterparty credit risk arising from the risk that the borrower of the securities may default.

140. The legal mechanism by which collateral is pledged or transferred must ensure that the bank has the right to liquidate or take legal possession of it, in a timely manner, in the event of the default, insolvency or bankruptcy (or one or more otherwise-defined credit events set out in the transaction documentation) of the counterparty (and, where applicable, of the custodian holding the collateral). Additionally, banks must take all steps necessary to fulfil those requirements under the law applicable to the bank's interest in the collateral for obtaining and maintaining an enforceable security interest, eg by registering it with a registrar, or for exercising a right to net or set off in relation to the title transfer of the collateral.

141. Banks must have clear and robust procedures for the timely liquidation of collateral to ensure that any legal conditions required for declaring the default of the counterparty and liquidating the collateral are observed, and that collateral can be liquidated promptly.

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

- the risk to which margin agreements expose them (such as the volatility and liquidity of the securities exchanged as collateral);
- the concentration risk to particular types of collateral;
- the reuse of collateral (both cash and non-cash) including the potential liquidity shortfalls resulting from the reuse of collateral received from counterparties; and

- the surrender of rights on collateral posted to counterparties.

143. Where the collateral is held by a custodian, banks must take reasonable steps to ensure that the custodian segregates the collateral from its own assets.

144. A capital requirement must be applied on both sides of a transaction. For example, both repos and reverse repos will be subject to capital requirements. Likewise, both sides of a securities lending and borrowing transaction will be subject to explicit capital charges, as will the posting of securities in connection with derivatives exposures or with any other borrowing transaction.

145. Where a bank, acting as an agent, arranges a repo-style transaction (ie repurchase/reverse repurchase and securities lending/borrowing transactions) between a customer and a third party and provides a guarantee to the customer that the third party will perform on its obligations, then the risk to the bank is the same as if the bank had entered into the transaction as a principal. In such circumstances, a bank must calculate capital requirements as if it were itself the principal.

### (ii) The simple approach

#### *General requirements for the simple approach*

146. Under the simple approach, the risk weight of the counterparty is replaced by the risk weight of the collateral instrument collateralising or partially collateralising the exposure.

147. For collateral to be recognised in the simple approach, it must be pledged for at least the life of the exposure and it must be marked to market and revalued with a minimum frequency of six months. Those portions of exposures collateralised by the market value of recognised collateral receive the risk weight applicable to the collateral instrument. The risk weight on the collateralised portion is subject to a floor of 20% except under the conditions specified in paragraphs 150 to 154. The remainder of the exposure must be assigned the risk weight appropriate to the counterparty. Maturity mismatches are not allowed under the simple approach (see paragraphs 126 and 127).

#### *Eligible financial collateral under the simple approach*

148. The following collateral instruments are eligible for recognition in the simple approach:

(a) Cash (as well as certificates of deposit or comparable instruments issued by the lending bank) on deposit with the bank that is incurring the counterparty exposure.[69, 70]

(b) Gold.

(c) In jurisdictions that allow the use of external ratings for regulatory purposes:

  (i) Debt securities rated by a recognised ECAI where these are either:

    – at least BB– when issued by sovereigns or PSEs that are treated as sovereigns by the national supervisor; or

    – at least BBB– when issued by other entities (including banks and other prudentially regulated financial institutions); or

    – at least A-3/P-3 for short-term debt instruments.

[69] Cash-funded credit-linked notes issued by the bank against exposures in the banking book that fulfil the criteria for credit derivatives are treated as cash-collateralised transactions.

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

(ii) Debt securities not rated by a recognised ECAI where these are:

- issued by a bank; and
- listed on a recognised exchange; and
- classified as senior debt; and
- all rated issues of the same seniority by the issuing bank are rated at least BBB– or A-3/P-3 by a recognised ECAI; and
- the bank holding the securities as collateral has no information to suggest that the issue justifies a rating below BBB– or A-3/P-3 (as applicable); and
- the supervisor is sufficiently confident that the market liquidity of the security is adequate.

(d) In jurisdictions that do not allow the use of external ratings for regulatory purposes, the following securities will be eligible provided that the supervisor is sufficiently confident that the market liquidity of the security is adequate:

(i) Debt securities issued by sovereigns or PSEs that are treated as sovereigns by the national supervisor;

(ii) Debt securities issued by banks assigned to Grade A under the SCRA;

(iii) Other debt securities issued by "investment grade" entities as defined in paragraph 197, and

(iv) Securitisation exposures with a risk weight of less than 100%.

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

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

- a price for the units is publicly quoted daily; and
- the UCITS/mutual fund is limited to investing in the instruments listed in this paragraph.[71]

149. Resecuritisations as defined in the securitisation framework are not eligible financial collateral.

*Exemptions under the simple approach to the risk-weight floor*

150. Repo-style transactions that fulfil all of the following conditions are exempted from the risk-weight floor under the simple approach:

(a) Both the exposure and the collateral are cash or a sovereign security or PSE security qualifying for a 0% risk weight under the standardised approach;

(b) Both the exposure and the collateral are denominated in the same currency;

(c) Either the transaction is overnight or both the exposure and the collateral are marked to market daily and are subject to daily remargining;

(d) Following a counterparty's failure to remargin, the time that is required between the last mark-to-market before the failure to remargin and the liquidation of the collateral is considered to be no more than four business days;

(e) The transaction is settled across a settlement system proven for that type of transaction;

[71] However, the use or potential use by a UCITS/mutual fund of derivative instruments solely to hedge investments listed in this paragraph and paragraph 159 shall not prevent units in that UCITS/mutual fund from being eligible financial collateral.

(f) The documentation covering the agreement is standard market documentation for repo-style transactions in the securities concerned;

(g) The transaction is governed by documentation specifying that if the counterparty fails to satisfy an obligation to deliver cash or securities or to deliver margin or otherwise defaults, then the transaction is immediately terminable; and

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

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

(a) Sovereigns, central banks and PSEs;

(b) Banks and securities firms;

(c) Other financial companies (including insurance companies) eligible for a 20% risk weight in the standardised approach;

(d) Regulated mutual funds that are subject to capital or leverage requirements;

(e) Regulated pension funds; and

(f) Qualifying central counterparties (QCCPs).

152. Repo transactions that fulfil the requirement in paragraph 150 receive a 10% risk weight, as an exemption to the risk weight floor described in paragraph 147. If the counterparty to the transaction is a core market participant, banks may apply a risk weight of 0% to the transaction.

153. OTC derivative transactions subject to daily mark-to-market, collateralised by cash and where there is no currency mismatch may receive a 0% risk weight. Such transactions collateralised by sovereign or PSE securities qualifying for a 0% risk weight in the standardised approach may receive a 10% risk weight.

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

- the collateral is cash on deposit as defined in paragraph 148(a); or
- the collateral is in the form of sovereign/PSE securities eligible for a 0% risk weight, and its market value has been discounted by 20%.

### (iii) The comprehensive approach

#### *(a) General requirements for the comprehensive approach*

155. In the comprehensive approach, when taking collateral, banks must calculate their adjusted exposure to a counterparty in order to take account of the risk mitigating effect of that collateral. Banks must use the applicable supervisory haircuts to adjust both the amount of the exposure to the counterparty and the value of any collateral received in support of that counterparty to take account of possible future fluctuations in the value of either,[72] as occasioned by market movements. Unless either side of the transaction is cash or a zero haircut is applied, the volatility-adjusted exposure amount is higher than the nominal exposure and the volatility-adjusted collateral value is lower than the nominal collateral value.

[72] Exposure amounts may vary where, for example, securities are being lent.

156. The size of the individual haircuts depends on the type of instrument, type of transaction, residual maturity and the frequency of marking to market and remargining as provided in paragraphs 163 and 164. Haircuts must be scaled up using the square root of time formula depending on the frequency of remargining or marking to market. This formula is included in paragraph 172.

157. Additionally, where the exposure and collateral are held in different currencies, banks must apply an additional haircut to the volatility-adjusted collateral amount in accordance with paragraphs 165 and 204 to take account of possible future fluctuations in exchange rates.

158. The effect of master netting agreements covering repo-style transactions can be recognised for the calculation of capital requirements subject to the conditions and requirements in paragraphs 175 to 178.

### *(b) Eligible financial collateral under the comprehensive approach*

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

(a) All of the instruments listed in paragraph 148;

(b) Equities and convertible bonds that are not included in a main index but which are listed on a recognised security exchange;

(c) UCITS/mutual funds which include the instruments in point (b).

### *(c) Calculation of capital requirement for transactions secured by financial collateral*

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

$$E^{*} = max\left\{0, E \cdot \left(1 + H_{e}\right) - C \cdot \left(1 - H_{c} - H_{fx}\right)\right\}$$

where:

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

$E$ = current value of the exposure

$H_e$ = haircut appropriate to the exposure

$C$ = the current value of the collateral received

$H_c$ = haircut appropriate to the collateral

$H_{fx}$ = haircut appropriate for currency mismatch between the collateral and exposure

161. In the case of maturity mismatches, the value of the collateral received (collateral amount) must be adjusted in accordance with paragraphs 126 to 130.

162. The exposure amount after risk mitigation ($E^{*}$) must be multiplied by the risk weight of the counterparty to obtain the risk-weighted asset amount for the collateralised transaction.

163. In jurisdictions that allow the use of external ratings for regulatory purposes, the following supervisory haircuts (assuming daily mark-to-market, daily remargining and a 10-business day holding period), expressed as percentages, must be used to determine the haircuts appropriate to the collateral (Hc) and to the exposure (He):

## Supervisory haircuts for comprehensive approach

Jurisdictions that allow the use of external ratings for regulatory purposes — Table 14

| Issue rating for debt securities | Residual maturity | Sovereigns[73] | Other issuers[74] | Securitisation exposures[75] |
|---|---|---|---|---|
| AAA to AA–/A-1 | ≤ 1 year | 0.5 | 1 | 2 |
| | >1 year, ≤ 3 years | 2 | 3 | 8 |
| | >3 years, ≤ 5 years | | 4 | |
| | >5 years, ≤ 10 years | 4 | 6 | 16 |
| | > 10 years | | 12 | |
| A+ to BBB–/ A-2/A-3/P-3 and unrated bank securities per para. 148(c)(ii) | ≤ 1 year | 1 | 2 | 4 |
| | >1 year, ≤ 3 years | 3 | 4 | 12 |
| | >3 years, ≤ 5 years | | 6 | |
| | >5 years, ≤ 10 years | 6 | 12 | 24 |
| | > 10 years | | 20 | |
| BB+ to BB– | All | 15 | Not eligible | Not eligible |
| Main index equities (including convertible bonds) and gold | | 20 | | |
| Other equities and convertible bonds listed on a recognised exchange | | 30 | | |
| UCITS/mutual funds | | Highest haircut applicable to any security in which the fund can invest, unless the bank can apply the look-through approach (LTA) for equity investments in funds, in which case the bank may use a weighted average of haircuts applicable to instruments held by the fund. | | |
| Cash in the same currency[76] | | 0 | | |

164. In jurisdictions that do not allow the use of external ratings for regulatory purposes, the following supervisory haircuts (assuming daily mark-to-market, daily remargining and a 10-business day holding period), expressed as percentages, must be used to determine the haircuts appropriate to the collateral (Hc) and to the exposure (He):

[73] Includes: PSEs that are treated as sovereigns by the national supervisor, as well as multilateral development banks receiving a 0% risk weight.

[74] Includes PSEs that are not treated as sovereigns by the national supervisor.

[75] Those exposures that meet the definition set forth in the securitisation framework.

[76] Eligible cash collateral specified in paragraph 148(a).

Supervisory haircuts for comprehensive approach

Jurisdictions that do not allow the use of external ratings for regulatory purposes Table 15

| | Residual maturity | Issuer's risk weight (only for securities issued by sovereigns[77] | | | Other investment-grade securities, consistent with paragraphs 148(d)(iii)[78] | |
|---|---|---|---|---|---|---|
| | | 0% | 20% or 50% | 100% | Non-securitisation exposures | Senior securitisation exposures with risk weight < 100% |
| Debt securities | ≤ 1 year | 0.5 | 1 | 15 | 2 | 4 |
| | >1 year, ≤ 3 years | 2 | 3 | 15 | 4 | 12 |
| | >3 years, ≤ 5 years | | | | 6 | |
| | >5 years, ≤ 10 years | 4 | 6 | 15 | 12 | 24 |
| | > 10 years | | | | 20 | |
| Main index equities (including convertible bonds) and gold | 20 | | | | | |
| Other equities and convertible bonds listed on a recognised exchange | 30 | | | | | |
| UCITS/mutual funds | Highest haircut applicable to any security in which the fund can invest, unless the bank can apply the look-through approach (LTA) for equity investments in funds, in which case the bank may use a weighted average of haircuts applicable to instruments held by the fund. | | | | | |
| Cash in the same currency[79] | 0 | | | | | |
| Other exposure types | 30 | | | | | |

165. The haircut for currency risk (Hfx) where exposure and collateral are denominated in different currencies is 8% (also based on a 10-business day holding period and daily mark-to-market).

166. For SFTs and secured lending transactions, a haircut adjustment may need to be applied in accordance with paragraphs 169 to 172.

167. For SFTs in which the bank lends, or posts as collateral, non-eligible instruments, the haircut to be applied on the exposure must be 30%. For transactions in which the bank borrows non-eligible instruments, credit risk mitigation may not be applied.

168. Where the collateral is a basket of assets, the haircut on the basket must be $H = \sum_i a_i H_i$, where $a_i$ is the weight of the asset (as measured by units of currency) in the basket and $H_i$ the haircut applicable to that asset.

### *(d) Adjustment for different holding periods and non-daily mark-to-market or remargining*

169. For some transactions, depending on the nature and frequency of the revaluation and remargining provisions, different holding periods and thus different haircuts must be applied. The framework for collateral haircuts distinguishes between repo-style transactions (ie repo/reverse repos and

[77] Includes: PSEs that are treated as sovereigns by the national supervisor, as well as multilateral development banks receiving a 0% risk weight.

[78] Includes PSEs that are not treated as sovereigns by the national supervisor.

[79] Eligible cash collateral specified in paragraph 148(a).

securities lending/borrowing), "other capital markets-driven transactions" (ie OTC derivatives transactions and margin lending) and secured lending. In capital-market-driven transactions and repo-style transactions, the documentation contains remargining clauses; in secured lending transactions, it generally does not.

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

Adjustment to supervisory haircuts

For different holding periods and non-daily mark-to-market or remargining — Table 16

| Transaction type | Minimum holding period | Condition |
|---|---|---|
| Repo-style transaction | five business days | daily remargining |
| Other capital market transactions | 10 business days | daily remargining |
| Secured lending | 20 business days | daily revaluation |

171. Where a bank has a transaction or netting set that meets the criteria outlined in paragraphs 41(i) or 41(ii) of the counterparty credit risk standards, the minimum holding period must be the margin period of risk that would apply under those paragraphs.

172. When the frequency of remargining or revaluation is longer than the minimum, the minimum haircut numbers must be scaled up depending on the actual number of business days between remargining or revaluation. The 10-business day haircuts provided in paragraphs 163 and 164 are the default haircuts and these haircuts must be scaled up or down using the formula below:

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

where:

$H$ = haircut

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

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

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

### *(e) Exemptions under the comprehensive approach for qualifying repo-style transactions involving core market participants*

173. For repo-style transactions with core market participants as defined in paragraph 151 and that satisfy the conditions in paragraph 150 supervisors may apply a haircut of zero.

174. Where, under the comprehensive approach, a supervisor applies a specific carve-out to repo-style transactions in securities issued by its domestic government, other supervisors may choose to allow banks incorporated in their jurisdiction to adopt the same approach to the same transactions.

### *(f) Treatment under the comprehensive approach of SFTs covered by master netting agreements*

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

(a) provide the non-defaulting party the right to terminate and close out in a timely manner all transactions under the agreement upon an event of default, including in the event of insolvency or bankruptcy of the counterparty;

(b) provide for the netting of gains and losses on transactions (including the value of any collateral) terminated and closed out under it so that a single net amount is owed by one party to the other;

(c) allow for the prompt liquidation or set-off of collateral upon the event of default; and

(d) be, together with the rights arising from the provisions required in (a) to (c) above, legally enforceable in each relevant jurisdiction upon the occurrence of an event of default and regardless of the counterparty's insolvency or bankruptcy.

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

- All transactions are marked to market daily;[80] and
- The collateral instruments used in the transactions are recognised as eligible financial collateral in the banking book.

177. The formula in paragraph 178 will be used to calculate the counterparty credit risk capital requirements for transactions with netting agreements. This formula includes the current exposure, an amount for systematic exposure of the securities based on the net exposure, an amount for the idiosyncratic exposure of the securities based on the gross exposure, and an amount for currency mismatch. All other rules regarding the calculation of haircuts under the comprehensive approach stated in paragraphs 155 to 174 equivalently apply for banks using bilateral netting agreements for repo-style transactions.

178. Banks using standard supervisory haircuts for repo-style transactions conducted under a master netting agreement must use the following formula to calculate their exposure amount:

$$E^{*} = max\left\{0; \sum_{i} E_{i} - \sum_{i} C_{j} + 0.4 \cdot net\,exposure + 0.6 \cdot \frac{gross\,exposure}{\sqrt{N}} + \sum_{fx}\left(E_{fx} \cdot H_{fx}\right)\right\}$$

where:

$E^{*}$ = exposure value of the netting set after risk mitigation

$E_i$ = current value of all cash and securities lent, sold with an agreement to repurchase or otherwise posted to the counterparty under the netting agreement

$C_j$ = current value of all cash and securities borrowed, purchased with an agreement to resell or otherwise held by the bank under the netting agreement

$$net\,exposure = \left|\sum_{s} E_{s} H_{s}\right|$$

$$gross\,exposure = \sum_{s} E_{s}\left|H_{s}\right|$$

$E_s$ = The net current value of each security issuance under the netting set (always a positive value)

$H_s$ = haircut appropriate to $E_s$ as described in tables of paragraphs 163 or 164, as applicable,

[80] The holding period for the haircuts depends, as in other repo-style transactions, on the frequency of margining.

- $H_s$ has a positive sign if the security is lent, sold with an agreement to repurchased, or transacted in manner similar to either securities lending or a repurchase agreement
- $H_s$ has a negative sign if the security is borrowed, purchased with an agreement to resell, or transacted in a manner similar to either a securities borrowing or reverse repurchase agreement

N is the number of security issues contained in the netting set (except that issuances where the value $E_s$ is less than one tenth of the value of the largest $E_s$ in the netting set are not included the count)

$E_{fx}$ = absolute value of the net position in each currency *fx* different from the settlement currency

$H_{fx}$ = haircut appropriate for currency mismatch of currency *fx*.

### (iv) Minimum haircut floors for SFTs

179. Paragraphs 180 to 188 specify the treatment of certain non-centrally cleared SFTs with certain counterparties. The requirements are not applicable to banks in jurisdictions that are prohibited from conducting such transactions below the minimum haircut floors specified in paragraph 184 below.

180. The haircut floors found in paragraph 184 below apply to the following transactions:

- Non-centrally cleared SFTs in which the financing (ie the lending of cash) against collateral other than government securities is provided to counterparties who are not supervised by a regulator that imposes prudential requirements consistent with international norms.
- Collateral upgrade transactions with these same counterparties. A collateral upgrade transaction is when a bank lends a security to its counterparty and the counterparty pledges a lower quality security as collateral, thus allowing the counterparty to exchange a lower quality security for a higher quality security. For these transactions, the floors must be calculated according to the formula set out in paragraph 187.

181. SFTs with central banks are not subject to the haircut floors.

182. Cash-collateralised securities lending transactions are exempted from the haircut floors where:

- Securities are lent (to the bank) at long maturities and the lender of securities reinvests or employs the cash at the same or shorter maturity, therefore not giving rise to material maturity or liquidity mismatch.
- Securities are lent (to the bank) at call or at short maturities, giving rise to liquidity risk, only if the lender of the securities reinvests the cash collateral into a reinvestment fund or account subject to regulations or regulatory guidance meeting the minimum standards for reinvestment of cash collateral by securities lenders set out in Section 3.1 of the *Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos*.[81] For this purpose, banks may rely on representations by securities lenders that their reinvestment of cash collateral meets the minimum standards.

183. Banks that lend securities are exempted from the haircut floors on collateral upgrade transactions if they are unable to re-use, or provide representations that they do not and will not reuse, the securities received as collateral against the securities lent.

[81] Financial Stability Board, *Strengthening oversight and regulation of shadow banking, Policy framework for addressing shadow banking risks in securities lending and repos*, 29 August 2013, www.fsb.org/wp-content/uploads/r_130829b.pdf.

184. These are the haircut floors for SFTs referred to above (herein referred to as "in-scope SFTs"), expressed as percentages:

| Residual maturity of collateral | Haircut level | |
|---|---|---|
| | Corporate and other issuers | Securitised products |
| ≤ 1 year debt securities, and floating rate notes (FRNs) | 0.5% | 1% |
| > 1 year, ≤ 5 years debt securities | 1.5% | 4% |
| > 5 years, ≤ 10 years debt securities | 3% | 6% |
| > 10 years debt securities | 4% | 7% |
| Main index equities | 6% | |
| Other assets within the scope of the framework | 10% | |

185. In-scope SFTs which do not meet the haircut floors must be treated as unsecured loans to the counterparties.

186. To determine whether the treatment in paragraph 185 applies to an in-scope SFT (or a netting set of SFTs in the case of portfolio-level haircuts), we must compare the collateral haircut H (real or calculated as per the rules below) and a haircut floor f (from paragraph 184 above or calculated as per the below rules).

187. For a single in-scope SFT not included in a netting set, the values of H and f are computed as:

- For a single cash-lent-for-collateral SFT, H and f are known since H is simply defined by the amount of collateral received and f is given in paragraph 184. For the purposes of this calculation, collateral that is called by either counterparty can be treated collateral received from the moment that it is called (ie the treatment is independent of the settlement period).

  For example, consider an in-scope SFT where 100 cash is lent against 101 of a corporate debt security with a 12-year maturity, H is 1% [(101-100)/100] and f is 4% (per paragraph 184). Therefore, the SFT in question would be subject to the treatment in paragraph 185.

- For a single collateral-for-collateral SFT, lending collateral A and receiving collateral B, the H is still be defined by the amount of collateral received but the effective floor of the transaction must integrate the floor of the two types of collateral and can be computed as:

$$f = \left[\left(\frac{1}{1+f_A}\right) \Big/ \left(\frac{1}{1+f_B}\right)\right] - 1 = \frac{1+f_B}{1+f_A} - 1$$

  which will be compared to the effective haircut of the transaction, ie $\frac{C_B}{C_A} - 1$.

  For example, consider an in-scope SFT where 102 of a corporate debt security with a 10-year maturity is exchanged against 104 of equity, the effective haircut H of the transaction is 104/102 – 1 = 1.96% which has to be compared with the effective floor f of 1.06/1.03 – 1 =2.91%. Therefore, the SFT in question would be subject to the treatment in paragraph 185.

188. For a netting of SFTs an effective "portfolio" floor of the transaction must be computed as:

$$f_{Portfolio} = \left[\left(\frac{\sum_s E_s}{\sum_s E_s \times (1+f_s)}\right) \Big/ \left(\frac{\sum_t C_t}{\sum_t C_t \times (1+f_t)}\right)\right] - 1$$

where $E_s$ is the net position in each security (or cash) s that is net lent, $C_t$ the net position that is net borrowed, and $f_s$ and $f_t$ are the haircut floors for the securities that are net lent and net borrowed respectively. This calculation is therefore the weighted average floor of the portfolio. Then the portfolio does not breach the floor where:

$$\frac{\sum C_t - \sum E_s}{\sum E_s} \geq f_{Portfolio}$$

If the portfolio haircut does breach the floor, then the netting set of SFTs is subject to the treatment in paragraph 185. This treatment should be applied to all trades for which the security received appears in the table in paragraph 184 and for which, within the netting set, the bank is also a net receiver in that security. For the purposes of this calculation, collateral that is called by either counterparty can be treated collateral received from the moment that it is called (ie the treatment is independent of the settlement period).

The following portfolio of trades gives an example of how this methodology works (it shows a portfolio that does not breach the floor).

| Actual trades | Cash | Sovereign debt | Collateral A | Collateral B |
|---|---|---|---|---|
| Floor ($f_s$) | *0%* | *0%* | *6%* | *10%* |
| Portfolio of trades | 50 | 100 | -400 | 250 |
| $E_s$ | 50 | 100 | 0 | 250 |
| $C_t$ | 0 | 0 | 400 | 0 |

| | |
|---|---|
| $f_{Portfolio}$ | -0.0024 |
| $\frac{\sum C_t - \sum E_s}{\sum E_s}$ | 0 |

### (v) Collateralised OTC derivatives transactions

189. Under the standardised approach for counterparty credit risk (SA-CCR), the calculation of the counterparty credit risk charge for an individual contact will be as follows:

$$Exposure\ amount = alpha \cdot \left(RC + PFE\right)$$

where:

*Alpha* = 1.4,

*RC* = the replacement cost calculated according to paragraphs 130 to 145 of the counterparty credit risk standards, and

*PFE* = the amount for potential future exposure calculated according to paragraphs 146 to 187 of the counterparty credit risk standards.

As an alternative to the SA-CCR for the calculation of the counterparty credit risk charge, banks may also use the Internal Model Method as set out in the counterparty credit risk standards, subject to supervisory approval.

## 4. On-balance sheet netting

190. Where a bank:

(a) has a well founded legal basis for concluding that the netting or offsetting agreement is enforceable in each relevant jurisdiction regardless of whether the counterparty is insolvent or bankrupt;

(b) is able at any time to determine those assets and liabilities with the same counterparty that are subject to the netting agreement;

(c) monitors and controls its roll-off risks; and

(d) monitors and controls the relevant exposures on a net basis,

it may use the net exposure of loans and deposits as the basis for its capital adequacy calculation in accordance with the formula in paragraph 160. Assets (loans) are treated as exposure and liabilities (deposits) as collateral. The haircuts are zero except when a currency mismatch exists. A 10-business day holding period applies when daily mark-to-market is conducted. For on-balance sheet netting, the requirements in paragraphs 163 and 172 and 126 to 130 must be applied.

## 5. Guarantees and credit derivatives

### (i) Operational requirements for guarantees and credit derivatives

191. If conditions set below are met, banks can substitute the risk weight of the counterparty with the risk weight of the guarantor.

192. A guarantee (counter-guarantee) or credit derivative must satisfy the following requirements:

(a) it represents a direct claim on the protection provider;

(b) it is explicitly referenced to specific exposures or a pool of exposures, so that the extent of the cover is clearly defined and incontrovertible;

(c) other than non-payment by a protection purchaser of money due in respect of the credit protection contract it is irrevocable; there is no clause in the contract that would allow the protection provider unilaterally to cancel the credit cover or that would increase the effective cost of cover as a result of deteriorating credit quality in the hedged exposure;[82]

(d) it must be unconditional; there should be no clause in the protection contract outside the direct control of the bank that could prevent the protection provider from being obliged to pay out in a timely manner in the event that the underlying counterparty fails to make the payment(s) due.

193. In the case of maturity mismatches, the amount of credit protection that is provided must be adjusted in accordance with paragraphs 126 to 130.

### (ii) Specific operational requirements for guarantees

194. In addition to the legal certainty requirements in paragraph 125, in order for a guarantee to be recognised, the following requirements must be satisfied:

(a) On the qualifying default/non-payment of the counterparty, the bank may in a timely manner pursue the guarantor for any monies outstanding under the documentation governing the transaction. The guarantor may make one lump sum payment of all monies under such documentation to the bank, or the guarantor may assume the future payment obligations of the counterparty covered by the guarantee. The bank must have the right to receive any such payments from the guarantor without first having to take legal action in order to pursue the counterparty for payment.

[82] There must be no possibility for the protection provider to change the maturity agreed *ex post*.

(b) The guarantee is an explicitly documented obligation assumed by the guarantor.

(c) Except as noted in the following sentence, the guarantee covers all types of payments the underlying counterparty is expected to make under the documentation governing the transaction, for example notional amount, margin payments, etc. Where a guarantee covers payment of principal only, interests and other uncovered payments must be treated as an unsecured amount in accordance with the rules for proportional cover described in paragraph 202.

### (iii) Specific operational requirements for credit derivatives

195. In addition to the legal certainty requirements in paragraph 125, in order for a credit derivative contract to be recognised, the following requirements must be satisfied:

(a) The credit events specified by the contracting parties must at a minimum cover:

- failure to pay the amounts due under terms of the underlying obligation that are in effect at the time of such failure (with a grace period that is closely in line with the grace period in the underlying obligation);
- bankruptcy, insolvency or inability of the obligor to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as they become due, and analogous events; and
- restructuring [83] of the underlying obligation involving forgiveness or postponement of principal, interest or fees that results in a credit loss event (ie write-off, specific provision or other similar debit to the profit and loss account).

(b) If the credit derivative covers obligations that do not include the underlying obligation, section (g) below governs whether the asset mismatch is permissible.

(c) The credit derivative shall not terminate prior to expiration of any grace period required for a default on the underlying obligation to occur as a result of a failure to pay. In the case of a maturity mismatch, the provisions of paragraphs 126 to 130 must be applied.

(d) Credit derivatives allowing for cash settlement are recognised for capital purposes insofar as a robust valuation process is in place in order to estimate loss reliably. There must be a clearly specified period for obtaining post-credit-event valuations of the underlying obligation. If the reference obligation specified in the credit derivative for purposes of cash settlement is different from the underlying obligation, section (g) below governs whether the asset mismatch is permissible.

(e) If the protection purchaser's right/ability to transfer the underlying obligation to the protection provider is required for settlement, the terms of the underlying obligation must provide that any required consent to such transfer may not be unreasonably withheld.

(f) The identity of the parties responsible for determining whether a credit event has occurred must be clearly defined. This determination must not be the sole responsibility of the protection seller. The protection buyer must have the right/ability to inform the protection provider of the occurrence of a credit event.

[83] When hedging corporate exposures, this particular credit event is not required to be specified provided that (i) A 100% vote is needed to amend maturity, principal, coupon, currency or seniority status of the underlying corporate exposure; (ii) The legal domicile in which the corporate exposure is governed has a well-established bankruptcy code that allows for a company to reorganise/restructure and provides for an orderly settlement of creditor claims. If these conditions are not met, then the treatment in paragraph 196 may be eligible.

(g) A mismatch between the underlying obligation and the reference obligation under the credit derivative (ie the obligation used for purposes of determining cash settlement value or the deliverable obligation) is permissible if (1) the reference obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (ie the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.

(h) A mismatch between the underlying obligation and the obligation used for purposes of determining whether a credit event has occurred is permissible if (1) the latter obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (ie the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.

196. When the restructuring of the underlying obligation is not covered by the credit derivative, but the other requirements in paragraph 195 are met, partial recognition of the credit derivative will be allowed. If the amount of the credit derivative is less than or equal to the amount of the underlying obligation, 60% of the amount of the hedge can be recognised as covered. If the amount of the credit derivative is larger than that of the underlying obligation, then the amount of eligible hedge is capped at 60% of the amount of the underlying obligation.

### (iv) Range of eligible guarantors (counter-guarantors)/protection providers and credit derivatives

197. Credit protection given by the following entities can be recognised when they have a lower risk weight than the counterparty:

- Sovereign entities,[84] PSEs, MDBs, banks, securities firms and other prudentially regulated financial institutions with a lower risk weight than the counterparty;[85]
- In jurisdictions that allow the use of external ratings for regulatory purposes:
  - other entities that are externally rated except when credit protection is provided to a securitisation exposure. This would include credit protection provided by a parent, subsidiary and affiliate companies when they have a lower risk weight than the obligor;
  - when credit protection is provided to a securitisation exposure, other entities that currently are externally rated BBB– or better and that were externally rated A– or better at the time the credit protection was provided. This would include credit protection provided by parent, subsidiary and affiliate companies when they have a lower risk weight than the obligor.
- In jurisdictions that do not allow the use of external ratings for regulatory purposes:
  - Other entities, defined as "investment grade" meaning they have adequate capacity to meet their financial commitments (including repayments of principal and interest) in a timely manner, irrespective of the economic cycle and business conditions.

[84] This includes the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism (ESM) and the European Financial Stability Facility (EFSF), as well as MDBs eligible for a 0% risk weight as defined in paragraph 14 and referred to in footnote 11.

[85] A prudentially regulated financial institution is defined as: a legal entity supervised by a regulator that imposes prudential requirements consistent with international norms or a legal entity (parent company or subsidiary) included in a consolidated group where any substantial legal entity in the consolidated group is supervised by a regulator that imposes prudential requirements consistent with international norms. These include, but are not limited to, prudentially regulated insurance companies, broker/dealers, thrifts and futures commission merchants, and qualifying central counterparties as defined in Basel Committee on Banking Supervision, *Regulatory capital requirements framework for bank exposures to central counterparties*, July 2012, www.bis.org/publ/bcbs227.pdf.

When making this determination, the bank should assess the entity against the investment grade definition taking into account the complexity of its business model, performance against industry and peers, and risks posed by the entity's operating environment.

Moreover, the following conditions will have to be met:

- For corporate entities (or the entity's parent company), they must have securities outstanding on a recognised securities exchange;
- The creditworthiness of these "investment grade entities" is not positively correlated with the credit risk of the exposures for which they provided guarantees.

– Parent, subsidiary and affiliate companies of the obligor where their creditworthiness is not positively correlated with the credit risk of the exposures for which they provided guarantees. For an intra-group company to be recognised as eligible guarantor, the credit risk of the whole group should be taken into account.

198. Only credit default swaps and total return swaps that provide credit protection equivalent to guarantees are eligible for recognition.[86] The following exception applies: where a bank buys credit protection through a total return swap and records the net payments received on the swap as net income, but does not record offsetting deterioration in the value of the asset that is protected (either through reductions in fair value or by an addition to reserves), the credit protection will not be recognised.

199. First-to-default and all other nth-to-default credit derivatives (ie by which a bank obtains credit protection for a basket of reference names and where the first- or nth–to-default among the reference names triggers the credit protection and terminates the contract) are not eligible as a credit risk mitigation technique and therefore cannot provide any regulatory capital relief. In transactions in which a bank provided credit protection through such instruments, it shall apply the treatment described in paragraph 89.

### (v) Risk-weight treatment of transactions in which eligible credit protection is provided

#### *General risk-weight treatment*

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

201. Materiality thresholds on payments below which the protection provider is exempt from payment in the event of loss are equivalent to retained first-loss positions. The portion of the exposure that is below a materiality threshold must be assigned a risk weight of 1250% by the bank purchasing the credit protection.

#### *Proportional cover*

202. Where losses are shared pari passu on a pro rata basis between the bank and the guarantor, capital relief is afforded on a proportional basis, ie the protected portion of the exposure receives the treatment applicable to eligible guarantees/credit derivatives, with the remainder treated as unsecured.

#### *Tranched cover*

203. Where the bank transfers a portion of the risk of an exposure in one or more tranches to a protection seller or sellers and retains some level of the risk of the loan, and the risk transferred and the risk retained are of different seniority, banks may obtain credit protection for either the senior tranches

[86] Cash-funded credit-linked notes issued by the bank against exposures in the banking book that fulfil all minimum requirements for credit derivatives are treated as cash-collateralised transactions. However, in this case the limitations regarding the protection provider as set out in paragraph 197 do not apply.

(eg the second-loss portion) or the junior tranche (eg the first-loss portion). In this case the rules as set out in the securitisation standard apply.

### (vi) Currency mismatches

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

$$G_A = G \cdot \left(1 - H_{FX}\right)$$

where:

G = nominal amount of the credit protection

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

The currency mismatch haircut for a 10-business day holding period (assuming daily marking to market) is 8%. This haircut must be scaled up using the square root of time formula, depending on the frequency of revaluation of the credit protection as described in paragraph 172.

### (vii) Sovereign guarantees and counter-guarantees

205. As specified in paragraph 8, a lower risk weight may be applied at national discretion to a bank's exposures to the sovereign (or central bank) where the bank is incorporated and where the exposure is denominated in domestic currency and funded in that currency. National supervisors may extend this treatment to portions of exposures guaranteed by the sovereign (or central bank), where the guarantee is denominated in the domestic currency and the exposure is funded in that currency. An exposure may be covered by a guarantee that is indirectly counter-guaranteed by a sovereign. Such an exposure may be treated as covered by a sovereign guarantee provided that:

(a) the sovereign counter-guarantee covers all credit risk elements of the exposure;

(b) both the original guarantee and the counter-guarantee meet all operational requirements for guarantees, except that the counter-guarantee need not be direct and explicit to the original exposure; and

(c) the supervisor is satisfied that the cover is robust and that no historical evidence suggests that the coverage of the counter-guarantee is less than effectively equivalent to that of a direct sovereign guarantee.

# Internal ratings-based approach for credit risk

## A. Overview

1. This section describes the IRB approach for credit risk. Subject to certain minimum conditions and disclosure requirements, banks that have received supervisory approval to use the IRB approach may rely on their own internal estimates of risk components in determining the capital requirement for a given exposure. The risk components include measures of the probability of default (PD), loss given default (LGD), the exposure at default (EAD), and effective maturity (M). In some cases, banks may be required to use a supervisory value as opposed to an internal estimate for one or more of the risk components.

2. The IRB approach is based on measures of unexpected losses (UL) and expected losses (EL). The risk-weight functions produce capital requirements for the UL portion. Expected losses are treated separately, as outlined in paragraph 43 of the Basel II framework (June 2006)[1] and Section G below.

3. In this section, the asset classes are defined first. Adoption of the IRB approach across asset classes is also discussed early in this section. The risk components, each of which is defined later in this section, serve as inputs to the risk-weight functions that have been developed for separate asset classes. For example, there is a risk-weight function for corporate exposures and another one for qualifying revolving retail exposures. The treatment of each asset class begins with a presentation of the relevant risk-weight function(s) followed by the risk components and other relevant factors, such as the treatment of credit risk mitigants. The legal certainty standards for recognising CRM as set out in paragraphs 117 to 205 of the standardised approach apply for both the foundation and advanced IRB approaches. The minimum requirements that banks must satisfy to use the IRB approach are presented at the end of this section starting at Section H, paragraph 154.

## B. Mechanics of the IRB approach

4. In Section 1 that follows, the asset classes (eg corporate exposures and retail exposures) eligible for the IRB approach are defined. Section 2 provides a description of the risk components to be used by banks by asset class. Section 3 discusses a bank's adoption of the IRB approach at the asset class level and the related roll-out requirements. In cases where an IRB treatment is not specified, the risk weight for those other exposures is 100%, except when a 0% risk weight applies under the standardised approach, and the resulting risk-weighted assets are assumed to represent UL only.

### 1. Categorisation of exposures

5. Under the IRB approach, banks must categorise banking-book exposures into broad classes of assets with different underlying risk characteristics, subject to the definitions set out below. The classes of assets are (a) corporate, (b) sovereign, (c) bank, (d) retail, and (e) equity. Within the corporate asset class, five sub-classes of specialised lending are separately identified. Within the retail asset class, three sub-classes are separately identified. Within the corporate and retail asset classes, a distinct treatment for purchased receivables may also apply provided certain conditions are met. For the equity asset class the IRB approach is not permitted, as outlined further below.

[1] References to the Basel II framework (June 2006) are to the comprehensive version available at: www.bis.org/publ/bcbs128.pdf.

6. The classification of exposures in this way is broadly consistent with established bank practice. However, some banks may use different definitions in their internal risk management and measurement systems. While it is not the intention of the Committee to require banks to change the way in which they manage their business and risks, banks are required to apply the appropriate treatment to each exposure for the purposes of deriving their minimum capital requirement. Banks must demonstrate to supervisors that their methodology for assigning exposures to different classes is appropriate and consistent over time.

7. For the treatment of securitisation exposures, see the Committee's *Revisions to the securitisation framework*.[2]

### (i) Definition of corporate exposures

8. In general, a corporate exposure is defined as a debt obligation of a corporation, partnership, or proprietorship. Banks are permitted to distinguish separately exposures to small- and medium-sized entities (SME), as defined in paragraph 54.

9. In addition to general corporates, within the corporate asset class, five sub-classes of specialised lending (SL) are identified. Such lending possesses all the following characteristics, either in legal form or economic substance:

- The exposure is typically to an entity (often a special purpose entity (SPE)) which was created specifically to finance and/or operate physical assets;
- The borrowing entity has little or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed;
- The terms of the obligation give the lender a substantial degree of control over the asset(s) and the income that it generates; and
- As a result of the preceding factors, the primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of a broader commercial enterprise.

10. The five sub-classes of specialised lending (SL) are project finance, object finance, commodities finance, income-producing real estate, and high-volatility commercial real estate. Each of these sub-classes is defined below.

#### *Project finance*

11. Project finance (PF) is a method of funding in which the lender looks primarily to the revenues generated by a single project, both as the source of repayment and as security for the exposure. This type of financing is usually for large, complex and expensive installations that might include, for example, power plants, chemical processing plants, mines, transportation infrastructure, environment, and telecommunications infrastructure. Project finance may take the form of financing of the construction of a new capital installation, or refinancing of an existing installation, with or without improvements.

12. In such transactions, the lender is usually paid solely or almost exclusively out of the money generated by the contracts for the facility's output, such as the electricity sold by a power plant. The borrower is usually an SPE that is not permitted to perform any function other than developing, owning, and operating the installation. The consequence is that repayment depends primarily on the project's cash flow and on the collateral value of the project's assets. In contrast, if repayment of the exposure depends

[2] Basel Committee on Banking Supervision, *Revisions to the securitisation framework*, 11 December 2014 (revised July 2016), www.bis.org/bcbs/publ/d374.pdf.

primarily on a well-established, diversified, credit-worthy, contractually obligated end user for repayment, it is considered a secured exposure to that end-user.

### *Object finance*

13. Object finance (OF) refers to a method of funding the acquisition of physical assets (eg ships, aircraft, satellites, railcars, and fleets) where the repayment of the exposure is dependent on the cash flows generated by the specific assets that have been financed and pledged or assigned to the lender. A primary source of these cash flows might be rental or lease contracts with one or several third parties. In contrast, if the exposure is to a borrower whose financial condition and debt-servicing capacity enables it to repay the debt without undue reliance on the specifically pledged assets, the exposure should be treated as a collateralised corporate exposure.

### *Commodities finance*

14. Commodities finance (CF) refers to structured short-term lending to finance reserves, inventories, or receivables of exchange-traded commodities (eg crude oil, metals, or crops), where the exposure will be repaid from the proceeds of the sale of the commodity and the borrower has no independent capacity to repay the exposure. This is the case when the borrower has no other activities and no other material assets on its balance sheet. The structured nature of the financing is designed to compensate for the weak credit quality of the borrower. The exposure's rating reflects its self-liquidating nature and the lender's skill in structuring the transaction rather than the credit quality of the borrower.

15. The Committee believes that such lending can be distinguished from exposures financing the reserves, inventories, or receivables of other more diversified corporate borrowers. Banks are able to rate the credit quality of the latter type of borrowers based on their broader ongoing operations. In such cases, the value of the commodity serves as a risk mitigant rather than as the primary source of repayment.

### *Income-producing real estate*

16. Income-producing real estate (IPRE) refers to a method of providing funding to real estate (such as, office buildings to let, retail space, multifamily residential buildings, industrial or warehouse space, and hotels) where the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset. The primary source of these cash flows would generally be lease or rental payments or the sale of the asset. The borrower may be, but is not required to be, an SPE, an operating company focused on real estate construction or holdings, or an operating company with sources of revenue other than real estate. The distinguishing characteristic of IPRE versus other corporate exposures that are collateralised by real estate is the strong positive correlation between the prospects for repayment of the exposure and the prospects for recovery in the event of default, with both depending primarily on the cash flows generated by a property.

### *High-volatility commercial real estate*

17. High-volatility commercial real estate (HVCRE) lending is the financing of commercial real estate that exhibits higher loss rate volatility (ie higher asset correlation) compared to other types of SL. HVCRE includes:

- Commercial real estate exposures secured by properties of types that are categorised by the national supervisor as sharing higher volatilities in portfolio default rates;
- Loans financing any of the land acquisition, development and construction (ADC) phases for properties of those types in such jurisdictions; and
- Loans financing ADC of any other properties where the source of repayment at origination of the exposure is either the future uncertain sale of the property or cash flows whose source of repayment is substantially uncertain (eg the property has not yet been leased to the occupancy

rate prevailing in that geographic market for that type of commercial real estate), unless the borrower has substantial equity at risk. Commercial ADC loans exempted from treatment as HVCRE loans on the basis of certainty of repayment of borrower equity are, however, ineligible for the additional reductions for SL exposures described in paragraph 58.

18. Where supervisors categorise certain types of commercial real estate exposures as HVCRE in their jurisdictions, they are required to make public such determinations. Other supervisors need to ensure that such treatment is then applied equally to banks under their supervision when making such HVCRE loans in that jurisdiction.

### (ii) Definition of sovereign exposures

19. This asset class covers all exposures to counterparties treated as sovereigns under the standardised approach. This includes sovereigns (and their central banks), certain PSEs identified as sovereigns in the standardised approach, MDBs that meet the criteria for a 0% risk weight and referred to in footnote 11 of the standardised approach, and the entities referred to in paragraph 10 of the standardised approach. The treatment of sovereign exposures is unchanged from the Basel II framework (June 2006).

### (iii) Definition of bank exposures

20. This asset class covers exposures to banks as defined in paragraph 16 of the standardised approach for credit risk and those securities firms and other financial institutions set out in paragraph 37 of the standardised approach for credit risk that are treated as exposures to banks. Bank exposures also include claims on all domestic PSEs that are not treated as exposures to sovereigns under the standardised approach, and MDBs that do not meet the criteria for a 0% risk weight under the standardised approach (ie MDBs that are not listed in footnote 11 of the standardised approach).

### (iv) Definition of retail exposures

21. An exposure is categorised as a retail exposure if it meets all of the following criteria:

*Nature of borrower or low value of individual exposures*

- Exposures to individuals – such as revolving credits and lines of credit (eg credit cards, overdrafts, and retail facilities secured by financial instruments) as well as personal term loans and leases (eg instalment loans, auto loans and leases, student and educational loans, personal finance, and other exposures with similar characteristics) – are generally eligible for retail treatment regardless of exposure size, although supervisors may wish to establish exposure thresholds to distinguish between retail and corporate exposures.
- Residential mortgage loans[3] (including first and subsequent liens, term loans and revolving home equity lines of credit) are eligible for retail treatment regardless of exposure size so long as the credit is:
  - (i) an exposure to an individual;[4] or
  - (ii) an exposure to associations or cooperatives of individuals that are regulated under national law and exist with the only purpose of granting its members the use of a primary residence in the property securing the loan.

[3] Loans that meet the conditions set out in footnote 35 of paragraph 60 of the standardised approach for credit risk are also eligible to be included in the IRB retail residential mortgage sub-class.

[4] At national discretion, supervisors may exclude from the retail residential mortgage sub-asset class loans to individuals that have mortgaged more than a specified number of properties or housing units, and treat such loans as corporate exposures.

- Loans extended to small businesses and managed as retail exposures are eligible for retail treatment provided the total exposure of the banking group to a small business borrower (on a consolidated basis where applicable) is less than €1 million. Small business loans extended through or guaranteed by an individual are subject to the same exposure threshold.
- It is expected that supervisors provide flexibility in the practical application of such thresholds such that banks are not forced to develop extensive new information systems simply for the purpose of ensuring perfect compliance. It is, however, important for supervisors to ensure that such flexibility (and the implied acceptance of exposure amounts in excess of the thresholds that are not treated as violations) is not being abused.

*Large number of exposures*

22. The exposure must be one of a large pool of exposures, which are managed by the bank on a pooled basis.

- Small business exposures below €1 million may be treated as retail exposures if the bank treats such exposures in its internal risk management systems consistently over time and in the same manner as other retail exposures. This requires that such an exposure be originated in a similar manner to other retail exposures. Furthermore, it must not be managed individually in a way comparable to corporate exposures, but rather as part of a portfolio segment or pool of exposures with similar risk characteristics for purposes of risk assessment and quantification. However, this does not preclude retail exposures from being treated individually at some stages of the risk management process. The fact that an exposure is rated individually does not by itself deny the eligibility as a retail exposure.

23. Within the retail asset class category, banks are required to identify separately three sub-classes of exposures: (a) residential mortgage loans, as defined above, (b) qualifying revolving retail exposures, as defined in the following paragraph, and (c) all other retail exposures.

### (v) Definition of qualifying revolving retail exposures

24. All of the following criteria must be satisfied for a sub-portfolio to be treated as a qualifying revolving retail exposure (QRRE). These criteria must be applied at a sub-portfolio level consistent with the bank's segmentation of its retail activities generally. Segmentation at the national or country level (or below) should be the general rule.

(a) The exposures are revolving, unsecured, and uncommitted (both contractually and in practice). In this context, revolving exposures are defined as those where customers' outstanding balances are permitted to fluctuate based on their decisions to borrow and repay, up to a limit established by the bank.

(b) The exposures are to individuals.

(c) The maximum exposure to a single individual in the sub-portfolio is €100,000 or less.

(d) Because the asset correlation assumptions for the QRRE risk-weight function are markedly below those for the other retail risk-weight function at low PD values, banks must demonstrate that the use of the QRRE risk-weight function is constrained to portfolios that have exhibited low volatility of loss rates, relative to their average level of loss rates, especially within the low PD bands. Supervisors will review the relative volatility of loss rates across the QRRE subportfolios, as well as the aggregate QRRE portfolio, and intend to share information on the typical characteristics of QRRE loss rates across jurisdictions.

(e) Data on loss rates for the sub-portfolio must be retained in order to allow analysis of the volatility of loss rates.

(f) The supervisor must concur that treatment as a qualifying revolving retail exposure is consistent with the underlying risk characteristics of the sub-portfolio.

25. The QRRE sub-class is split into exposures to transactors and revolvers. A QRRE transactor is an exposure to an obligor that meets the definition set out in paragraph 56 of the standardised approach. That is, the exposure is to an obligor in relation to a facility such as credit card or charge card where the balance has been repaid in full at each scheduled repayment date for the previous 12 months, or the exposure is in relation to an overdraft facility if there have been no drawdowns over the previous 12 months. All exposures that are not QRRE transactors are QRRE revolvers.

### (vi) Definition of equity exposures

26. This asset class covers exposures to equities as defined in paragraph 49 of the standardised approach for credit risk.

### (vii) Definition of eligible purchased receivables

27. Eligible purchased receivables are divided into retail and corporate receivables as defined below.

#### *Retail receivables*

28. Purchased retail receivables, provided the purchasing bank complies with the IRB rules for retail exposures, are eligible for the top-down approach as permitted within the existing standards for retail exposures. The bank must also apply the minimum operational requirements as set forth in Sections F and H.

#### *Corporate receivables*

29. In general, for purchased corporate receivables, banks are expected to assess the default risk of individual obligors as specified in Section C.1 (starting with paragraph 52) consistent with the treatment of other corporate exposures. However, the top-down approach may be used, provided that the purchasing bank's programme for corporate receivables complies with both the criteria for eligible receivables and the minimum operational requirements of this approach. The use of the top-down purchased receivables treatment is limited to situations where it would be an undue burden on a bank to be subjected to the minimum requirements for the IRB approach to corporate exposures that would otherwise apply. Primarily, it is intended for receivables that are purchased for inclusion in asset-backed securitisation structures, but banks may also use this approach, with the approval of national supervisors, for appropriate on-balance sheet exposures that share the same features.

30. Supervisors may deny the use of the top-down approach for purchased corporate receivables depending on the bank's compliance with minimum requirements. In particular, to be eligible for the proposed 'top-down' treatment, purchased corporate receivables must satisfy the following conditions:

- The receivables are purchased from unrelated, third party sellers, and as such the bank has not originated the receivables either directly or indirectly.

- The receivables must be generated on an arm's-length basis between the seller and the obligor. (As such, intercompany accounts receivable and receivables subject to contra-accounts between firms that buy and sell to each other are ineligible.[5])
- The purchasing bank has a claim on all proceeds from the pool of receivables or a pro-rata interest in the proceeds.[6]
- National supervisors must also establish concentration limits above which capital charges must be calculated using the minimum requirements for the bottom-up approach for corporate exposures. Such concentration limits may refer to one or a combination of the following measures: the size of one individual exposure relative to the total pool, the size of the pool of receivables as a percentage of regulatory capital, or the maximum size of an individual exposure in the pool.

31. The existence of full or partial recourse to the seller does not automatically disqualify a bank from adopting this top-down approach, as long as the cash flows from the purchased corporate receivables are the primary protection against default risk as determined by the rules in paragraphs 132 to 135 for purchased receivables and the bank meets the eligibility criteria and operational requirements.

## 2. Foundation and advanced approaches

32. For each of the asset classes covered under the IRB framework, there are three key elements:

- Risk components: estimates of risk parameters provided by banks, some of which are supervisory estimates.
- Risk-weight functions: the means by which risk components are transformed into risk-weighted assets and therefore capital requirements.
- Minimum requirements: the minimum standards that must be met in order for a bank to use the IRB approach for a given asset class.

33. For many of the asset classes, the Committee has made available two broad approaches: a foundation and an advanced approach. Under the foundation approach (F-IRB approach), as a general rule, banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the advanced approach (A-IRB approach), banks provide more of their own estimates of PD, LGD and EAD, and their own calculation of M, subject to meeting minimum standards. For both the foundation and advanced approaches, banks must always use the risk-weight functions provided in this Framework for the purpose of deriving capital requirements. The full suite of approaches is described below.

34. For exposures to equities, defined in paragraph 26 above, the IRB approaches are not permitted (see paragraph 42). In addition, the A-IRB approach cannot be used for the following:

(i) Exposures to general corporates belonging to a group with total consolidated annual revenues greater than €500m.

(ii) Exposures in the bank asset class (paragraph 20), and other securities firms and financial institutions (including insurance companies and any other financial institutions in the corporate asset class).

In making the assessment above for the revenue threshold, the amounts must be as reported in the audited financial statements of the corporates or, for corporates that are part of consolidated groups,

[5] Contra-accounts involve a customer buying from and selling to the same firm. The risk is that debts may be settled through payments in kind rather than cash. Invoices between the companies may be offset against each other instead of being paid. This practice can defeat a security interest when challenged in court.

[6] Claims on tranches of the proceeds (first loss position, second loss position, etc) would fall under the securitisation treatment.

their consolidated groups (according to the accounting standard applicable to the ultimate parent of the consolidated group). The figures must be based on the average amounts calculated over the prior three years, or on the latest amounts updated every three years by the bank.

### (i) Corporate and bank exposures

35. Under the foundation approach, banks must provide their own estimates of PD associated with each of their borrower grades, but must use supervisory estimates for the other relevant risk components. The other risk components are LGD, EAD and M.[7]

36. Under the advanced approach, banks must calculate the effective maturity (M)[8] and provide their own estimates of PD, LGD and EAD.

37. There is an exception to this general rule for the five sub-classes of assets identified as SL.

#### *The SL categories: PF, OF, CF, IPRE and HVCRE*

38. Banks that do not meet the requirements for the estimation of PD under the corporate foundation approach for their SL exposures are required to map their internal risk grades to five supervisory categories, each of which is associated with a specific risk weight. This version is termed the 'supervisory slotting criteria approach'.

39. Banks that meet the requirements for the estimation of PD are able to use the foundation approach to corporate exposures to derive risk weights for all classes of SL exposures except HVCRE. At national discretion, banks meeting the requirements for HVCRE exposure are able to use a foundation approach that is similar in all respects to the corporate approach, with the exception of a separate risk-weight function as described in paragraph 64.

40. Banks that meet the requirements for the estimation of PD, LGD and EAD are able to use the advanced approach to corporate exposures to derive risk weights for all classes of SL exposures except HVCRE. At national discretion, banks meeting these requirements for HVCRE exposure are able to use an advanced approach that is similar in all respects to the corporate approach, with the exception of a separate risk-weight function as described in paragraph 64.

### (ii) Retail exposures

41. For retail exposures, banks must provide their own estimates of PD, LGD and EAD. There is no foundation approach for this asset class.

### (iii) Equity exposures

42. All equity exposures are subject to the standardised approach set out in paragraph 50[9] of the standardised approach for credit risk, with the exception of equity investments in funds that are subject to the requirements set out in the standard published by the Basel Committee in December 2013.[10]

[7] As noted in paragraph 107, some supervisors may require banks using the foundation approach to calculate M using the definition provided in paragraphs 109 to 114.

[8] At the discretion of the national supervisor, certain domestic exposures may be exempt from the calculation of M (see paragraph 108).

[9] The prohibition on the use of the IRB approach for equity exposures will be subject to a five-year linear phase-in arrangement from the date of implementation of this standard. During the phase-in period, the risk weight for equity exposures will be the greater of: (i) the risk weight as calculated under the IRB approach; and (ii) the risk weight set for the linear phase-in arrangement under the standardised approach for credit risk (see paragraph 50 footnote 29 of the standardised approach). Alternatively, supervisory authorities may require banks to apply the fully phased-in standardised approach treatment from the date of implementation of this standard.

[10] Final standards on capital requirements for banks' equity investments in funds are available at www.bis.org/publ/bcbs266.pdf.

### (iv) Eligible purchased receivables

43. The treatment potentially straddles two asset classes. For eligible corporate receivables, both a foundation and advanced approach are available subject to certain operational requirements being met. As noted in paragraph 29, for corporate purchased receivables banks are in general expected to assess the default risk of individual obligors. The bank may use the A-IRB treatment for purchased corporate receivables (paragraphs 134 and 135) only for exposures to individual corporate obligors that are eligible for the A-IRB approach according to paragraph 34. Otherwise, the F-IRB treatment for purchased corporate receivables should be used. For eligible retail receivables, as with the retail asset class, only the A-IRB approach is available.

## 3. Adoption of the IRB approach for asset classes

44. Once a bank adopts an IRB approach for part of its holdings within an asset class, it is expected to extend it across all holdings within that asset class. In this context, the relevant assets classes are as follows:

- Banks
- Corporates (excluding specialised lending and purchased receivables)
- Specialised lending
- Corporate purchased receivables
- Qualifying revolving retail exposures
- Retail residential mortgages
- Other retail (excluding purchased receivables)
- Retail purchased receivables

The Committee recognises however, that, for many banks, it may not be practicable for various reasons to implement the IRB approach for an entire asset class across all business units at the same time. Furthermore, once on IRB, data limitations may mean that banks can meet the standards for the use of own estimates of LGD and EAD for some but not all of their exposures within an asset classes at the same time (for example, exposures that are in the same asset class, but are in different business units).

45. As such, supervisors may allow banks to adopt a phased rollout of the IRB approach across an asset class. The phased rollout includes: (i) adoption of IRB across the asset class within the same business unit; (ii) adoption of IRB for the asset class across business units in the same banking group; and (iii) move from the foundation approach to the advanced approach for certain risk components where use of the advanced approach is permitted. However, when a bank adopts an IRB approach for an asset class within a particular business unit, it must apply the IRB approach to all exposures within that asset class in that unit.

46. If a bank intends to adopt an IRB approach to an asset class, it must produce an implementation plan, specifying to what extent and when it intends to roll out the IRB approaches within the asset class and business units. The plan should be realistic, and must be agreed with the supervisor. It should be driven by the practicality and feasibility of moving to the more advanced approaches, and not motivated by a desire to adopt a Pillar 1 approach that minimises its capital charge. During the roll-out period, supervisors will ensure that no capital relief is granted for intra-group transactions which are designed to reduce a banking group's aggregate capital charge by transferring credit risk among entities on the standardised approach, foundation and advanced IRB approaches. This includes, but is not limited to, asset sales or cross guarantees.

47. Some exposures that are immaterial in terms of size and perceived risk profile within their asset class may be exempt from the requirements in the previous two paragraphs, subject to supervisory approval. Capital requirements for such operations will be determined according to the standardised approach, with the national supervisor determining whether a bank should hold more capital under Pillar 2 for such positions.

48. Banks adopting an IRB approach for an asset class are expected to continue to employ an IRB approach for that asset class. A voluntary return to the standardised or foundation approach is permitted only in extraordinary circumstances, such as divestiture of a large fraction of the bank's credit-related business in that asset class, and must be approved by the supervisor.

49. Given the data limitations associated with SL exposures, a bank may remain on the supervisory slotting criteria approach for one or more of the PF, OF, CF, IPRE or HVCRE sub-classes, and move to the foundation or advanced approach for the other sub-classes. However, a bank should not move to the advanced approach for the HVCRE sub-class without also doing so for material IPRE exposures at the same time.

50. Irrespective of the materiality, exposures to CCPs arising from OTC derivatives, exchange traded derivatives transactions and SFTs must be treated according to the dedicated treatment laid down in Section XI of the counterparty credit risk standards.

# C. Rules for corporate and bank exposures

51. Section C presents the method of calculating the unexpected loss (UL) capital requirements for corporate and bank exposures. As discussed in Section C.1, a single risk-weight function is provided for determining the capital requirement for corporate and bank exposures. Supervisory risk weights are provided for each of the specialised lending sub-classes of corporates, and a separate risk-weight function is also provided for HVCRE. Section C.2 discusses the risk components. The method of calculating expected losses, and for determining the difference between that measure and provisions is described in Section G.

## 1. Risk-weighted assets for corporate and bank exposures

### (i) Formula for derivation of risk-weighted assets for corporate and bank exposures

52. The derivation of risk-weighted assets is dependent on estimates of the PD, LGD, EAD and, in some cases, effective maturity (M), for a given exposure.

53. Throughout this section, PD and LGD are measured as decimals, and EAD is measured as currency (eg euros), except where explicitly noted otherwise. For exposures not in default, the formula for calculating risk-weighted assets is:[11, 12]

[11] ln denotes the natural logarithm.

[12] N(x) denotes the cumulative distribution function for a standard normal random variable (ie the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G(z) denotes the inverse cumulative distribution

Correlation (R) = $0.12 \cdot \frac{\left(1-e^{-50 \cdot PD}\right)}{\left(1-e^{-50}\right)} + 0.24 \cdot \left(1 - \frac{\left(1-e^{-50 \cdot PD}\right)}{\left(1-e^{-50}\right)}\right)$

Maturity adjustment (b) = $\left[0.11852 - 0.05478 \cdot \ln\left(PD\right)\right]^2$

Capital requirement[13,14](K) = $\left[LGD \cdot N\left[\frac{G\left(PD\right)}{\sqrt{\left(1-R\right)}} + \sqrt{\frac{R}{1-R}} \cdot G\left(0.999\right)\right] - PD \cdot LGD\right] \cdot \frac{\left(1+\left(M-2.5\right) \cdot b\right)}{\left(1-1.5 \cdot b\right)}$

Risk-weighted assets (RWA) = $K \cdot 12.5 \cdot EAD$

The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraph 235) and the bank's best estimate of expected loss (described in paragraph 238). The risk-weighted asset amount for the defaulted exposure is the product of K, 12.5, and the EAD.

A multiplier of 1.25 is applied to the correlation parameter of all exposures to financial institutions meeting the following criteria:

- Regulated financial institutions whose total assets are greater than or equal to US $100 billion. The most recent audited financial statement of the parent company and consolidated subsidiaries must be used in order to determine asset size. For the purpose of this paragraph, a regulated financial institution is defined as a parent and its subsidiaries where any substantial legal entity in the consolidated group is supervised by a regulator that imposes prudential requirements consistent with international norms. These include, but are not limited to, prudentially regulated Insurance Companies, Broker/Dealers, Banks, Thrifts and Futures Commission Merchants;
- Unregulated financial institutions, regardless of size. Unregulated financial institutions are, for the purposes of this paragraph, legal entities whose main business includes: the management of financial assets, lending, factoring, leasing, provision of credit enhancements, securitisation, investments, financial custody, central counterparty services, proprietary trading and other financial services activities identified by supervisors.
- Correlation (R_FI) = $1.25 \cdot \left[0.12 \cdot \frac{\left(1-e^{-50 \cdot PD}\right)}{\left(1-e^{-50}\right)} + 0.24 \cdot \left(1 - \frac{\left(1-e^{-50 \cdot PD}\right)}{\left(1-e^{-50}\right)}\right)\right]$

Illustrative risk weights are shown in Annex 5 of the Basel II framework (June 2006).

function for a standard normal random variable (ie the value of x such that N(x) = z). The normal cumulative distribution function and the inverse of the normal cumulative distribution function are, for example, available in Excel as the functions NORMSDIST and NORMSINV.

[13] If this calculation results in a negative capital charge for any individual sovereign exposure, banks should apply a zero capital charge for that exposure.

[14] The following terms are used to refer to specific parts of the capital requirements formula:

- Full maturity adjustment = $\frac{\left(1+\left(M-2.5\right) \cdot b\right)}{\left(1-1.5 \cdot b\right)}$
- Explicit maturity adjustment = $\left(1+\left(M-2.5\right) \cdot b\right)$
- M is the effective maturity, calculated according to paragraphs 107 to 114

### (ii) Firm-size adjustment for small- and medium-sized entities (SME)

54. Under the IRB approach for corporate credits, banks will be permitted to separately distinguish exposures to SME borrowers (defined as corporate exposures where the reported sales for the consolidated group of which the firm is a part is less than €50 million) from those to large firms. A firm-size adjustment (ie 0.04 x (1 – (S – 5) / 45)) is made to the corporate risk weight formula for exposures to SME borrowers. S is expressed as total annual sales in millions of euros with values of S falling in the range of equal to or less than €50 million or greater than or equal to €5 million. Reported sales of less than €5 million will be treated as if they were equivalent to €5 million for the purposes of the firm-size adjustment for SME borrowers.

$$\text{Correlation (R)} = 0.12 \cdot \frac{\left(1 - e^{-50 \cdot PD}\right)}{\left(1 - e^{-50}\right)} + 0.24 \cdot \left(1 - \frac{\left(1 - e^{-50 \cdot PD}\right)}{\left(1 - e^{-50}\right)}\right) - 0.04 \cdot \left(1 - \frac{(S - 5)}{45}\right)$$

55. Subject to national discretion, supervisors may allow banks, as a failsafe, to substitute total assets of the consolidated group for total sales in calculating the SME threshold and the firm-size adjustment. However, total assets should be used only when total sales are not a meaningful indicator of firm size.

### (iii) Risk weights for specialised lending

*Risk weights for PF, OF, CF and IPRE*

56. Banks that do not meet the requirements for the estimation of PD under the corporate IRB approach will be required to map their internal grades to five supervisory categories, each of which is associated with a specific risk weight. The slotting criteria on which this mapping must be based are provided in Annex 6 of the Basel II framework (June 2006). The risk weights for unexpected losses associated with each supervisory category are:

Supervisory categories and UL risk weights for other SL exposures

| Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|
| 70% | 90% | 115% | 250% | 0% |

57. Although banks are expected to map their internal ratings to the supervisory categories for specialised lending using the slotting criteria provided in Annex 6 of the Basel II framework (June 2006), each supervisory category broadly corresponds to a range of external credit assessments as outlined below.

| Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|
| BBB- or better | BB+ or BB | BB- or B+ | B to C- | Not applicable |

58. At national discretion, supervisors may allow banks to assign preferential risk weights of 50% to "strong" exposures, and 70% to "good" exposures, provided they have a remaining maturity of less than 2.5 years or the supervisor determines that banks' underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category.

59. Banks that meet the requirements for the estimation of PD will be able to use the F-IRB approach for the corporate asset class to derive risk weights for SL sub-classes.

60. Banks that meet the requirements for the estimation of PD and LGD and EAD (where relevant) will be able to use the A-IRB approach for the corporate asset class to derive risk weights for SL sub-classes.

*Risk weights for HVCRE*

61. Banks that do not meet the requirements for estimation of PD, or whose supervisor has chosen not to implement the foundation or advanced approaches to HVCRE, must map their internal grades to five supervisory categories, each of which is associated with a specific risk weight. The slotting criteria on which this mapping must be based are the same as those for IPRE, as provided in Annex 6 of the Basel II framework (June 2006). The risk weights associated with each supervisory category are:

Supervisory categories and UL risk weights for high-volatility commercial real estate

| Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|
| 95% | 120% | 140% | 250% | 0% |

62. As indicated in paragraph 57, each supervisory category broadly corresponds to a range of external credit assessments.

63. At national discretion, supervisors may allow banks to assign preferential risk weights of 70% to "strong" exposures, and 95% to "good" exposures, provided they have a remaining maturity of less than 2.5 years or the supervisor determines that banks' underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category.

64. Banks that meet the requirements for the estimation of PD and whose supervisor has chosen to implement a foundation or advanced approach to HVCRE exposures will use the same formula for the derivation of risk weights that is used for other SL exposures, except that they will apply the following asset correlation formula:

$$\text{Correlation (R)} = 0.12 \cdot \frac{\left(1 - e^{-50 \cdot PD}\right)}{\left(1 - e^{-50}\right)} + 0.30 \cdot \left(1 - \frac{\left(1 - e^{-50 \cdot PD}\right)}{\left(1 - e^{-50}\right)}\right)$$

65. Banks that do not meet the requirements for estimation of LGD and EAD for HVCRE exposures must use the supervisory parameters for LGD and EAD for corporate exposures.

## 2. Risk components

66. This section, paragraphs 67 to 115, sets out the calculation of the risk components for corporate and bank exposures. In the case of an exposure that is guaranteed by a sovereign, the floors that apply to the risk components do not apply to that part of the exposure covered by the sovereign guarantee (ie any part of the exposure that is not covered by the guarantee is subject to the relevant floors).

### (i) Probability of default (PD)

67. For corporate and bank exposures, the PD is the one-year PD associated with the internal borrower grade to which that exposure is assigned. The PD of borrowers assigned to a default grade(s), consistent with the reference definition of default, is 100%. The minimum requirements for the derivation of the PD estimates associated with each internal borrower grade are outlined in paragraphs 229 to 231.

68. The PD for each exposure that is used as input into the risk weight formula and the calculation of expected loss must not be less than 0.05%.

### (ii) Loss given default (LGD)

69. A bank must provide an estimate of the LGD for each corporate and bank exposure. There are two approaches for deriving this estimate: a foundation approach and an advanced approach. As noted in paragraph 34, the advanced approach is not permitted for exposures to certain entities.

*LGD under the foundation approach*

Treatment of unsecured claims and non-recognised collateral

70. Under the foundation approach, senior claims on banks, securities firms and other financial institutions (including insurance companies and any financial institutions in the corporate asset class) that are not secured by recognised collateral will be assigned a 45% LGD. Senior claims on other corporates that are not secured by recognised collateral will be assigned a 40% LGD.

71. All subordinated claims on corporates and banks will be assigned a 75% LGD. A subordinated loan is a facility that is expressly subordinated to another facility. At national discretion, supervisors may choose to employ a wider definition of subordination. This might include economic subordination, such as cases where the facility is unsecured and the bulk of the borrower's assets are used to secure other exposures.

Collateral under the foundation approach

72. In addition to the eligible financial collateral recognised in the standardised approach, under the foundation IRB approach some other forms of collateral, known as eligible IRB collateral, are also recognised. These include receivables, specified commercial and residential real estate (CRE/RRE), and other physical collateral, where they meet the minimum requirements set out in paragraphs 283 to 299. For eligible financial collateral, the requirements are identical to the operational standards as set out in the credit risk mitigation section of the standardised approach.

Methodology for recognition of eligible collateral under the foundation approach

73. The simple approach to collateral presented in the standardised approach is not available to banks applying the IRB approach.

74. The LGD applicable to a collateralised transaction (LGD*) must be calculated as the exposure weighted average of the LGD applicable to the unsecured part of an exposure ($LGD_U$) and the LGD applicable to the collateralised part of an exposure ($LGD_S$). Specifically:

$$LGD^* = LGD_U \cdot \frac{E_U}{E \cdot \left(1 + H_E\right)} + LGD_S \cdot \frac{E_S}{E \cdot \left(1 + H_E\right)}$$

where:

- E is the current value of the exposure (ie cash lent or securities lent or posted). In the case of securities lent or posted the exposure value has to be increased by applying the appropriate haircuts ($H_E$) according to the comprehensive approach for financial collateral.
- $E_S$ is the current value of the collateral received after the application of the haircut applicable for the type of collateral ($H_c$) and for any currency mismatches between the exposure and the collateral, as specified in paragraphs 75 to 76. $E_S$ is capped at the value of $E \cdot \left(1 + H_E\right)$.
- $E_U = E \cdot \left(1 + H_E\right) - E_S$. The terms $E_U$ and $E_S$ are only used to calculate LGD*. Banks must continue to calculate EAD without taking into account the presence of any collateral, unless otherwise specified.
- $LGD_U$ = the LGD applicable for an unsecured exposure, as set out in paragraph 70 to 71.
- $LGD_S$ = the LGD applicable to exposures secured by the type of collateral used in the transaction, as specified in paragraph 75.

75. The following table specifies the $LGD_S$ and haircuts applicable in the formula set out in paragraph 74:

| Type of collateral | $LGD_S$ | Haircut |
|---|---|---|
| Eligible financial collateral | 0% | As determined by the haircuts that apply in the comprehensive formula of the standardised approach for credit risk (paragraph 163 for jurisdictions that allow the use of ratings for regulatory purposes and paragraph 164 for jurisdictions that do not).<br>The haircuts have to be adjusted for different holding periods and non-daily remargining or revaluation according to paragraphs 169 to 172 of the standardised approach. |
| Eligible receivables | 20% | 40% |
| Eligible residential real estate / commercial real estate | 20% | 40% |
| Other eligible physical collateral | 25% | 40% |
| Ineligible collateral | N/A | 100% |

76. When eligible collateral is denominated in a different currency to that of the exposure, the haircut for currency risk is the same haircut that applies in the comprehensive approach (paragraph 165 of the standardised approach).

77. Banks that lend securities or post collateral must calculate capital requirements for both of the following: (i) the credit risk or market risk of the securities, if this remains with the bank; and (ii) the counterparty credit risk arising from the risk that the borrower of the securities may default. For repo-style transactions, banks may recognise a reduction in the counterparty credit risk requirement arising from the effect of a master netting agreement providing that it satisfies the criteria set out in paragraphs 175 and 176 of the standardised approach. The bank must calculate E*, which is the exposure to be used for the counterparty credit risk charge taking account of the risk mitigation of collateral received, using the formula set out in paragraph 178 of the standardised approach. In calculating RWA and EL amounts for the counterparty credit risk arising from the set of transactions covered by the master netting agreement, E* must be used as the EAD of the counterparty and the LGD of the counterparty must be determined using the LGD specified for unsecured exposures, as set out in paragraphs 70 and 71.

Use of models to calculate EAD for counterparty credit risk

78. As an alternative to the use of standard haircuts for the calculation of the counterparty credit risk charge for SFTs set out in paragraph 77, banks may be permitted to use a VaR models approach to reflect price volatility of the exposures and the financial collateral. This approach can take into account the correlation effects between security positions. This approach applies to single SFTs and SFTs covered by netting agreements on a counterparty-by-counterparty basis, both under the condition that the collateral is revalued on a daily basis. This holds for the underlying securities being different and unrelated to securitisations. The master netting agreement must satisfy the criteria set out in paragraph 175 and 176 of the standardised approach. The VaR models approach is available to banks that have received supervisory recognition for an internal market risk model according to paragraph 177 of "Minimum capital requirements for market risk". Banks which have not received market risk model recognition can separately apply for supervisory recognition to use their internal VaR models for the calculation of potential price volatility for SFTs, provided the model meets the requirements of paragraph 177. Although the market risk standards have changed from a 99% VaR to a 97.5% expected shortfall, the VaR models approach to SFTs retains the use of a 99% VaR to calculate the counterparty credit risk for SFTs. The VaR model needs to capture risk sufficient to pass the backtesting and profit and loss attribution tests of paragraph 183 of "Minimum capital requirements for market risk". The default risk charge of paragraph 186 is not required in the VaR model for SFTs.

79. The quantitative and qualitative criteria for recognition of internal market risk models for SFTs are in principle the same as in paragraphs 180 and 181 of "Minimum capital requirements for market risk". The minimum liquidity horizon or the holding period for SFTs is 5-business days for margined repo-style

transactions, rather than the 10-business days in paragraph 181 (k). For other transactions eligible for the VaR models approach, the 10-business day holding period will be retained. The minimum holding period should be adjusted upwards for market instruments where such a holding period would be inappropriate given the liquidity of the instrument concerned.

80. The calculation of the exposure E* for banks using their internal model to calculate their counterparty credit risk charge will be the following:

E* = max {0, [(ΣE – ΣC) + VaR output from internal model]}

In calculating capital requirements banks will use the previous business day's VaR number.

81. Subject to supervisory approval, instead of using the VaR approach, banks may also calculate an effective expected positive exposure for repo-style and other similar SFTs, in accordance with the Internal Model Method set out in the counterparty credit risk standards.

Carve out from the comprehensive approach

82. As in the standardised approach, for transactions where the conditions in paragraph 150 are met, and in addition, the counterparty is a core market participant as specified in paragraph 151, supervisors may choose not to apply the haircuts specified under the comprehensive approach, but instead to apply a zero H. A netting set that contains any transaction that does not meet the requirements in paragraph 150 of the standardised approach is not eligible for this treatment.

Methodology for the treatment of pools of collateral

83. In the case where a bank has obtained multiple types of collateral it may apply the formula set out in paragraph 74 sequentially for each individual type of collateral. In doing so, after each step of recognising one individual type of collateral, the remaining value of the unsecured exposure ($E_U$) will be reduced by the adjusted value of the collateral ($E_S$) recognised in that step. In line with paragraph 74, the total of $E_S$ across all collateral types is capped at the value of $E \cdot \left(1+H_E\right)$. This results in the following formula:

$$LGD^{*} = LGD_U \cdot \frac{E_U}{E \cdot \left(1+H_E\right)} + \sum_i LGD_{Si} \cdot \frac{E_{Si}}{E \cdot \left(1+H_E\right)}$$

where for each collateral type i:

- $LGD_{Si}$ is the LGD applicable to that form of collateral (as specified in paragraph 75); and
- $E_{Si}$ is the current value of the collateral received after the application of the haircut applicable for the type of collateral (Hc) (as specified in paragraph 75).

### *LGD under the advanced approach*

84. Subject to certain additional minimum requirements specified below (and the conditions set out in paragraph 34), supervisors may permit banks to use their own internal estimates of LGD for corporate exposures. LGD must be measured as the loss given default as a percentage of the EAD. Banks eligible for the IRB approach that are unable to meet these additional minimum requirements must utilise the foundation LGD treatment described above.

85. The LGD for each exposure that is used as input into the risk weight formula and the calculation of expected loss must not be less than the parameter floors indicated in the table below:

LGD parameter floors

| | LGD | |
|---|---|---|
| | Unsecured | Secured |
| Corporate | 25% | Varying by collateral type:<br>• 0% financial<br>• 10% receivables<br>• 10% commercial or residential real estate<br>• 15% other physical |

86. The LGD floors for secured exposures in the table above apply when the exposure is fully secured (ie the value of collateral after the application of haircuts exceeds the value of the exposure). The LGD floor for a partially secured exposure is calculated as a weighted average of the unsecured LGD floor for the unsecured portion and the secured LGD floor for the secured portion. That is, the following formula should be used to determine the LGD floor:

$$Floor = LGD_{U\,floor} \cdot \frac{E_U}{E \cdot \left(1 + H_E\right)} + LGD_{S\,floor} \cdot \frac{E_S}{E \cdot \left(1 + H_E\right)}$$

where:

- $LGD_{U\ floor}$ and $LGD_{S\ floor}$ are the floor values for fully unsecured and fully secured exposures respectively, as specified in the table in paragraph 85.
- The other terms are defined as set out in paragraph 74 and 75.

87. In cases where a bank has met the conditions to use their own internal estimates of LGD for a pool of unsecured exposures, and takes collateral against one of these exposures, it may not be able to model the effects of the collateral (ie it may not have enough data to model the effect of the collateral on recoveries). In such cases, the bank is permitted to apply the formula set out in paragraph 74 or 83, with the exception that the $LGD_U$ term would be the bank's own internal estimate of the unsecured LGD. To adopt this treatment the collateral must be eligible under the F-IRB and the bank's estimate of $LGD_U$ must not take account of any effects of collateral recoveries.

88. The minimum requirements for the derivation of LGD estimates are outlined in paragraphs 235 to 240.

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

89. Banks that want to recognise the effects of master netting agreements on repo-style transactions for capital purposes must apply the methodology outlined in paragraph 77 for determining E* for use as the EAD in the calculation of counterparty credit risk. For banks using the advanced approach, own LGD estimates would be permitted for the unsecured equivalent amount (E*) used to calculate counterparty credit risk. In both cases banks, in addition to counterparty credit risk, must also calculate the capital requirements relating to any credit or market risk to which they remain exposed arising from the underlying securities in the master netting agreement.

### *Treatment of guarantees and credit derivatives*

90. There are two approaches for recognition of CRM in the form of guarantees and credit derivatives in the IRB approach: a foundation approach for banks using supervisory values of LGD, and an advanced approach for those banks using their own internal estimates of LGD.

91. Under either approach, CRM in the form of guarantees and credit derivatives must not reflect the effect of double default (see paragraph 254). As such, to the extent that the CRM is recognised by the

bank, the adjusted risk weight will not be less than that of a comparable direct exposure to the protection provider. Consistent with the standardised approach, banks may choose not to recognise credit protection if doing so would result in a higher capital requirement.

Recognition under the foundation approach

92. For banks using the foundation approach for LGD, the approach to guarantees and credit derivatives closely follows the treatment under the standardised approach as specified in paragraphs 191 to 205 of the standardised approach. The range of eligible guarantors is the same as under the standardised approach except that companies that are internally rated may also be recognised under the foundation approach. To receive recognition, the requirements outlined in paragraphs 191 to 196 of the standardised approach must be met.

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

- For the covered portion of the exposure, a risk weight is derived by taking:
  - the risk-weight function appropriate to the type of guarantor, and
  - the PD appropriate to the guarantor's borrower grade.
- The bank may replace the LGD of the underlying transaction with the LGD applicable to the guarantee taking into account seniority and any collateralisation of a guaranteed commitment. For example, when a bank has a subordinated claim on the borrower but the guarantee represents a senior claim on the guarantor this may be reflected by using an LGD applicable for senior exposures (see paragraph 70) instead of an LGD applicable for subordinated exposures.
- In case the bank applies the standardised approach to direct exposures to the guarantor it may only recognise the guarantee by applying the standardised approach to the covered portion of the exposure.

94. The uncovered portion of the exposure is assigned the risk weight associated with the underlying obligor.

95. Where partial coverage exists, or where there is a currency mismatch between the underlying obligation and the credit protection, it is necessary to split the exposure into a covered and an uncovered amount. The treatment in the foundation approach follows that outlined in paragraphs 202 to 204 of the standardised approach, and depends upon whether the cover is proportional or tranched.

Recognition under the advanced approach

96. Banks using the advanced approach for estimating LGDs may reflect the risk-mitigating effect of guarantees and credit derivatives through either adjusting PD or LGD estimates. Whether adjustments are done through PD or LGD, they must be done in a consistent manner for a given guarantee or credit derivative type. In doing so, banks must not include the effect of double default in such adjustments. Thus, the adjusted risk weight must not be less than that of a comparable direct exposure to the protection provider. In case the bank applies the standardised approach to direct exposures to the guarantor it may only recognise the guarantee by applying the standardised approach to the covered portion of the exposure. In case the bank applies the foundation IRB approach to direct exposures to the guarantor it may only recognise the guarantee by determining the risk weight for the comparable direct exposure to the guarantor according to the foundation IRB approach.

97. A bank relying on own-estimates of LGD has the option to adopt the treatment outlined above for banks under the foundation IRB approach (paragraphs 92 to 95), or to make an adjustment to its LGD estimate of the exposure to reflect the presence of the guarantee or credit derivative. Under this option, there are no limits to the range of eligible guarantors although the set of minimum requirements provided in paragraphs 256 and 257 concerning the type of guarantee must be satisfied. For credit derivatives, the

requirements of paragraphs 262 and 263 must be satisfied.[15] For exposures for which a bank has permission to use its own estimates of LGD, the bank may recognise the risk mitigating effects of first-to-default credit derivatives, but may not recognise the risk mitigating effects of second-to-default or more generally nth-to-default credit derivatives.

### (iii) Exposure at default (EAD)

98. The following sections apply to both on and off-balance sheet positions. All exposures are measured gross of specific provisions or partial write-offs. The EAD on drawn amounts should not be less than the sum of: (i) the amount by which a bank's regulatory capital would be reduced if the exposure were written-off fully; and (ii) any specific provisions and partial write-offs. When the difference between the instrument's EAD and the sum of (i) and (ii) is positive, this amount is termed a discount. The calculation of risk-weighted assets is independent of any discounts. Under the limited circumstances described in paragraph 147, discounts may be included in the measurement of total eligible provisions for purposes of the EL-provision calculation set out in Section G.

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

99. On-balance sheet netting of loans and deposits will be recognised subject to the same conditions as under paragraph 190 of the standardised approach. Where currency or maturity mismatched on-balance sheet netting exists, the treatment follows the standardised approach, as set out in paragraphs 126 and 128 to 131.

#### *Exposure measurement for off-balance sheet items (with the exception of derivatives)*

100. For off-balance sheet items there are two approaches for the estimation of EAD: a foundation approach and an advanced approach. When only the drawn balances of revolving facilities have been securitised, banks must ensure that they continue to hold required capital against the undrawn balances associated with the securitised exposures.

101. In the foundation approach, EAD is calculated as the committed but undrawn amount multiplied by a CCF. In the advanced approach, EAD for undrawn commitments may be calculated as the committed but undrawn amount multiplied by a CCF or derived from direct estimates of total facility EAD.

#### *EAD under the foundation approach*

102. The types of instruments and the CCFs applied to them are the same as those in the standardised approach, as set out in paragraphs 78 to 89.

103. The amount to which the CCF is applied is the lower of the value of the unused committed credit line, and the value that reflects any possible constraining of the availability of the facility, such as the existence of a ceiling on the potential lending amount which is related to a borrower's reported cash flow. If the facility is constrained in this way, the bank must have sufficient line monitoring and management procedures to support this contention.

[15] When credit derivatives do not cover the restructuring of the underlying obligation, the partial recognition set out in paragraph 196 of the standardised approach applies.

104. Where a commitment is obtained on another off-balance sheet exposure, banks under the foundation approach are to apply the lower of the applicable CCFs.

*EAD under the advanced approach*

105. Banks which meet the minimum requirements for use of their own estimates of EAD (see paragraphs 241 to 250) will be allowed for exposures for which A-IRB is permitted (see paragraph 34) to use their own internal estimates of EAD for undrawn revolving commitments[16] to extend credit, purchase assets or issue credit substitutes provided the exposure is not subject to a CCF of 100% in the foundation approach (see paragraph 102). Standardised approach CCFs must be used for all other off-balance sheet items (for example, undrawn non-revolving commitments), and must be used where the minimum requirements for own estimates of EAD are not met. The EAD for each exposure that is used as input into the risk weight formula and the calculation of expected loss is subject to a floor that is the sum of: (i) the on balance sheet amount; and (ii) 50% of the off balance sheet exposure using the applicable CCF in the standardised approach.

*Exposure measurement for transactions that expose banks to counterparty credit risk*

106. Measures of exposure for SFTs and OTC derivatives that expose banks to counterparty credit risk under the IRB approach will be calculated as per the rules set forth in the counterparty credit risk standards.

(iv) Effective maturity (M)

107. For banks using the foundation approach for corporate exposures, effective maturity (M) will be 2.5 years except for repo-style transactions where the effective maturity will be 6 months (ie M=0.5). National supervisors may choose to require all banks in their jurisdiction (those using the foundation and advanced approaches) to measure M for each facility using the definition provided below.

108. Banks using any element of the advanced IRB approach are required to measure effective maturity for each facility as defined below. However, national supervisors may allow the effective maturity to be fixed at 2.5 years (the 'fixed maturity treatment') for facilities to certain smaller domestic corporate borrowers if the reported sales (ie turnover) as well as total assets for the consolidated group of which the firm is a part of are less than €500 million. The consolidated group has to be a domestic company based in the country where the fixed maturity treatment is applied. If adopted, national supervisors must apply the fixed maturity treatment to all IRB banks using the advanced approach in that country, rather than on a bank-by-bank basis.

109. Except as noted in paragraph 110, the effective maturity (M) is subject to a floor of one year and a cap of 5 years and is defined as follows:

- For an instrument subject to a determined cash flow schedule, effective maturity M is defined as:

  Effective maturity (M) = $\sum_t t \cdot CF_t \,/\, \sum_t CF_t$

  where $CF_t$ denotes the cash flows (principal, interest payments and fees) contractually payable by the borrower in period t.

- If a bank is not in a position to calculate the effective maturity of the contracted payments as noted above, it is allowed to use a more conservative measure of M such as that it equals the maximum remaining time (in years) that the borrower is permitted to take to fully discharge its

[16] A revolving loan facility is one that lets a borrower obtain a loan where the borrower has the flexibility to decide how often to withdraw from the loan and at what time intervals. A revolving facility allows the borrower to drawdown, repay and re-draw loans advanced to it. Facilities that allow prepayments and subsequent redraws of those prepayments are considered as revolving.

contractual obligation (principal, interest, and fees) under the terms of loan agreement. Normally, this will correspond to the nominal maturity of the instrument.

- For derivatives subject to a master netting agreement, the effective maturity is defined as the weighted average maturity of the transactions within the netting agreement. Further, the notional amount of each transaction should be used for weighting the maturity.
- For revolving exposures, effective maturity must be determined using the maximum contractual termination date of the facility. Banks must not use the repayment date of the current drawing.

110. The one-year floor does not apply to certain short-term exposures, comprising fully or nearly-fully collateralised [17] capital market-driven transactions (ie OTC derivatives transactions and margin lending) and repo-style transactions (ie repos/reverse repos and securities lending/borrowing) with an original maturity of less than one year, where the documentation contains daily remargining clauses. For all eligible transactions the documentation must require daily revaluation, and must include provisions that must allow for the prompt liquidation or setoff of the collateral in the event of default or failure to re-margin. The maturity of such transactions must be calculated as the greater of one-day, and the effective maturity (M, consistent with the definition above), except for transactions subject to a master netting agreement, where the floor is determined by the minimum holding period for the transaction type, as required by paragraph 113.

111. The one-year floor also does not apply to the following exposures:

(i) Short-term self-liquidating trade transactions. Import and export letters of credit and similar transactions should be accounted for at their actual remaining maturity.

(ii) Issued as well as confirmed letters of credit that are short term (ie have a maturity below one year) and self-liquidating.

112. In addition to the transactions considered in paragraph 110 above, other short-term exposures with an original maturity of less than one year that are not part of a bank's ongoing financing of an obligor may be eligible for exemption from the one-year floor. After a careful review of the particular circumstances in their jurisdictions, national supervisors should define the types of short-term exposures that might be considered eligible for this treatment. The results of these reviews might, for example, include transactions such as:

- Some capital market-driven transactions and repo-style transactions that might not fall within the scope of paragraph 110;
- Some trade finance transactions that are not exempted by paragraph 111.
- Some exposures arising from settling securities purchases and sales. This could also include overdrafts arising from failed securities settlements provided that such overdrafts do not continue more than a short, fixed number of business days;
- Some exposures arising from cash settlements by wire transfer, including overdrafts arising from failed transfers provided that such overdrafts do not continue more than a short, fixed number of business days;
- Some exposures to banks arising from foreign exchange settlements; and
- Some short-term loans and deposits.

113. For transactions falling within the scope of paragraph 110 subject to a master netting agreement, the effective maturity is defined as the weighted average maturity of the transactions. A floor equal to the minimum holding period for the transaction type set out in paragraph 170 of the standardised approach

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

will apply to the average. Where more than one transaction type is contained in the master netting agreement a floor equal to the highest holding period will apply to the average. Further, the notional amount of each transaction should be used for weighting maturity.

114. Where there is no explicit definition, the effective maturity (M) assigned to all exposures is set at 2.5 years unless otherwise specified in paragraph 107.

*Treatment of maturity mismatches*

115. The treatment of maturity mismatches under IRB is identical to that in the standardised approach (see paragraphs 126 to 130).

# D. Rules for retail exposures

116. Section D presents in detail the method of calculating the UL capital requirements for retail exposures. Section D.1 provides the risk weight functions. Section D.2 presents the risk components to serve as inputs to the risk-weight functions. The method of calculating expected losses, and for determining the difference between that measure and provisions is described in Section G.

## 1. Risk-weighted assets for retail exposures

117. There are three separate risk-weight functions for retail exposures, as defined in paragraphs 118 to 120. Risk weights for retail exposures are based on separate assessments of PD and LGD as inputs to the risk-weight functions. None of the three retail risk-weight functions contain the full maturity adjustment component that is present in the risk-weight function for exposures to banks and corporates. Throughout this section, PD and LGD are measured as decimals, and EAD is measured as currency (eg euros).

### (i) Retail residential mortgage exposures

118. For exposures defined in paragraph 21 that are not in default and are secured or partly secured[18] by residential mortgages, risk weights will be assigned based on the following formula:

Correlation (R) = 0.15

Capital requirement (K) = $$\left[ LGD \cdot N\left[ \frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$$

Risk-weighted assets = $K \cdot 12.5 \cdot EAD$

The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraph 235) and the bank's best estimate of expected loss (described in paragraph 238). The risk-weighted asset amount for the defaulted exposure is the product of K, 12.5 and the EAD.

### (ii) Qualifying revolving retail exposures

119. For qualifying revolving retail exposures as defined in paragraphs 24 and 25 that are not in default, risk weights are defined based on the following formula:

[18] This means that risk weights for residential mortgages also apply to the unsecured portion of such residential mortgages.

Correlation (R) = 0.04

Capital requirement (K) = $\left[ LGD \cdot N\left[ \frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$

Risk-weighted assets = $K \cdot 12.5 \cdot EAD$

The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraph 235) and the bank's best estimate of expected loss (described in paragraph 238). The risk-weighted asset amount for the defaulted exposure is the product of K, 12.5, and the EAD.

### (iii) Other retail exposures

120. For all other retail exposures that are not in default, risk weights are assigned based on the following function, which allows correlation to vary with PD:

Correlation (R) = $0.03 \cdot \frac{\left(1-e^{-35 \cdot PD}\right)}{\left(1-e^{-35}\right)} + 0.16 \cdot \left( 1 - \frac{\left(1-e^{-35 \cdot PD}\right)}{\left(1-e^{-35}\right)} \right)$

Capital requirement (K) = $\left[ LGD \cdot N\left[ \frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$

Risk-weighted assets = $K \cdot 12.5 \cdot EAD$

The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraph 235) and the bank's best estimate of expected loss (described in paragraph 238). The risk-weighted asset amount for the defaulted exposure is the product of K, 12.5, and the EAD.

Illustrative risk weights are shown in Annex 5 of the Basel II framework (June 2006).

## 2. Risk components

### (i) Probability of default (PD) and loss given default (LGD)

121. For each identified pool of retail exposures, banks are expected to provide an estimate of the PD and LGD associated with the pool, subject to the minimum requirements as set out in Section H. Additionally, the PD for retail exposures is the greater of: (i) the one-year PD associated with the internal borrower grade to which the pool of retail exposures is assigned; and (ii) 0.1% for QRRE revolvers (see paragraph 25 for the definition of QRRE revolvers) and 0.05% for all other exposures. The LGD for each exposure that is used as input into the risk weight formula and the calculation of expected loss must not be less than the parameter floors indicated in the table below:

LGD parameter floors

| | LGD | |
|---|---|---|
| | Unsecured | Secured |
| Retail classes: | | |
| Mortgages | N/A | 5% |
| QRRE (transactors and revolvers) | 50% | N/A |
| Other retail | 30% | Varying by collateral type:<br>• 0% financial<br>• 10% receivables<br>• 10% commercial or residential real estate<br>• 15% other physical |

The LGD floors for partially secured exposures in the "other retail" category should be calculated according to the formula set out in paragraph 86. The LGD floor for residential mortgages is fixed at 5%, irrespective of the level of collateral provided by the property.

### (ii) Recognition of guarantees and credit derivatives

122. Banks may reflect the risk-reducing effects of guarantees and credit derivatives, either in support of an individual obligation or a pool of exposures, through an adjustment of either the PD or LGD estimate, subject to the minimum requirements in paragraphs 252 to 263. Whether adjustments are done through PD or LGD, they must be done in a consistent manner for a given guarantee or credit derivative type. In case the bank applies the standardised approach to direct exposures to the guarantor it must assign the standardised approach risk weight to the covered portion of the exposure.

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

### (iii) Exposure at default (EAD)

124. Both on and off-balance sheet retail exposures are measured gross of specific provisions or partial write-offs. The EAD on drawn amounts should not be less than the sum of: (i) the amount by which a bank's regulatory capital would be reduced if the exposure were written-off fully; and (ii) any specific provisions and partial write-offs. When the difference between the instrument's EAD and the sum of (i) and (ii) is positive, this amount is termed a discount. The calculation of risk-weighted assets is independent of any discounts. Under the limited circumstances described in paragraph 147, discounts may be included in the measurement of total eligible provisions for purposes of the EL-provision calculation set out in Section G.

125. On-balance sheet netting of loans and deposits of a bank to or from a retail customer will be permitted subject to the same conditions outlined in paragraph 190 of the standardised approach. Banks must use their own estimates of EAD for undrawn revolving commitments to extend credit, purchase assets or issue credit substitutes provided the exposure is not subject to a CCF of 100% in the standardised approach (see paragraph 79 of the standardised approach) and the minimum requirements in paragraphs 241 to 251 are satisfied. Foundation approach CCFs must be used for all other off-balance sheet items (for example, undrawn non-revolving commitments), and must be used where the minimum requirements for own estimates of EAD are not met.

126. For retail exposures with uncertain future drawdown such as credit cards, banks must take into account their history and/or expectation of additional drawings prior to default in their overall calibration

of loss estimates. In particular, where a bank does not reflect conversion factors for undrawn lines in its EAD estimates, it must reflect in its LGD estimates the likelihood of additional drawings prior to default. Conversely, if the bank does not incorporate the possibility of additional drawings in its LGD estimates, it must do so in its EAD estimates.

127. When only the drawn balances of revolving retail facilities have been securitised, banks must ensure that they continue to hold required capital against the undrawn balances associated with the securitised exposures using the IRB approach to credit risk for commitments.

128. To the extent that foreign exchange and interest rate commitments exist within a bank's retail portfolio for IRB purposes, banks are not permitted to provide their internal assessments of credit equivalent amounts. Instead, the rules for the standardised approach continue to apply.

# F. Rules for purchased receivables

129. Section F presents the method of calculating the UL capital requirements for purchased receivables. For such assets, there are IRB capital charges for both default risk and dilution risk. Section F.1 discusses the calculation of risk-weighted assets for default risk. The calculation of risk-weighted assets for dilution risk is provided in Section F.2. The method of calculating expected losses, and for determining the difference between that measure and provisions, is described in Section G.

## 1. Risk-weighted assets for default risk

130. For receivables belonging unambiguously to one asset class, the IRB risk weight for default risk is based on the risk-weight function applicable to that particular exposure type, as long as the bank can meet the qualification standards for this particular risk-weight function. For example, if banks cannot comply with the standards for qualifying revolving retail exposures (defined in paragraph 24), they should use the risk-weight function for other retail exposures. For hybrid pools containing mixtures of exposure types, if the purchasing bank cannot separate the exposures by type, the risk-weight function producing the highest capital requirements for the exposure types in the receivable pool applies.

### (i) Purchased retail receivables

131. For purchased retail receivables, a bank must meet the risk quantification standards for retail exposures but can utilise external and internal reference data to estimate the PDs and LGDs. The estimates for PD and LGD (or EL) must be calculated for the receivables on a stand-alone basis; that is, without regard to any assumption of recourse or guarantees from the seller or other parties.

### (ii) Purchased corporate receivables

132. For purchased corporate receivables the purchasing bank is expected to apply the existing IRB risk quantification standards for the bottom-up approach. However, for eligible purchased corporate receivables, and subject to supervisory permission, a bank may employ the following top-down procedure for calculating IRB risk weights for default risk:

- The purchasing bank will estimate the pool's one-year EL for default risk, expressed in percentage of the exposure amount (ie the total EAD amount to the bank by all obligors in the receivables pool). The estimated EL must be calculated for the receivables on a stand-alone basis; that is, without regard to any assumption of recourse or guarantees from the seller or other parties. The treatment of recourse or guarantees covering default risk (and/or dilution risk) is discussed separately below.

- Given the EL estimate for the pool's default losses, the risk weight for default risk is determined by the risk-weight function for corporate exposures.[19] As described below, the precise calculation of risk weights for default risk depends on the bank's ability to decompose EL into its PD and LGD components in a reliable manner. Banks can utilise external and internal data to estimate PDs and LGDs. However, the advanced approach will not be available for banks that use the foundation approach for corporate exposures.

*Foundation IRB treatment*

133. If the purchasing bank is unable to decompose EL into its PD and LGD components in a reliable manner, the risk weight is determined from the corporate risk-weight function using the following specifications: if the bank can demonstrate that the exposures are exclusively senior claims to corporate borrowers, an LGD of 40% can be used. PD will be calculated by dividing the EL using this LGD. EAD will be calculated as the outstanding amount minus the capital charge for dilution prior to credit risk mitigation ($K_{Dilution}$). Otherwise, PD is the bank's estimate of EL; LGD will be 100%; and EAD is the amount outstanding minus $K_{Dilution}$. EAD for a revolving purchase facility is the sum of the current amount of receivables purchased plus 40% of any undrawn purchase commitments minus $K_{Dilution}$. If the purchasing bank is able to estimate PD in a reliable manner, the risk weight is determined from the corporate risk-weight functions according to the specifications for LGD, M and the treatment of guarantees under the foundation approach as given in paragraphs 70 to 83, 89 to 95, and 107.

*Advanced IRB treatment*

134. If the purchasing bank can estimate either the pool's default-weighted average loss rates given default (as defined in paragraph 235) or average PD in a reliable manner, the bank may estimate the other parameter based on an estimate of the expected long-run loss rate. The bank may: (i) use an appropriate PD estimate to infer the long-run default-weighted average loss rate given default; or (ii) use a long-run default-weighted average loss rate given default to infer the appropriate PD. In either case, it is important to recognise that the LGD used for the IRB capital calculation for purchased receivables cannot be less than the long-run default-weighted average loss rate given default and must be consistent with the concepts defined in paragraph 235. The risk weight for the purchased receivables will be determined using the bank's estimated PD and LGD as inputs to the corporate risk-weight function. Similar to the foundation IRB treatment, EAD will be the amount outstanding minus $K_{Dilution}$. EAD for a revolving purchase facility will be the sum of the current amount of receivables purchased plus 40% of any undrawn purchase commitments minus $K_{Dilution}$ (thus, banks using the advanced IRB approach will not be permitted to use their internal EAD estimates for undrawn purchase commitments).

135. For drawn amounts, M will equal the pool's exposure-weighted average effective maturity (as defined in paragraphs 109 to 114). This same value of M will also be used for undrawn amounts under a committed purchase facility provided the facility contains effective covenants, early amortisation triggers, or other features that protect the purchasing bank against a significant deterioration in the quality of the future receivables it is required to purchase over the facility's term. Absent such effective protections, the

[19] The firm-size adjustment for SME, as defined in paragraph 54, will be the weighted average by individual exposure of the pool of purchased corporate receivables. If the bank does not have the information to calculate the average size of the pool, the firm-size adjustment will not apply.

M for undrawn amounts will be calculated as the sum of: (a) the longest-dated potential receivable under the purchase agreement; and (b) the remaining maturity of the purchase facility.

## 2. Risk-weighted assets for dilution risk

136. Dilution refers to the possibility that the receivable amount is reduced through cash or non-cash credits to the receivable's obligor.[20] For both corporate and retail receivables, unless the bank can demonstrate to its supervisor that the dilution risk for the purchasing bank is immaterial, the treatment of dilution risk must be the following: at the level of either the pool as a whole (top-down approach) or the individual receivables making up the pool (bottom-up approach), the purchasing bank will estimate the one-year EL for dilution risk, also expressed in percentage of the receivables amount. Banks can utilise external and internal data to estimate EL. As with the treatments of default risk, this estimate must be computed on a stand-alone basis; that is, under the assumption of no recourse or other support from the seller or third-party guarantors. For the purpose of calculating risk weights for dilution risk, the corporate risk-weight function must be used with the following settings: the PD must be set equal to the estimated EL, and the LGD must be set at 100%. An appropriate maturity treatment applies when determining the capital requirement for dilution risk. If a bank can demonstrate that the dilution risk is appropriately monitored and managed to be resolved within one year, the supervisor may allow the bank to apply a one-year maturity.

137. This treatment will be applied regardless of whether the underlying receivables are corporate or retail exposures, and regardless of whether the risk weights for default risk are computed using the standard IRB treatments or, for corporate receivables, the top-down treatment described above.

## 3. Treatment of purchase price discounts for receivables

138. In many cases, the purchase price of receivables will reflect a discount (not to be confused with the discount concept defined in paragraphs 98 and 124) that provides first loss protection for default losses, dilution losses or both. To the extent that a portion of such a purchase price discount may be refunded to the seller based on the performance of the receivables, the purchaser may recognise this refundable amount as first-loss protection and hence treat this exposure under the securitisation framework, while the seller providing such a refundable purchase price discount must treat the refundable amount as a first-loss position under the securitisation framework. Non-refundable purchase price discounts for receivables do not affect either the EL-provision calculation in Section G or the calculation of risk-weighted assets.

139. When collateral or partial guarantees obtained on receivables provide first loss protection (collectively referred to as mitigants in this paragraph), and these mitigants cover default losses, dilution losses, or both, they may also be treated as first loss protection under the securitisation framework (see paragraph 51 of the securitisation framework). When the same mitigant covers both default and dilution

[20] Examples include offsets or allowances arising from returns of goods sold, disputes regarding product quality, possible debts of the borrower to a receivables obligor, and any payment or promotional discounts offered by the borrower (eg a credit for cash payments within 30 days).

risk, banks using the Securitisation Internal Ratings-Based Approach (SEC-IRBA) that are able to calculate an exposure-weighted LGD must do so as defined in paragraph 60 of the securitisation framework.

### 4. Recognition of credit risk mitigants

140. Credit risk mitigants will be recognised generally using the same type of framework as set forth in paragraphs 90 to 97.[21] In particular, a guarantee provided by the seller or a third party will be treated using the existing IRB rules for guarantees, regardless of whether the guarantee covers default risk, dilution risk, or both.

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

## G. Treatment of expected losses and recognition of provisions

141. Section G discusses the method by which the difference between provisions (eg specific provisions, portfolio-specific general provisions such as country risk provisions or general provisions) and expected losses may be included in or must be deducted from regulatory capital, as outlined in the definition of capital section of the Basel III framework (June 2011).

### 1. Calculation of expected losses

142. A bank must sum the EL amount (defined as EL multiplied by EAD) associated with its exposures to which the IRB approach is applied (excluding the EL amount associated with securitisation exposures) to obtain a total EL amount. The treatment of EL for securitisation exposures is described in paragraph 37 of the securitisation framework.

#### (i) Expected loss for exposures other than exposures subject to the supervisory slotting criteria

143. Banks must calculate EL as PD x LGD for corporate, bank, and retail exposures not in default. For corporate, bank, and retail exposures that are in default, banks must use their best estimate of expected loss as defined in paragraph 238 for exposures subject to the advanced approach and for exposures subject to the foundation approach banks must use the supervisory LGD. For exposures subject to the supervisory slotting criteria EL is calculated as described in paragraphs 144 to 146. Securitisation exposures do not contribute to the EL amount, as set out in paragraph 37 of the securitisation framework.

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

### (ii) Expected loss for specialised lending (SL) exposures subject to the supervisory slotting criteria

144. For SL exposures subject to the supervisory slotting criteria, the EL amount is determined by multiplying 8% by the risk-weighted assets produced from the appropriate risk weights, as specified below, multiplied by EAD.

*Supervisory categories and EL risk weights for non-HVCRE SL exposures*

145. The risk weights for SL, other than HVCRE, are as follows:

| Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|
| 5% | 10% | 35% | 100% | 625% |

Where, at national discretion, supervisors allow banks to assign preferential risk weights to non-HVCRE SL exposures falling into the "strong" and "good" supervisory categories as outlined in paragraph 58, the corresponding EL risk weight is 0% for "strong" exposures, and 5% for "good" exposures.

*Supervisory categories and EL risk weights for HVCRE*

146. The risk weights for HVCRE are as follows:

| Strong | Good | Satisfactory | Weak | Default |
|---|---|---|---|---|
| 5% | 5% | 35% | 100% | 625% |

Even where, at national discretion, supervisors allow banks to assign preferential risk weights to HVCRE exposures falling into the "strong" and "good" supervisory categories as outlined in paragraph 63, the corresponding EL risk weight will remain at 5% for both "strong" and "good" exposures.

## 2. Calculation of provisions

### (i) Exposures subject to the IRB approach

147. Total eligible provisions are defined as the sum of all provisions (eg specific provisions, partial write-offs, portfolio-specific general provisions such as country risk provisions or general provisions) that are attributed to exposures treated under the IRB approach. In addition, total eligible provisions may include any discounts on defaulted assets. Specific provisions set aside against securitisation exposures must not be included in total eligible provisions.

### (ii) Portion of exposures subject to the standardised approach for credit risk

148. Banks using the standardised approach for a portion of their credit risk exposures (see paragraphs 44 to 48), must determine the portion of general provisions attributed to the standardised or IRB treatment of provisions according to the methods outlined in paragraphs 149 and 150.

149. Banks should generally attribute total general provisions on a pro rata basis according to the proportion of credit risk-weighted assets subject to the standardised and IRB approaches. However, when one approach to determining credit risk-weighted assets (ie standardised or IRB approach) is used exclusively within an entity, general provisions booked within the entity using the standardised approach may be attributed to the standardised treatment. Similarly, general provisions booked within entities using the IRB approach may be attributed to the total eligible provisions as defined in paragraph 147.

150. At national supervisory discretion, banks using both the standardised and IRB approaches may rely on their internal methods for allocating general provisions for recognition in capital under either the standardised or IRB approach, subject to the following conditions. Where the internal allocation method

is made available, the national supervisor will establish the standards surrounding their use. Banks will need to obtain prior approval from their supervisors to use an internal allocation method for this purpose.

### 3. Treatment of EL and provisions

151. As specified in paragraphs 61 and 73 of the Basel III framework (June 2011), banks using the IRB approach must compare the total amount of total eligible provisions (as defined in paragraph 147) with the total EL amount as calculated within the IRB approach (as defined in paragraph 142). In addition, paragraph 60 of the Basel III framework (June 2011) outlines the treatment for that portion of a bank that is subject to the standardised approach for credit risk when the bank uses both the standardised and IRB approaches.

152. Where the calculated EL amount is lower than the total eligible provisions of the bank, its supervisors must consider whether the EL fully reflects the conditions in the market in which it operates before allowing the difference to be included in Tier 2 capital. If specific provisions exceed the EL amount on defaulted assets this assessment also needs to be made before using the difference to offset the EL amount on non-defaulted assets.

153. The treatment of EL and provisions related to securitisation exposures is outlined in paragraph 37 of the securitisation framework.

## H. Minimum requirements for IRB approach

154. Section H presents the minimum requirements for entry and on-going use of the IRB approach. The minimum requirements are set out in 12 separate sections concerning: (a) composition of minimum requirements; (b) compliance with minimum requirements; (c) rating system design; (d) risk rating system operations; (e) corporate governance and oversight; (f) use of internal ratings; (g) risk quantification; (h) validation of internal estimates; (i) supervisory LGD and EAD estimates; (j) requirements for recognition of leasing; (k) calculation of capital charges for equity exposures; and (l) disclosure requirements. It may be helpful to note that the minimum requirements cut across asset classes. Therefore, more than one asset class may be discussed within the context of a given minimum requirement.

### 1. Composition of minimum requirements

155. To be eligible for the IRB approach a bank must demonstrate to its supervisor that it meets certain minimum requirements at the outset and on an ongoing basis. Many of these requirements are in the form of objectives that a qualifying bank's risk rating systems must fulfil. The focus is on banks' abilities to rank order and quantify risk in a consistent, reliable and valid fashion.

156. The overarching principle behind these requirements is that rating and risk estimation systems and processes provide for a meaningful assessment of borrower and transaction characteristics; a meaningful differentiation of risk; and reasonably accurate and consistent quantitative estimates of risk. Furthermore, the systems and processes must be consistent with internal use of these estimates. The Committee recognises that differences in markets, rating methodologies, banking products, and practices require banks and supervisors to customise their operational procedures. It is not the Committee's intention to dictate the form or operational detail of banks' risk management policies and practices. Each supervisor will develop detailed review procedures to ensure that banks' systems and controls are adequate to serve as the basis for the IRB approach.

157. The minimum requirements set out in this document apply to all asset classes unless noted otherwise. The standards related to the process of assigning exposures to borrower or facility *grades* (and

the related oversight, validation, etc) apply equally to the process of assigning retail exposures to pools of homogenous exposures, unless noted otherwise.

158. The minimum requirements set out in this document apply to both foundation and advanced approaches unless noted otherwise. Generally, all IRB banks must produce their own estimates of PD[22] and must adhere to the overall requirements for rating system design, operations, controls, and corporate governance, as well as the requisite requirements for estimation and validation of PD measures. Banks wishing to use their own estimates of LGD and EAD must also meet the incremental minimum requirements for these risk factors included in paragraphs 235 to 263.

## 2. Compliance with minimum requirements

159. To be eligible for an IRB approach, a bank must demonstrate to its supervisor that it meets the IRB requirements in this document, at the outset and on an ongoing basis. Banks' overall credit risk management practices must also be consistent with the evolving sound practice guidelines issued by the Committee and national supervisors.

160. There may be circumstances when a bank is not in complete compliance with all the minimum requirements. Where this is the case, the bank must produce a plan for a timely return to compliance, and seek approval from its supervisor, or the bank must demonstrate that the effect of such non-compliance is immaterial in terms of the risk posed to the institution. Failure to produce an acceptable plan or satisfactorily implement the plan or to demonstrate immateriality will lead supervisors to reconsider the bank's eligibility for the IRB approach. Furthermore, for the duration of any non-compliance, supervisors will consider the need for the bank to hold additional capital under Pillar 2 or take other appropriate supervisory action.

## 3. Rating system design

161. The term "rating system" comprises all of the methods, processes, controls, and data collection and IT systems that support the assessment of credit risk, the assignment of internal risk ratings, and the quantification of default and loss estimates.

162. Within each asset class, a bank may utilise multiple rating methodologies/systems. For example, a bank may have customised rating systems for specific industries or market segments (eg middle market, and large corporate). If a bank chooses to use multiple systems, the rationale for assigning a borrower to a rating system must be documented and applied in a manner that best reflects the level of risk of the borrower. Banks must not allocate borrowers across rating systems inappropriately to minimise regulatory capital requirements (ie cherry-picking by choice of rating system). Banks must demonstrate that each system used for IRB purposes is in compliance with the minimum requirements at the outset and on an ongoing basis.

### (i) Rating dimensions

*Standards for corporate and bank exposures*

163. A qualifying IRB rating system must have two separate and distinct dimensions: (i) the risk of borrower default; and (ii) transaction-specific factors.

164. The first dimension must be oriented to the risk of borrower default. Separate exposures to the same borrower must be assigned to the same borrower grade, irrespective of any differences in the nature of each specific transaction. There are two exceptions to this. Firstly, in the case of country transfer risk,

[22] Banks are not required to produce their own estimates of PD for exposures subject to the supervisory slotting approach.

where a bank may assign different borrower grades depending on whether the facility is denominated in local or foreign currency. Secondly, when the treatment of associated guarantees to a facility may be reflected in an adjusted borrower grade. In either case, separate exposures may result in multiple grades for the same borrower. A bank must articulate in its credit policy the relationship between borrower grades in terms of the level of risk each grade implies. Perceived and measured risk must increase as credit quality declines from one grade to the next. The policy must articulate the risk of each grade in terms of both a description of the probability of default risk typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk.

165. The second dimension must reflect transaction-specific factors, such as collateral, seniority, product type, etc. For exposures subject to the foundation IRB approach, this requirement can be fulfilled by the existence of a facility dimension, which reflects both borrower and transaction-specific factors. For example, a rating dimension that reflects EL by incorporating both borrower strength (PD) and loss severity (LGD) considerations would qualify. Likewise a rating system that exclusively reflects LGD would qualify. Where a rating dimension reflects EL and does not separately quantify LGD, the supervisory estimates of LGD must be used.

166. For banks using the advanced approach, facility ratings must reflect exclusively LGD. These ratings can reflect any and all factors that can influence LGD including, but not limited to, the type of collateral, product, industry, and purpose. Borrower characteristics may be included as LGD rating criteria only to the extent they are predictive of LGD. Banks may alter the factors that influence facility grades across segments of the portfolio as long as they can satisfy their supervisor that it improves the relevance and precision of their estimates.

167. Banks using the supervisory slotting criteria are exempt from this two-dimensional requirement for these exposures. Given the interdependence between borrower/transaction characteristics in exposures subject to the supervisory slotting approaches, banks may satisfy the requirements under this heading through a single rating dimension that reflects EL by incorporating both borrower strength (PD) and loss severity (LGD) considerations. This exemption does not apply to banks using the general corporate foundation or advanced approach for the SL sub-class.

### *Standards for retail exposures*

168. Rating systems for retail exposures must be oriented to both borrower and transaction risk, and must capture all relevant borrower and transaction characteristics. Banks must assign each exposure that falls within the definition of retail for IRB purposes into a particular pool. Banks must demonstrate that this process provides for a meaningful differentiation of risk, provides for a grouping of sufficiently homogenous exposures, and allows for accurate and consistent estimation of loss characteristics at pool level.

169. For each pool, banks must estimate PD, LGD, and EAD. Multiple pools may share identical PD, LGD and EAD estimates. At a minimum, banks should consider the following risk drivers when assigning exposures to a pool:

- Borrower risk characteristics (eg borrower type, demographics such as age/occupation);
- Transaction risk characteristics, including product and/or collateral types (eg loan to value measures, seasoning,[23] guarantees; and seniority (first vs. second lien)). Banks must explicitly address cross-collateral provisions where present.

[23] For each pool where the banks estimate PD and LGD, banks should analyse the representativeness of the age of the facilities (in terms of time since origination for PD and time since the date of default for LGD) in the data used to derive the estimates of the bank's actual facilities. In some jurisdictions default rates peak several years after origination or recovery rates show a low point several years after default, banks should adjust the estimates with an adequate margin of conservatism to account for the lack of representativeness as well as anticipated implications of rapid exposure growth.

- Delinquency of exposure: Banks are expected to separately identify exposures that are delinquent and those that are not.

### (ii) Rating structure

*Standards for corporate and bank exposures*

170. A bank must have a meaningful distribution of exposures across grades with no excessive concentrations, on both its borrower-rating and its facility-rating scales.

171. To meet this objective, a bank must have a minimum of seven borrower grades for non-defaulted borrowers and one for those that have defaulted. Banks with lending activities focused on a particular market segment may satisfy this requirement with the minimum number of grades.

172. A borrower grade is defined as an assessment of borrower risk on the basis of a specified and distinct set of rating criteria, from which estimates of PD are derived. The grade definition must include both a description of the degree of default risk typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk. Furthermore, "+" or "-" modifiers to alpha or numeric grades will only qualify as distinct grades if the bank has developed complete rating descriptions and criteria for their assignment, and separately quantifies PDs for these modified grades.

173. Banks with loan portfolios concentrated in a particular market segment and range of default risk must have enough grades within that range to avoid undue concentrations of borrowers in particular grades. Significant concentrations within a single grade or grades must be supported by convincing empirical evidence that the grade or grades cover reasonably narrow PD bands and that the default risk posed by all borrowers in a grade fall within that band.

174. There is no specific minimum number of facility grades for banks using the advanced approach for estimating LGD. A bank must have a sufficient number of facility grades to avoid grouping facilities with widely varying LGDs into a single grade. The criteria used to define facility grades must be grounded in empirical evidence.

175. Banks using the supervisory slotting criteria must have at least four grades for non-defaulted borrowers, and one for defaulted borrowers. The requirements for SL exposures that qualify for the corporate foundation and advanced approaches are the same as those for general corporate exposures.

*Standards for retail exposures*

176. For each pool identified, the bank must be able to provide quantitative measures of loss characteristics (PD, LGD, and EAD) for that pool. The level of differentiation for IRB purposes must ensure that the number of exposures in a given pool is sufficient so as to allow for meaningful quantification and validation of the loss characteristics at the pool level. There must be a meaningful distribution of borrowers and exposures across pools. A single pool must not include an undue concentration of the bank's total retail exposure.

### (iii) Rating criteria

177. A bank must have specific rating definitions, processes and criteria for assigning exposures to grades within a rating system. The rating definitions and criteria must be both plausible and intuitive and must result in a meaningful differentiation of risk.

- The grade descriptions and criteria must be sufficiently detailed to allow those charged with assigning ratings to consistently assign the same grade to borrowers or facilities posing similar risk. This consistency should exist across lines of business, departments and geographic locations. If rating criteria and procedures differ for different types of borrowers or facilities, the bank must

monitor for possible inconsistency, and must alter rating criteria to improve consistency when appropriate.

- Written rating definitions must be clear and detailed enough to allow third parties to understand the assignment of ratings, such as internal audit or an equally independent function and supervisors, to replicate rating assignments and evaluate the appropriateness of the grade/pool assignments.
- The criteria must also be consistent with the bank's internal lending standards and its policies for handling troubled borrowers and facilities.

178. To ensure that banks are consistently taking into account available information, they must use all relevant and material information in assigning ratings to borrowers and facilities. Information must be current. The less information a bank has, the more conservative must be its assignments of exposures to borrower and facility grades or pools. An external rating can be the primary factor determining an internal rating assignment; however, the bank must ensure that it considers other relevant information.

### *Exposures subject to the supervisory slotting approach*

179. Banks using the supervisory slotting criteria must assign exposures to their internal rating grades based on their own criteria, systems and processes, subject to compliance with the requisite minimum requirements. Banks must then map these internal rating grades into the five supervisory rating categories. Tables 1 to 4 in Annex 6 of the Basel II framework (June 2006) provide, for each sub-class of SL exposures, the general assessment factors and characteristics exhibited by the exposures that fall under each of the supervisory categories. Each lending activity has a unique table describing the assessment factors and characteristics.

180. The Committee recognises that the criteria that banks use to assign exposures to internal grades will not perfectly align with criteria that define the supervisory categories; however, banks must demonstrate that their mapping process has resulted in an alignment of grades which is consistent with the preponderance of the characteristics in the respective supervisory category. Banks should take special care to ensure that any overrides of their internal criteria do not render the mapping process ineffective.

### (iv) Rating assignment horizon

181. Although the time horizon used in PD estimation is one year (as described in paragraph 215), banks are expected to use a longer time horizon in assigning ratings.

182. A borrower rating must represent the bank's assessment of the borrower's ability and willingness to contractually perform despite adverse economic conditions or the occurrence of unexpected events. The range of economic conditions that are considered when making assessments must be consistent with current conditions and those that are likely to occur over a business cycle within the respective industry/geographic region. Rating systems should be designed in such a way that idiosyncratic or industry-specific changes are a driver of migrations from one category to another, and business cycle effects may also be a driver.

183. PD estimates for borrowers that are highly leveraged or for borrowers whose assets are predominantly traded assets must reflect the performance of the underlying assets based on periods of stressed volatilities.

184. Given the difficulties in forecasting future events and the influence they will have on a particular borrower's financial condition, a bank must take a conservative view of projected information. Furthermore, where limited data are available, a bank must adopt a conservative bias to its analysis.

### (v) Use of models

185. The requirements in this section apply to statistical models and other mechanical methods used to assign borrower or facility ratings or in estimation of PDs, LGDs, or EADs. Credit scoring models and other mechanical rating procedures generally use only a subset of available information. Although mechanical rating procedures may sometimes avoid some of the idiosyncratic errors made by rating systems in which human judgement plays a large role, mechanical use of limited information also is a source of rating errors. Credit scoring models and other mechanical procedures are permissible as the primary or partial basis of rating assignments, and may play a role in the estimation of loss characteristics. Sufficient human judgement and human oversight is necessary to ensure that all relevant and material information, including that which is outside the scope of the model, is also taken into consideration, and that the model is used appropriately.

- The burden is on the bank to satisfy its supervisor that a model or procedure has good predictive power and that regulatory capital requirements will not be distorted as a result of its use. The variables that are input to the model must form a reasonable set of predictors. The model must be accurate on average across the range of borrowers or facilities to which the bank is exposed and there must be no known material biases.
- The bank must have in place a process for vetting data inputs into a statistical default or loss prediction model which includes an assessment of the accuracy, completeness and appropriateness of the data specific to the assignment of an approved rating.
- The bank must demonstrate that the data used to build the model are representative of the population of the bank's actual borrowers or facilities.
- When combining model results with human judgement, the judgement must take into account all relevant and material information not considered by the model. The bank must have written guidance describing how human judgement and model results are to be combined.
- The bank must have procedures for human review of model-based rating assignments. Such procedures should focus on finding and limiting errors associated with known model weaknesses and must also include credible ongoing efforts to improve the model's performance.
- The bank must have a regular cycle of model validation that includes monitoring of model performance and stability; review of model relationships; and testing of model outputs against outcomes.

### (vi) Documentation of rating system design

186. Banks must document in writing their rating systems' design and operational details. The documentation must evidence banks' compliance with the minimum standards, and must address topics such as portfolio differentiation, rating criteria, responsibilities of parties that rate borrowers and facilities, definition of what constitutes a rating exception, parties that have authority to approve exceptions, frequency of rating reviews, and management oversight of the rating process. A bank must document the rationale for its choice of internal rating criteria and must be able to provide analyses demonstrating that rating criteria and procedures are likely to result in ratings that meaningfully differentiate risk. Rating criteria and procedures must be periodically reviewed to determine whether they remain fully applicable to the current portfolio and to external conditions. In addition, a bank must document a history of major changes in the risk rating process, and such documentation must support identification of changes made to the risk rating process subsequent to the last supervisory review. The organisation of rating assignment, including the internal control structure, must also be documented.

187. Banks must document the specific definitions of default and loss used internally and demonstrate consistency with the reference definitions set out in paragraphs 220 to 228.

188. If the bank employs statistical models in the rating process, the bank must document their methodologies. This material must:

- Provide a detailed outline of the theory, assumptions and/or mathematical and empirical basis of the assignment of estimates to grades, individual obligors, exposures, or pools, and the data source(s) used to estimate the model;
- Establish a rigorous statistical process (including out-of-time and out-of-sample performance tests) for validating the model; and
- Indicate any circumstances under which the model does not work effectively.

189. Use of a model obtained from a third-party vendor that claims proprietary technology is not a justification for exemption from documentation or any other of the requirements for internal rating systems. The burden is on the model's vendor and the bank to satisfy supervisors.

## 4. Risk rating system operations

### (i) Coverage of ratings

190. For corporate, and bank exposures, each borrower and all recognised guarantors must be assigned a rating and each exposure must be associated with a facility rating as part of the loan approval process. Similarly, for retail, each exposure must be assigned to a pool as part of the loan approval process.

191. Each separate legal entity to which the bank is exposed must be separately rated. A bank must have policies acceptable to its supervisor regarding the treatment of individual entities in a connected group including circumstances under which the same rating may or may not be assigned to some or all related entities. Those policies must include a process for the identification of specific wrong way risk for each legal entity to which the bank is exposed. Transactions with counterparties where specific wrong way risk has been identified need to be treated differently when calculating the EAD for such exposures (see paragraph 58 of the counterparty credit risk standards).

### (ii) Integrity of rating process

*Standards for corporate and bank exposures*

192. Rating assignments and periodic rating reviews must be completed or approved by a party that does not directly stand to benefit from the extension of credit. Independence of the rating assignment process can be achieved through a range of practices that will be carefully reviewed by supervisors. These operational processes must be documented in the bank's procedures and incorporated into bank policies. Credit policies and underwriting procedures must reinforce and foster the independence of the rating process.

193. Borrowers and facilities must have their ratings refreshed at least on an annual basis. Certain credits, especially higher risk borrowers or problem exposures, must be subject to more frequent review. In addition, banks must initiate a new rating if material information on the borrower or facility comes to light.

194. The bank must have an effective process to obtain and update relevant and material information on the borrower's financial condition, and on facility characteristics that affect LGDs and EADs (such as the condition of collateral). Upon receipt, the bank needs to have a procedure to update the borrower's rating in a timely fashion.

*Standards for retail exposures*

195. A bank must review the loss characteristics and delinquency status of each identified risk pool on at least an annual basis. It must also review the status of individual borrowers within each pool as a means of ensuring that exposures continue to be assigned to the correct pool. This requirement may be satisfied by review of a representative sample of exposures in the pool.

### (iii) Overrides

196. For rating assignments based on expert judgement, banks must clearly articulate the situations in which bank officers may override the outputs of the rating process, including how and to what extent such overrides can be used and by whom. For model-based ratings, the bank must have guidelines and processes for monitoring cases where human judgement has overridden the model's rating, variables were excluded or inputs were altered. These guidelines must include identifying personnel that are responsible for approving these overrides. Banks must identify overrides and separately track their performance.

### (iv) Data maintenance

197. A bank must collect and store data on key borrower and facility characteristics to provide effective support to its internal credit risk measurement and management process, to enable the bank to meet the other requirements in this document, and to serve as a basis for supervisory reporting. These data should be sufficiently detailed to allow retrospective re-allocation of obligors and facilities to grades, for example if increasing sophistication of the internal rating system suggests that finer segregation of portfolios can be achieved. Furthermore, banks must collect and retain data on aspects of their internal ratings as required under Pillar 3 of this Framework.

*For corporate and bank exposures*

198. Banks must maintain rating histories on borrowers and recognised guarantors, including the rating since the borrower/guarantor was assigned an internal grade, the dates the ratings were assigned, the methodology and key data used to derive the rating and the person/model responsible. The identity of borrowers and facilities that default, and the timing and circumstances of such defaults, must be retained. Banks must also retain data on the PDs and realised default rates associated with rating grades and ratings migration in order to track the predictive power of the borrower rating system.

199. Banks using the advanced IRB approach must also collect and store a complete history of data on the LGD and EAD estimates associated with each facility and the key data used to derive the estimate and the person/model responsible. Banks must also collect data on the estimated and realised LGDs and EADs associated with each defaulted facility. Banks that reflect the credit risk mitigating effects of guarantees/credit derivatives through LGD must retain data on the LGD of the facility before and after evaluation of the effects of the guarantee/credit derivative. Information about the components of loss or recovery for each defaulted exposure must be retained, such as amounts recovered, source of recovery (eg collateral, liquidation proceeds and guarantees), time period required for recovery, and administrative costs.

200. Banks under the foundation approach which utilise supervisory estimates are encouraged to retain the relevant data (ie data on loss and recovery experience for corporate exposures under the foundation approach, data on realised losses for banks using the supervisory slotting criteria).

*For retail exposures*

201. Banks must retain data used in the process of allocating exposures to pools, including data on borrower and transaction risk characteristics used either directly or through use of a model, as well as data on delinquency. Banks must also retain data on the estimated PDs, LGDs and EADs, associated with pools

of exposures. For defaulted exposures, banks must retain the data on the pools to which the exposure was assigned over the year prior to default and the realised outcomes on LGD and EAD.

### (v) Stress tests used in assessment of capital adequacy

202. An IRB bank must have in place sound stress testing processes for use in the assessment of capital adequacy. Stress testing must involve identifying possible events or future changes in economic conditions that could have unfavourable effects on a bank's credit exposures and assessment of the bank's ability to withstand such changes. Examples of scenarios that could be used are (i) economic or industry downturns; (ii) market-risk events; and (iii) liquidity conditions.

203. In addition to the more general tests described above, the bank must perform a credit risk stress test to assess the effect of certain specific conditions on its IRB regulatory capital requirements. The test to be employed would be one chosen by the bank, subject to supervisory review. The test to be employed must be meaningful and reasonably conservative. Individual banks may develop different approaches to undertaking this stress test requirement, depending on their circumstances. For this purpose, the objective is not to require banks to consider worst-case scenarios. The bank's stress test in this context should, however, consider at least the effect of mild recession scenarios. In this case, one example might be to use two consecutive quarters of zero growth to assess the effect on the bank's PDs, LGDs and EADs, taking account – on a conservative basis – of the bank's international diversification.

204. Whatever method is used, the bank must include a consideration of the following sources of information. First, a bank's own data should allow estimation of the ratings migration of at least some of its exposures. Second, banks should consider information about the impact of smaller deterioration in the credit environment on a bank's ratings, giving some information on the likely effect of bigger, stress circumstances. Third, banks should evaluate evidence of ratings migration in external ratings. This would include the bank broadly matching its buckets to rating categories.

205. National supervisors may wish to issue guidance to their banks on how the tests to be used for this purpose should be designed, bearing in mind conditions in their jurisdiction. The results of the stress test may indicate no difference in the capital calculated under the IRB rules described in this section of this Framework if the bank already uses such an approach for its internal rating purposes. Where a bank operates in several markets, it does not need to test for such conditions in all of those markets, but a bank should stress portfolios containing the vast majority of its total exposures.

## 5. Corporate governance and oversight

### (i) Corporate governance

206. All material aspects of the rating and estimation processes must be approved by the bank's board of directors or a designated committee thereof and senior management.[24] These parties must possess a general understanding of the bank's risk rating system and detailed comprehension of its associated management reports. Senior management must provide notice to the board of directors or a designated committee thereof of material changes or exceptions from established policies that will materially impact the operations of the bank's rating system.

[24] This standard refers to a management structure composed of a board of directors and senior management. The Committee is aware that there are significant differences in legislative and regulatory frameworks across countries as regards the functions of the board of directors and senior management. In some countries, the board has the main, if not exclusive, function of supervising the executive body (senior management, general management) so as to ensure that the latter fulfils its tasks. For this reason, in some cases, it is known as a supervisory board. This means that the board has no executive functions. In other countries, by contrast, the board has a broader competence in that it lays down the general framework for the management of the bank. Owing to these differences, the notions of the board of directors and senior management are used in this paper not to identify legal constructs but rather to label two decision-making functions within a bank.

207. Senior management also must have a good understanding of the rating system's design and operation, and must approve material differences between established procedure and actual practice. Management must also ensure, on an ongoing basis, that the rating system is operating properly. Management and staff in the credit control function must meet regularly to discuss the performance of the rating process, areas needing improvement, and the status of efforts to improve previously identified deficiencies.

208. Internal ratings must be an essential part of the reporting to these parties. Reporting must include risk profile by grade, migration across grades, estimation of the relevant parameters per grade, and comparison of realised default rates (and LGDs and EADs for banks on advanced approaches) against expectations. Reporting frequencies may vary with the significance and type of information and the level of the recipient.

### (ii) Credit risk control

209. Banks must have independent credit risk control units that are responsible for the design or selection, implementation and performance of their internal rating systems. The unit(s) must be functionally independent from the personnel and management functions responsible for originating exposures. Areas of responsibility must include:

- Testing and monitoring internal grades;
- Production and analysis of summary reports from the bank's rating system, to include historical default data sorted by rating at the time of default and one year prior to default, grade migration analyses, and monitoring of trends in key rating criteria;
- Implementing procedures to verify that rating definitions are consistently applied across departments and geographic areas;
- Reviewing and documenting any changes to the rating process, including the reasons for the changes; and
- Reviewing the rating criteria to evaluate if they remain predictive of risk. Changes to the rating process, criteria or individual rating parameters must be documented and retained for supervisors to review.

210. A credit risk control unit must actively participate in the development, selection, implementation and validation of rating models. It must assume oversight and supervision responsibilities for any models used in the rating process, and ultimate responsibility for the ongoing review and alterations to rating models.

### (iii) Internal and external audit

211. Internal audit or an equally independent function must review at least annually the bank's rating system and its operations, including the operations of the credit function and the estimation of PDs, LGDs and EADs. Areas of review include adherence to all applicable minimum requirements. Internal audit must document its findings.

## 6. Use of internal ratings

212. Internal ratings and default and loss estimates must play an essential role in the credit approval, risk management, internal capital allocations, and corporate governance functions of banks using the IRB approach. Ratings systems and estimates designed and implemented exclusively for the purpose of qualifying for the IRB approach and used only to provide IRB inputs are not acceptable. It is recognised that banks will not necessarily be using exactly the same estimates for both IRB and all internal purposes.

For example, pricing models are likely to use PDs and LGDs relevant to the life of the asset. Where there are such differences, a bank must document them and demonstrate their reasonableness to the supervisor.

213. A bank must have a credible track record in the use of internal ratings information. Thus, the bank must demonstrate that it has been using a rating system that was broadly in line with the minimum requirements articulated in this document for at least the three years prior to qualification. A bank using the advanced IRB approach must demonstrate that it has been estimating and employing LGDs and EADs in a manner that is broadly consistent with the minimum requirements for use of own estimates of LGDs and EADs for at least the three years prior to qualification. Improvements to a bank's rating system will not render a bank non-compliant with the three-year requirement.

## 7. Risk quantification

### (i) Overall requirements for estimation

*Structure and intent*

214. This section addresses the broad standards for own-estimates of PD, LGD, and EAD. Generally, all banks using the IRB approaches must estimate a PD[25] for each internal borrower grade for corporate and bank exposures or for each pool in the case of retail exposures.

215. PD estimates must be a long-run average of one-year default rates for borrowers in the grade, with the exception of retail exposures as set out in paragraph 233 and 234. Requirements specific to PD estimation are provided in paragraphs 229 to 234. Banks on the advanced approach must estimate an appropriate LGD (as defined in paragraphs 235 to 240) for each of its facilities (or retail pools). For exposures subject to the advanced approach, banks must also estimate an appropriate long-run default-weighted average EAD for each of its facilities as defined in paragraphs 241 and 242. Requirements specific to EAD estimation appear in paragraphs 241 to 251. For corporate and bank exposures, banks that do not meet the requirements for own-estimates of EAD or LGD, above, must use the supervisory estimates of these parameters. Standards for use of such estimates are set out in paragraphs 280 to 297.

216. Internal estimates of PD, LGD, and EAD must incorporate all relevant, material and available data, information and methods. A bank may utilise internal data and data from external sources (including pooled data). Where internal or external data is used, the bank must demonstrate that its estimates are representative of long run experience.

217. Estimates must be grounded in historical experience and empirical evidence, and not based purely on subjective or judgmental considerations. Any changes in lending practice or the process for pursuing recoveries over the observation period must be taken into account. A bank's estimates must promptly reflect the implications of technical advances and new data and other information, as it becomes available. Banks must review their estimates on a yearly basis or more frequently.

218. The population of exposures represented in the data used for estimation, and lending standards in use when the data were generated, and other relevant characteristics should be closely matched to or at least comparable with those of the bank's exposures and standards. The bank must also demonstrate that economic or market conditions that underlie the data are relevant to current and foreseeable conditions. For estimates of LGD and EAD, banks must take into account paragraphs 235 to 251. The number of exposures in the sample and the data period used for quantification must be sufficient to provide the bank with confidence in the accuracy and robustness of its estimates. The estimation technique must perform well in out-of-sample tests.

[25] Banks are not required to produce their own estimates of PD for exposures subject to the supervisory slotting approach.

219. In general, estimates of PDs, LGDs, and EADs are likely to involve unpredictable errors. In order to avoid over-optimism, a bank must add to its estimates a margin of conservatism that is related to the likely range of errors. Where methods and data are less satisfactory and the likely range of errors is larger, the margin of conservatism must be larger. Supervisors may allow some flexibility in application of the required standards for data that are collected prior to the date of implementation of this Framework. However, in such cases banks must demonstrate to their supervisors that appropriate adjustments have been made to achieve broad equivalence to the data without such flexibility. Data collected beyond the date of implementation must conform to the minimum standards unless otherwise stated.

### (ii) Definition of default

220. A default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place.

- The bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such as realising security (if held).
- The obligor is past due more than 90 days on any material credit obligation to the banking group.[26] Overdrafts will be considered as being past due once the customer has breached an advised limit or been advised of a limit smaller than current outstandings.

221. The elements to be taken as indications of unlikeliness to pay include:

- The bank puts the credit obligation on non-accrued status.
- The bank makes a charge-off or account-specific provision resulting from a significant perceived decline in credit quality subsequent to the bank taking on the exposure.
- The bank sells the credit obligation at a material credit-related economic loss.
- The bank consents to a distressed restructuring of the credit obligation where this is likely to result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or (where relevant) fees.
- The bank has filed for the obligor's bankruptcy or a similar order in respect of the obligor's credit obligation to the banking group.
- The obligor has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of the credit obligation to the banking group.

222. National supervisors will provide appropriate guidance as to how these elements must be implemented and monitored.

223. For retail exposures, the definition of default can be applied at the level of a particular facility, rather than at the level of the obligor. As such, default by a borrower on one obligation does not require a bank to treat all other obligations to the banking group as defaulted.

224. A bank must record actual defaults on IRB exposure classes using this reference definition. A bank must also use the reference definition for its estimation of PDs, and (where relevant) LGDs and EADs. In arriving at these estimations, a bank may use external data available to it that is not itself consistent with that definition, subject to the requirements set out in paragraph 230. However, in such cases, banks must demonstrate to their supervisors that appropriate adjustments to the data have been made to achieve broad equivalence with the reference definition. This same condition would apply to any internal data used up to implementation of this Framework. Internal data (including that pooled by banks) used in such

[26] In the case of retail and PSE obligations, for the 90 days figure, a supervisor may substitute a figure up to 180 days for different products, as it considers appropriate to local conditions.

estimates beyond the date of implementation of this Framework must be consistent with the reference definition.

225. If the bank considers that a previously defaulted exposure's status is such that no trigger of the reference definition any longer applies, the bank must rate the borrower and estimate LGD as they would for a non-defaulted facility. Should the reference definition subsequently be triggered, a second default would be deemed to have occurred.

### (iii) Re-ageing

226. The bank must have clearly articulated and documented policies in respect of the counting of days past due, in particular in respect of the re-ageing of the facilities and the granting of extensions, deferrals, renewals and rewrites to existing accounts. At a minimum, the re-ageing policy must include: (a) approval authorities and reporting requirements; (b) minimum age of a facility before it is eligible for re-ageing; (c) delinquency levels of facilities that are eligible for re-ageing; (d) maximum number of re-ageings per facility; and (e) a reassessment of the borrower's capacity to repay. These policies must be applied consistently over time, and must support the 'use test' (ie if a bank treats a re-aged exposure in a similar fashion to other delinquent exposures more than the past-due cut off point, this exposure must be recorded as in default for IRB purposes).

### (iv) Treatment of overdrafts

227. Authorised overdrafts must be subject to a credit limit set by the bank and brought to the knowledge of the client. Any break of this limit must be monitored; if the account were not brought under the limit after 90 to 180 days (subject to the applicable past-due trigger), it would be considered as defaulted. Non-authorised overdrafts will be associated with a zero limit for IRB purposes. Thus, days past due commence once any credit is granted to an unauthorised customer; if such credit were not repaid within 90 to 180 days, the exposure would be considered in default. Banks must have in place rigorous internal policies for assessing the creditworthiness of customers who are offered overdraft accounts.

### (v) Definition of loss for all asset classes

228. The definition of loss used in estimating LGD is economic loss. When measuring economic loss, all relevant factors should be taken into account. This must include material discount effects and material direct and indirect costs associated with collecting on the exposure. Banks must not simply measure the loss recorded in accounting records, although they must be able to compare accounting and economic losses. The bank's own workout and collection expertise significantly influences their recovery rates and must be reflected in their LGD estimates, but adjustments to estimates for such expertise must be conservative until the bank has sufficient internal empirical evidence of the impact of its expertise.

### (vi) Requirements specific to PD estimation

#### *Corporate and bank exposures*

229. Banks must use information and techniques that take appropriate account of the long-run experience when estimating the average PD for each rating grade. For example, banks may use one or more of the three specific techniques set out below: internal default experience, mapping to external data, and statistical default models.

230. Banks may have a primary technique and use others as a point of comparison and potential adjustment. Supervisors will not be satisfied by mechanical application of a technique without supporting analysis. Banks must recognise the importance of judgmental considerations in combining results of techniques and in making adjustments for limitations of techniques and information.

- A bank may use data on internal default experience for the estimation of PD. A bank must demonstrate in its analysis that the estimates are reflective of underwriting standards and of any differences in the rating system that generated the data and the current rating system. Where only limited data are available, or where underwriting standards or rating systems have changed, the bank must add a greater margin of conservatism in its estimate of PD. The use of pooled data across institutions may also be recognised. A bank must demonstrate that the internal rating systems and criteria of other banks in the pool are comparable with its own.
- Banks may associate or map their internal grades to the scale used by an external credit assessment institution or similar institution and then attribute the default rate observed for the external institution's grades to the bank's grades. Mappings must be based on a comparison of internal rating criteria to the criteria used by the external institution and on a comparison of the internal and external ratings of any common borrowers. Biases or inconsistencies in the mapping approach or underlying data must be avoided. The external institution's criteria underlying the data used for quantification must be oriented to the risk of the borrower and not reflect transaction characteristics. The bank's analysis must include a comparison of the default definitions used, subject to the requirements in paragraph 220 to 225. The bank must document the basis for the mapping.
- A bank is allowed to use a simple average of default-probability estimates for individual borrowers in a given grade, where such estimates are drawn from statistical default prediction models. The bank's use of default probability models for this purpose must meet the standards specified in paragraph 185.

For all methods above, banks must estimate a PD for each rating grade based on the observed historical average one-year default rate that is a simple average based on number of obligors (count weighted). Weighting approaches, such as EAD weighting, are not permitted.

231. Irrespective of whether a bank is using external, internal, or pooled data sources, or a combination of the three, for its PD estimation, the length of the underlying historical observation period used must be at least five years for at least one source. If the available observation period spans a longer period for any source, and this data are relevant and material, this longer period must be used. The data should include a representative mix of good and bad years.

### *Retail exposures*

232. Given the bank-specific basis of assigning exposures to pools, banks must regard internal data as the primary source of information for estimating loss characteristics. Banks are permitted to use external data or statistical models for quantification provided a strong link can be demonstrated between: (a) the bank's process of assigning exposures to a pool and the process used by the external data source; and (b) between the bank's internal risk profile and the composition of the external data. In all cases banks must use all relevant and material data sources as points of comparison.

233. One method for deriving long-run average estimates of PD and default-weighted average loss rates given default (as defined in paragraph 235) for retail would be based on an estimate of the expected long-run loss rate. A bank may (i) use an appropriate PD estimate to infer the long-run default-weighted average loss rate given default, or (ii) use a long-run default-weighted average loss rate given default to infer the appropriate PD. In either case, it is important to recognise that the LGD used for the IRB capital calculation cannot be less than the long-run default-weighted average loss rate given default and must be consistent with the concepts defined in paragraph 235.

234. Irrespective of whether banks are using external, internal, pooled data sources, or a combination of the three, for their estimation of loss characteristics, the length of the underlying historical observation period used must be at least five years. If the available observation spans a longer period for any source, and these data are relevant, this longer period must be used. The data should include a representative mix

of good and bad years of the economic cycle relevant for the portfolio. The PD should be based on the observed historical average one-year default rate.

### (vii) Requirements specific to own-LGD estimates

#### *Standards for all asset classes*

235. A bank must estimate an LGD for each facility that aims to reflect economic downturn conditions where necessary to capture the relevant risks. This LGD cannot be less than the long-run default-weighted average loss rate given default calculated based on the average economic loss of all observed defaults within the data source for that type of facility. In addition, a bank must take into account the potential for the LGD of the facility to be higher than the default-weighted average during a period when credit losses are substantially higher than average. For certain types of exposures, loss severities may not exhibit such cyclical variability and LGD estimates may not differ materially from the long-run default-weighted average. However, for other exposures, this cyclical variability in loss severities may be important and banks will need to incorporate it into their LGD estimates. For this purpose, banks may make reference to the averages of loss severities observed during periods of high credit losses, forecasts based on appropriately conservative assumptions, or other similar methods. Appropriate estimates of LGD during periods of high credit losses might be formed using either internal and/or external data. Supervisors will continue to monitor and encourage the development of appropriate approaches to this issue.

236. In its analysis, the bank must consider the extent of any dependence between the risk of the borrower and that of the collateral or collateral provider. Cases where there is a significant degree of dependence must be addressed in a conservative manner. Any currency mismatch between the underlying obligation and the collateral must also be considered and treated conservatively in the bank's assessment of LGD.

237. LGD estimates must be grounded in historical recovery rates and, when applicable, must not solely be based on the collateral's estimated market value. This requirement recognises the potential inability of banks to gain both control of their collateral and liquidate it expeditiously. To the extent that LGD estimates take into account the existence of collateral, banks must establish internal requirements for collateral management, operational procedures, legal certainty and risk management process that are generally consistent with those required for the foundation IRB approach.

238. Recognising the principle that realised losses can at times systematically exceed expected levels, the LGD assigned to a defaulted asset should reflect the possibility that the bank would have to recognise additional, unexpected losses during the recovery period. For each defaulted asset, the bank must also construct its best estimate of the expected loss on that asset based on current economic circumstances and facility status. The amount, if any, by which the LGD on a defaulted asset exceeds the bank's best estimate of expected loss on the asset represents the capital requirement for that asset, and should be set by the bank on a risk-sensitive basis in accordance with paragraphs 53 and 118 to 120. Instances where the best estimate of expected loss on a defaulted asset is less than the sum of specific provisions and partial charge-offs on that asset will attract supervisory scrutiny and must be justified by the bank.

#### *Additional standards for corporate exposures*

239. Estimates of LGD must be based on a minimum data observation period that should ideally cover at least one complete economic cycle but must in any case be no shorter than a period of seven years for at least one source. If the available observation period spans a longer period for any source, and the data are relevant, this longer period must be used.

#### *Additional standards for retail exposures*

240. The minimum data observation period for LGD estimates for retail exposures is five years. The less data a bank has, the more conservative it must be in its estimation.

### (viii) Requirements specific to own-EAD estimates

*Standards for all asset classes*

241. EAD for an on-balance sheet or off-balance sheet item is defined as the expected gross exposure of the facility upon default of the obligor. For on-balance sheet items, banks must estimate EAD at no less than the current drawn amount, subject to recognising the effects of on-balance sheet netting as specified in the foundation approach. The minimum requirements for the recognition of netting are the same as those under the foundation approach. The additional minimum requirements for internal estimation of EAD under the advanced approach, therefore, focus on the estimation of EAD for off-balance sheet items (excluding transactions that expose banks to counterparty credit risk as set out in the counterparty credit risk standards). Banks using the advanced approach must have established procedures in place for the estimation of EAD for off-balance sheet items. These must specify the estimates of EAD to be used for each facility type. Banks' estimates of EAD should reflect the possibility of additional drawings by the borrower up to and after the time a default event is triggered. Where estimates of EAD differ by facility type, the delineation of these facilities must be clear and unambiguous.

242. Under the advanced approach, banks must assign an estimate of EAD for each eligible facility. It must be an estimate of the long-run default-weighted average EAD for similar facilities and borrowers over a sufficiently long period of time, but with a margin of conservatism appropriate to the likely range of errors in the estimate. If a positive correlation can reasonably be expected between the default frequency and the magnitude of EAD, the EAD estimate must incorporate a larger margin of conservatism. Moreover, for exposures for which EAD estimates are volatile over the economic cycle, the bank must use EAD estimates that are appropriate for an economic downturn, if these are more conservative than the long-run average. For banks that have been able to develop their own EAD models, this could be achieved by considering the cyclical nature, if any, of the drivers of such models. Other banks may have sufficient internal data to examine the impact of previous recession(s). However, some banks may only have the option of making conservative use of external data. Moreover, where a bank bases its estimates on alternative measures of central tendency (such as the median or a higher percentile estimate) or only on 'downturn' data, it should explicitly confirm that the basic downturn requirement of the framework is met, ie the bank's estimates do not fall below a (conservative) estimate of the long-run default-weighted average EAD for similar facilities.

243. The criteria by which estimates of EAD are derived must be plausible and intuitive, and represent what the bank believes to be the material drivers of EAD. The choices must be supported by credible internal analysis by the bank. The bank must be able to provide a breakdown of its EAD experience by the factors it sees as the drivers of EAD. A bank must use all relevant and material information in its derivation of EAD estimates. Across facility types, a bank must review its estimates of EAD when material new information comes to light and at least on an annual basis.

244. Due consideration must be paid by the bank to its specific policies and strategies adopted in respect of account monitoring and payment processing. The bank must also consider its ability and willingness to prevent further drawings in circumstances short of payment default, such as covenant violations or other technical default events. Banks must also have adequate systems and procedures in place to monitor facility amounts, current outstandings against committed lines and changes in outstandings per borrower and per grade. The bank must be able to monitor outstanding balances on a daily basis.

245. Banks' EAD estimates must be developed using a 12-month fixed-horizon approach; ie for each observation in the reference data set, default outcomes must be linked to relevant obligor and facility characteristics twelve months prior to default.

246. As set out in paragraph 218, banks' EAD estimates should be based on reference data that reflect the obligor, facility and bank management practice characteristics of the exposures to which the estimates

are applied. Consistent with this principle, EAD estimates applied to particular exposures should not be based on data that comingle the effects of disparate characteristics or data from exposures that exhibit different characteristics (eg same broad product grouping but different customers that are managed differently by the bank). The estimates should be based on appropriately homogenous segments. Alternatively, the estimates should be based on an estimation approach that effectively disentangles the impact of the different characteristics exhibited within the relevant dataset. Practices that generally do not comply with this principle include use of estimates based or partly based on:

- SME/midmarket data being applied to large corporate obligors.
- Data from commitments with 'small' unused limit availability being applied to facilities with 'large' unused limit availability.
- Data from obligors already identified as problematic at reference date being applied to current obligors with no known issues (eg customers at reference date who were already delinquent, watchlisted by the bank, subject to recent bank-initiated limit reductions, blocked from further drawdowns or subject to other types of collections activity).
- Data that has been affected by changes in obligors' mix of borrowing and other credit-related products over the observation period unless that data has been effectively mitigated for such changes, eg by adjusting the data to remove the effects of the changes in the product mix. Supervisors should expect banks to demonstrate a detailed understanding of the impact of changes in customer product mix on EAD reference data sets (and associated EAD estimates) and that the impact is immaterial or has been effectively mitigated within each bank's estimation process. Banks' analyses in this regard should be actively challenged by supervisors. Effective mitigation would not include: setting floors to CCF/EAD observations; use of obligor-level estimates that do not fully cover the relevant product transformation options or inappropriately combine products with very different characteristics (eg revolving and non-revolving products); adjusting only 'material' observations affected by product transformation; generally excluding observations affected by product profile transformation (thereby potentially distorting the representativeness of the remaining data).

247. A well-known feature of the commonly used undrawn limit factor (ULF) approach[27] to estimating CCFs is the region of instability associated with facilities close to being fully drawn at reference date. Banks should ensure that their EAD estimates are effectively quarantined from the potential effects of this region of instability.

- An acceptable approach could include using an estimation method other than the ULF approach that avoids the instability issue by not using potentially small undrawn limits that could approach zero in the denominator or, as appropriate, switching to a method other than the ULF as the region of instability is approached, eg a limit factor, balance factor or additional utilisation factor approach.[28] Note that, consistent with paragraph 246, including limit utilisation as a driver in EAD models could quarantine much of the relevant portfolio from this issue but, in the absence of

[27] A specific type of CCF, where predicted additional drawings in the lead-up to default are expressed as a percentage of the undrawn limit that remains available to the obligor under the terms and conditions of a facility, ie EAD=B0=Bt+ULF[Lt –Bt], where B0 = facility balance at date of default; Bt = current balance (for predicted EAD) or balance at reference date (for observed EAD); Lt = current limit (for predicted EAD) or limit at reference date (for realised/observed EAD).

[28] A limit factor (LF) is a specific type of CCF, where the predicted balance at default is expressed as a percentage of the total limit that is available to the obligor under the terms and conditions of a credit facility, ie EAD=B0= LF[Lt], where B0 = facility balance at date of default; Bt = current balance (for predicted EAD) or balance at reference date (for observed EAD); Lt = current limit (for predicted EAD) or limit at reference date (for realised/observed EAD). A balance factor (BF) is a specific type of CCF, where the predicted balance at default is expressed as a percentage of the current balance that has been drawn down under a credit facility, ie EAD=B0=BF[Bt]. An additional utilisation factor (AUF) is a specific type of CCF, where predicted additional drawings in the lead-up to default are expressed as a percentage of the total limit that is available to the obligor under the terms and conditions of a credit facility, ie EAD = B0 = Bt + AUF[Lt].

other actions, leaves open how to develop appropriate EAD estimates to be applied to exposures within the region of instability.

- Common but ineffective approaches to mitigating this issue include capping and flooring reference data (eg observed CCFs at 100 per cent and zero respectively) or omitting observations that are judged to be affected.

248. EAD reference data must not be capped to the principal amount outstanding or facility limits. Accrued interest, other due payments and limit excesses should be included in EAD reference data.

249. For transactions that expose banks to counterparty credit risk, estimates of EAD must fulfil the requirements set forth in the counterparty credit risk standards.

### *Additional standards for corporate exposures*

250. Estimates of EAD must be based on a time period that must ideally cover a complete economic cycle but must in any case be no shorter than a period of seven years. If the available observation period spans a longer period for any source, and the data are relevant, this longer period must be used. EAD estimates must be calculated using a default-weighted average and not a time-weighted average.

### *Additional standards for retail exposures*

251. The minimum data observation period for EAD estimates for retail exposures is five years. The less data a bank has, the more conservative it must be in its estimation. A bank need not give equal importance to historic data if it can demonstrate to its supervisor that more recent data are a better predictor of drawdowns.

## (ix) Minimum requirements for assessing effect of guarantees and credit derivatives

### *Standards for corporate exposures where own estimates of LGD are used and standards for retail exposures*

Guarantees

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

253. In all cases, both the borrower and all recognised guarantors must be assigned a borrower rating at the outset and on an ongoing basis. A bank must follow all minimum requirements for assigning borrower ratings set out in this document, including the regular monitoring of the guarantor's condition and ability and willingness to honour its obligations. Consistent with the requirements in paragraphs 198 and 199, a bank must retain all relevant information on the borrower absent the guarantee and the guarantor. In the case of retail guarantees, these requirements also apply to the assignment of an exposure to a pool, and the estimation of PD.

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

255. In case the bank applies the standardised approach to direct exposures to the guarantor, the guarantee may only be recognised by treating the covered portion of the exposure as a direct exposure to the guarantor under the standardised approach. Similarly, in case the bank applies the F-IRB approach to direct exposures to the guarantor, the guarantee may only be recognised by applying the F-IRB approach to the covered portion of the exposure. Alternatively, banks may choose to not recognise the effect of guarantees on their exposures.

Eligible guarantors and guarantees

256. There are no restrictions on the types of eligible guarantors. The bank must, however, have clearly specified criteria for the types of guarantors it will recognise for regulatory capital purposes.

257. The guarantee must be evidenced in writing, non-cancellable on the part of the guarantor, in force until the debt is satisfied in full (to the extent of the amount and tenor of the guarantee) and legally enforceable against the guarantor in a jurisdiction where the guarantor has assets to attach and enforce a judgement. The guarantee must also be unconditional; there should be no clause in the protection contract outside the direct control of the bank that could prevent the protection provider from being obliged to pay out in a timely manner in the event that the original counterparty fails to make the payment(s) due. However, as an exception for the purposes of own estimates of EAD under the A-IRB, guarantees that only cover loss remaining after the bank has first pursued the original obligor for payment and has completed the workout process may be recognised.

258. In case of guarantees where the bank applies the standardised approach to the covered portion of the exposure, the scope of guarantors and the minimum requirements as under the standardised approach apply.

Adjustment criteria

259. A bank must have clearly specified criteria for adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools) to reflect the impact of guarantees for regulatory capital purposes. These criteria must be as detailed as the criteria for assigning exposures to grades consistent with paragraphs 177 and 178, and must follow all minimum requirements for assigning borrower or facility ratings set out in this document.

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

261. In adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools), banks must take all relevant available information into account.

Credit derivatives

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

263. In addition, the criteria must address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries. The bank must also consider the extent to which other forms of residual risk remain.

*For banks using foundation LGD estimates*

264. The minimum requirements outlined in paragraphs 252 to 263 apply to banks using the foundation LGD estimates with the following exceptions:

(i) The bank is not able to use an 'LGD-adjustment' option; and

(ii) The range of eligible guarantees and guarantors is limited to those outlined in paragraph 92.

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

265. The following minimum requirements for risk quantification must be satisfied for any purchased receivables (corporate or retail) making use of the top-down treatment of default risk and/or the IRB treatments of dilution risk.

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

*Minimum operational requirements*

267. A bank purchasing receivables has to justify confidence that current and future advances can be repaid from the liquidation of (or collections against) the receivables pool. To qualify for the top-down treatment of default risk, the receivable pool and overall lending relationship should be closely monitored and controlled. Specifically, a bank will have to demonstrate the following:

*Legal certainty*

268. The structure of the facility must ensure that under all foreseeable circumstances the bank has effective ownership and control of the cash remittances from the receivables, including incidences of seller or servicer distress and bankruptcy. When the obligor makes payments directly to a seller or servicer, the bank must verify regularly that payments are forwarded completely and within the contractually agreed terms. As well, ownership over the receivables and cash receipts should be protected against bankruptcy 'stays' or legal challenges that could materially delay the lender's ability to liquidate/assign the receivables or retain control over cash receipts.

*Effectiveness of monitoring systems*

269. The bank must be able to monitor both the quality of the receivables and the financial condition of the seller and servicer. In particular:

- The bank must (a) assess the correlation among the quality of the receivables and the financial condition of both the seller and servicer, and (b) have in place internal policies and procedures that provide adequate safeguards to protect against such contingencies, including the assignment of an internal risk rating for each seller and servicer.
- The bank must have clear and effective policies and procedures for determining seller and servicer eligibility. The bank or its agent must conduct periodic reviews of sellers and servicers in

order to verify the accuracy of reports from the seller/servicer, detect fraud or operational weaknesses, and verify the quality of the seller's credit policies and servicer's collection policies and procedures. The findings of these reviews must be well documented.

- The bank must have the ability to assess the characteristics of the receivables pool, including: (a) over-advances; (b) history of the seller's arrears, bad debts, and bad debt allowances; (c) payment terms; and (d) potential contra accounts.
- The bank must have effective policies and procedures for monitoring on an aggregate basis single-obligor concentrations both within and across receivables pools.
- The bank must receive timely and sufficiently detailed reports of receivables ageings and dilutions to (a) ensure compliance with the bank's eligibility criteria and advancing policies governing purchased receivables, and (b) provide an effective means with which to monitor and confirm the seller's terms of sale (eg invoice date ageing) and dilution.

*Effectiveness of work-out systems*

270. An effective programme requires systems and procedures not only for detecting deterioration in the seller's financial condition and deterioration in the quality of the receivables at an early stage, but also for addressing emerging problems pro-actively. In particular,

- The bank should have clear and effective policies, procedures, and information systems to monitor compliance with (a) all contractual terms of the facility (including covenants, advancing formulas, concentration limits, early amortisation triggers, etc) as well as (b) the bank's internal policies governing advance rates and receivables eligibility. The bank's systems should track covenant violations and waivers as well as exceptions to established policies and procedures.
- To limit inappropriate draws, the bank should have effective policies and procedures for detecting, approving, monitoring, and correcting over-advances.
- The bank should have effective policies and procedures for dealing with financially weakened sellers or servicers and/or deterioration in the quality of receivable pools. These include, but are not necessarily limited to, early termination triggers in revolving facilities and other covenant protections, a structured and disciplined approach to dealing with covenant violations, and clear and effective policies and procedures for initiating legal actions and dealing with problem receivables.

*Effectiveness of systems for controlling collateral, credit availability, and cash*

271. The bank must have clear and effective policies and procedures governing the control of receivables, credit, and cash. In particular,

- Written internal policies must specify all material elements of the receivables purchase programme, including the advancing rates, eligible collateral, necessary documentation, concentration limits, and how cash receipts are to be handled. These elements should take appropriate account of all relevant and material factors, including the seller's/servicer's financial condition, risk concentrations, and trends in the quality of the receivables and the seller's customer base.
- Internal systems must ensure that funds are advanced only against specified supporting collateral and documentation (such as servicer attestations, invoices, shipping documents, etc).

*Compliance with the bank's internal policies and procedures*

272. Given the reliance on monitoring and control systems to limit credit risk, the bank should have an effective internal process for assessing compliance with all critical policies and procedures, including

- regular internal and/or external audits of all critical phases of the bank's receivables purchase programme.
- verification of the separation of duties (i) between the assessment of the seller/servicer and the assessment of the obligor and (ii) between the assessment of the seller/servicer and the field audit of the seller/servicer.

273. A bank's effective internal process for assessing compliance with all critical policies and procedures should also include evaluations of back office operations, with particular focus on qualifications, experience, staffing levels, and supporting systems.

## 8. Validation of internal estimates

274. Banks must have a robust system in place to validate the accuracy and consistency of rating systems, processes, and the estimation of all relevant risk components. A bank must demonstrate to its supervisor that the internal validation process enables it to assess the performance of internal rating and risk estimation systems consistently and meaningfully.

275. Banks must regularly compare realised default rates with estimated PDs for each grade and be able to demonstrate that the realised default rates are within the expected range for that grade. Banks using the advanced IRB approach must complete such analysis for their estimates of LGDs and EADs. Such comparisons must make use of historical data that are over as long a period as possible. The methods and data used in such comparisons by the bank must be clearly documented by the bank. This analysis and documentation must be updated at least annually.

276. Banks must also use other quantitative validation tools and comparisons with relevant external data sources. The analysis must be based on data that are appropriate to the portfolio, are updated regularly, and cover a relevant observation period. Banks' internal assessments of the performance of their own rating systems must be based on long data histories, covering a range of economic conditions, and ideally one or more complete business cycles.

277. Banks must demonstrate that quantitative testing methods and other validation methods do not vary systematically with the economic cycle. Changes in methods and data (both data sources and periods covered) must be clearly and thoroughly documented.

278. Banks must have well-articulated internal standards for situations where deviations in realised PDs, LGDs and EADs from expectations become significant enough to call the validity of the estimates into question. These standards must take account of business cycles and similar systematic variability in default experiences. Where realised values continue to be higher than expected values, banks must revise estimates upward to reflect their default and loss experience.

279. Where banks rely on supervisory, rather than internal, estimates of risk parameters, they are encouraged to compare realised LGDs and EADs to those set by the supervisors. The information on realised LGDs and EADs should form part of the bank's assessment of economic capital.

## 9. Supervisory LGD and EAD estimates

280. Banks under the foundation IRB approach, which do not meet the requirements for own-estimates of LGD and EAD, above, must meet the minimum requirements described in the standardised approach to receive recognition for eligible financial collateral (as set out in the credit risk mitigation section (Section D) of the standardised approach). They must meet the following additional minimum requirements in order to receive recognition for additional collateral types.

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

281. Eligible CRE and RRE collateral for corporate and bank exposures are defined as:

- Collateral where the risk of the borrower is not materially dependent upon the performance of the underlying property or project, but rather on the underlying capacity of the borrower to repay the debt from other sources. As such, repayment of the facility is not materially dependent on any cash flow generated by the underlying CRE/RRE serving as collateral;[29] and
- Additionally, the value of the collateral pledged must not be materially dependent on the performance of the borrower. This requirement is not intended to preclude situations where purely macro-economic factors affect both the value of the collateral and the performance of the borrower.

282. In light of the generic description above and the definition of corporate exposures, income producing real estate that falls under the SL asset class is specifically excluded from recognition as collateral for corporate exposures.[30]

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

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

- *Legal enforceability*: any claim on collateral taken must be legally enforceable in all relevant jurisdictions, and any claim on collateral must be properly filed on a timely basis. Collateral interests must reflect a perfected lien (ie all legal requirements for establishing the claim have been fulfilled). Furthermore, the collateral agreement and the legal process underpinning it must be such that they provide for the bank to realise the value of the collateral within a reasonable timeframe.
- *Objective market value of collateral*: the collateral must be valued at or less than the current fair value under which the property could be sold under private contract between a willing seller and an arm's-length buyer on the date of valuation.

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

[30] In exceptional circumstances for well-developed and long-established markets, mortgages on office and/or multi-purpose commercial premises and/or multi-tenanted commercial premises may have the potential to receive recognition as collateral in the corporate portfolio. 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% of the market value or 60% of loan-to value (LTV) based on mortgage-lending-value (MLV) must not exceed 0.3% of the outstanding loans in any given year; and that (ii) overall losses stemming from commercial real estate lending must not exceed 0.5% 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 are met.

- *Frequent revaluation*: the bank is expected to monitor the value of the collateral on a frequent basis and at a minimum once every year. More frequent monitoring is suggested where the market is subject to significant changes in conditions. Statistical methods of evaluation (eg reference to house price indices, sampling) may be used to update estimates or to identify collateral that may have declined in value and that may need re-appraisal. A qualified professional must evaluate the property when information indicates that the value of the collateral may have declined materially relative to general market prices or when a credit event, such as default, occurs.
- *Junior liens*: In some member countries, eligible collateral will be restricted to situations where the lender has a first charge over the property.[31] Junior liens may be taken into account where there is no doubt that the claim for collateral is legally enforceable and constitutes an efficient credit risk mitigant. Where junior liens are recognised the bank must first take the haircut value of the collateral, then reduce it by the sum of all loans with liens that rank higher than the junior lien, the remaining value is the collateral that supports the loan with the junior lien. In cases where liens are held by third parties that rank pari passu with the lien of the bank, only the proportion of the collateral (after the application of haircuts and reductions due to the value of loans with liens that rank higher than the lien of the bank) that is attributable to the bank may be recognised.

284. Additional collateral management requirements are as follows:

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

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

#### *Definition of eligible receivables*

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

#### *Operational requirements*

Legal certainty

286. The legal mechanism by which collateral is given must be robust and ensure that the lender has clear rights over the proceeds from the collateral.

[31] In some of these jurisdictions, first liens are subject to the prior right of preferential creditors, such as outstanding tax claims and employees' wages.

287. Banks must take all steps necessary to fulfil local requirements in respect of the enforceability of security interest, eg by registering a security interest with a registrar. There should be a framework that allows the potential lender to have a perfected first priority claim over the collateral.

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

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

Risk management

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

291. The margin between the amount of the exposure and the value of the receivables must reflect all appropriate factors, including the cost of collection, concentration within the receivables pool pledged by an individual borrower, and potential concentration risk within the bank's total exposures.

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

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

294. The bank should have a documented process for collecting receivable payments in distressed situations. The requisite facilities for collection should be in place, even when the bank normally looks to the borrower for collections.

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

295. Supervisors may allow for recognition of the credit risk mitigating effect of certain other physical collateral when the following conditions are met:

- The bank demonstrates to the satisfaction of the supervisor that there are liquid markets for disposal of collateral in an expeditious and economically efficient manner. Banks must carry out

a reassessment of this condition both periodically and when information indicates material changes in the market.

- The bank demonstrates to the satisfaction of the supervisor that there are well established, publicly available market prices for the collateral. Banks must also demonstrate that the amount they receive when collateral is realised does not deviate significantly from these market prices.

296. In order for a given bank to receive recognition for additional physical collateral, it must meet all the standards in paragraphs 283 and 284, subject to the following modifications.

- First Claim: With the sole exception of permissible prior claims specified in footnote 31, only first liens on, or charges over, collateral are permissible. As such, the bank must have priority over all other lenders to the realised proceeds of the collateral.
- The loan agreement must include detailed descriptions of the collateral and the right to examine and revalue the collateral whenever this is deemed necessary by the lending bank.
- The types of physical collateral accepted by the bank and policies and practices in respect of the appropriate amount of each type of collateral relative to the exposure amount must be clearly documented in internal credit policies and procedures and available for examination and/or audit review.
- Bank credit policies with regard to the transaction structure must address appropriate collateral requirements relative to the exposure amount, the ability to liquidate the collateral readily, the ability to establish objectively a price or market value, the frequency with which the value can readily be obtained (including a professional appraisal or valuation), and the volatility of the value of the collateral. The periodic revaluation process must pay particular attention to "fashion-sensitive" collateral to ensure that valuations are appropriately adjusted downward of fashion, or model-year, obsolescence as well as physical obsolescence or deterioration.
- In cases of inventories (eg raw materials, work-in-process, finished goods, dealers' inventories of autos) and equipment, the periodic revaluation process must include physical inspection of the collateral.

297. General Security Agreements, and other forms of floating charge, can provide the lending bank with a registered claim over a company's assets. In cases where the registered claim includes both assets that are not eligible as collateral under the F-IRB and assets that are eligible as collateral under the F-IRB, the bank may recognise the latter. Recognition is conditional on the claims meeting the operational requirements set out paragraphs 280 to 296.

## 10. Requirements for recognition of leasing

298. Leases other than those that expose the bank to residual value risk (see paragraph 299) will be accorded the same treatment as exposures collateralised by the same type of collateral. The minimum requirements for the collateral type must be met (CRE/RRE or other collateral). In addition, the bank must also meet the following standards:

- Robust risk management on the part of the lessor with respect to the location of the asset, the use to which it is put, its age, and planned obsolescence;
- A robust legal framework establishing the lessor's legal ownership of the asset and its ability to exercise its rights as owner in a timely fashion; and
- The difference between the rate of depreciation of the physical asset and the rate of amortisation of the lease payments must not be so large as to overstate the CRM attributed to the leased assets.

299. Leases that expose the bank to residual value risk will be treated in the following manner. Residual value risk is the bank's exposure to potential loss due to the fair value of the equipment declining below its residual estimate at lease inception.

- The discounted lease payment stream will receive a risk weight appropriate for the lessee's financial strength (PD) and supervisory or own-estimate of LGD, whichever is appropriate.
- The residual value will be risk-weighted at 100%.

## 11. Disclosure requirements

300. In order to be eligible for the IRB approach, banks must meet the disclosure requirements set out in Pillar 3. These are minimum requirements for use of IRB: failure to meet these will render banks ineligible to use the relevant IRB approach.

# Minimum capital requirements for CVA risk

## A. General provisions

1. In the context of this document, CVA stands for credit valuation adjustment specified at a counterparty level. CVA reflects the adjustment of default risk-free prices of derivatives and securities financing transactions (SFTs) as defined in paragraphs 4 and 5 of Annex 4 of the Basel II framework[1] due to a potential default of the counterparty. Regulatory CVA may differ from CVA used for accounting purposes as follows: (i) regulatory CVA excludes the effect of the bank's own default; (ii) several constraints reflecting best practice in accounting CVA are imposed on calculations of regulatory CVA, so some banks may find that regulatory CVA deviates from their accounting CVA. Unless explicitly specified otherwise, the term "CVA" in this document means "regulatory CVA".

2. CVA risk is defined as the risk of losses arising from changing CVA values in response to changes in counterparty credit spreads and market risk factors that drive prices of derivative transactions and SFTs.

3. The capital requirement for CVA risk must be calculated by all banks involved in covered transactions. Covered transactions include all derivatives except those transacted directly with a qualified central counterparty. Furthermore, covered transactions also include SFTs that are fair-valued by a bank for accounting purposes.

4. The CVA risk capital requirement is calculated for a bank's "CVA portfolio" on a standalone basis. The CVA portfolio includes CVA for a bank's entire portfolio of covered transactions and eligible CVA hedges.

5. Two approaches are available for calculating CVA capital: the standardised approach (SA-CVA) and the basic approach (BA-CVA). Banks must use the BA-CVA unless they receive approval from their relevant supervisory authority to use the SA-CVA.[2]

6. Banks that have received approval of their supervisory authority to use the SA-CVA may carve out from the SA-CVA calculations any number of netting sets. CVA capital for all carved out netting sets must be calculated via the BA-CVA.

7. A materiality threshold is established. Any bank whose aggregate notional amount of non-centrally cleared derivatives is less than or equal to 100 billion euro is deemed as being below the materiality threshold. Any bank below the materiality threshold may choose to set its CVA capital equal to 100% of the bank's capital requirement for counterparty credit risk (CCR). CVA hedges are not recognised under this treatment. If chosen, this treatment must be applied to the bank's entire portfolio instead of the BA-CVA or the SA-CVA. A bank's relevant supervisory authority, however, can remove this option if it determines that CVA risk resulting from the bank's derivative positions materially contributes to the bank's overall risk.

8. Eligibility criteria for CVA hedges are specified in paragraphs 15 to 17 for the BA-CVA and in paragraphs 36 to 38 for the SA-CVA.

9. CVA hedging instruments can be external (ie with an external counterparty) or internal (ie with one of the bank's trading desks).

[1] See Basel Committee on Banking Supervision, *Basel II: International Convergence of Capital Measurement and Capital Standards – Comprehensive Version*, June 2006, www.bis.org/publ/bcbs128.htm.

[2] Note that this is in contrast to the revised market risk framework, where banks do not need supervisory approval to use the standardised approach.

- All external CVA hedges (whether eligible or not) that are covered transactions must be included in the CVA calculation for the counterparty to the hedge.
- All eligible external CVA hedges must be excluded from a bank's market risk capital charge calculations in the trading book.
- Non-eligible external CVA hedges are treated as trading book instruments and are capitalised via the revised market risk standard.[3]
- An internal CVA hedge involves two perfectly offsetting positions: one of the CVA desk and the opposite position of the trading desk.
  - If an internal CVA hedge is ineligible, both positions belong to the trading book where they cancel each other, so there is no impact on either CVA portfolio or the trading book.
  - If an internal CVA hedge is eligible, the CVA desk's position is part of the CVA portfolio where it is capitalised via the revised CVA framework, while the trading desk's position is part of the trading book where it is capitalised via the revised market risk standard.
- If an internal CVA hedge involves an instrument that is subject to curvature risk, default risk charge or the residual risk add-on under the standardised approach of the revised market risk standard, it can be eligible only if the trading desk that is the CVA desk's "counterparty" executes a transaction with an external counterparty that exactly offsets the trading desk's position with the CVA desk.

10. Banks that use the BA-CVA or the SA-CVA for calculating CVA capital requirements may cap the maturity adjustment factor at 1 for all netting sets contributing to CVA capital when they calculate CCR capital under the Internal Ratings Based (IRB) approach.

# B. Basic Approach for CVA

## 1. General provisions

11. The BA-CVA calculations may be performed either via the reduced version or the full version. The full version recognises counterparty spread hedges and is intended for banks that hedge CVA risk. The reduced version is obtained from the full version via elimination of hedging recognition. The reduced version is designed to simplify BA-CVA implementation for less sophisticated banks that do not hedge CVA. The reduced BA-CVA is also part of the full BA-CVA capital calculations as a conservative means to restrict hedging efficiency, so all banks using the BA-CVA must make these calculations. Any bank under the BA-CVA approach can choose whether to implement the full version or the reduced version.

## 2. Reduced version of the BA-CVA (hedges are not recognised)

12. The capital requirement for CVA risk under the reduced version of the BA-CVA ($K_{reduced}$) is calculated as follows, where the summations are taken over all counterparties that are within scope of the CVA charge:

$$K_{reduced} = \sqrt{\left(\rho \cdot \sum_c SCVA_c\right)^2 + \left(1-\rho^2\right) \cdot \sum_c SCVA_c^2}$$

[3] Basel Committee on Banking Supervision, *Minimum capital requirements for market risk*, January 2016, www.bis.org/bcbs/publ/d352.pdf.

where:

- $SCVA_c$ is the CVA capital requirement that counterparty $c$ would receive if considered on a stand-alone basis (referred to as "stand-alone CVA capital" below). See paragraph 13 for its calculation.
- $\rho$= 50%. It is the supervisory correlation parameter. Its square, $\rho^2$=25%, represents the correlation between credit spreads of any two counterparties.[4] In the formula above, the effect of $\rho$ is to recognise the fact that the CVA risk to which a bank is exposed is less that the sum of the CVA risk for each counterparty, given that the credit spreads of counterparties are typically not perfectly correlated.

  The first term under the square root in the formula above aggregates the systematic components of CVA risk, and the second term under the square root aggregates the idiosyncratic components of CVA risk.

13. The stand-alone CVA capital for counterparty $c$ that is used in the formula in paragraph 12 ($SCVA_c$) is calculated as follows (where the summation is across all netting sets with the counterparty):

$$SCVA_c = \frac{1}{\alpha} \cdot RW_c \cdot \sum_{NS} M_{NS} \cdot EAD_{NS} \cdot DF_{NS}$$

where:

- $RW_c$ is the risk weight for counterparty $c$ that reflects the volatility of its credit spread. These risk weights are based on a combination of sector and credit quality of the counterparty as prescribed in paragraph 14.
- $M_{NS}$ is the effective maturity for the netting set $NS$. For banks that have supervisory approval to use IMM (internal models method) , $M_{NS}$ is calculated as per paragraphs 38 and 39 of Annex 4 of the Basel II framework, with the exception that the five year cap in paragraph 38 is not applied. For banks that do not have supervisory approval to use IMM, $M_{NS}$ is calculated according to paragraphs 320 to 323 of the Basel II framework, with the exception that the five year cap in paragraph 320 is not applied.
- $EAD_{NS}$ is the exposure at default (EAD) of the netting set $NS$, calculated in the same way as the bank calculates it for minimum capital requirements for CCR.
- $DF_{NS}$ is a supervisory discount factor. It is 1 for banks using the (IMM to calculate EAD, and is $\frac{1-e^{-0.05 \cdot M_{NS}}}{0.05 \cdot M_{NS}}$ for banks not using IMM.[5]
- $\alpha$ = 1.4.[6]

14. The supervisory risk weights ($RW_C$) are given in the tables below. Credit quality is specified as either investment grade (IG), high yield (HY), or not rated (NR). Where there are no external ratings or where external ratings are not recognised within a jurisdiction, banks may, subject to supervisory approval,

[4] One of the basic assumptions underlying the BA-CVA is that systematic credit spread risk is driven by a single factor. Under this assumption, $\rho$ can be interpreted as the correlation between the credit spread of a counterparty and the single credit spread systematic factor.

[5] DF is the supervisory discount factor averaged over time between today and the netting set's effective maturity date. The interest rate used for discounting is set at 5%, hence 0.05 in the formula. The product of EAD and effective maturity in the BA-CVA formula is a proxy for the area under the discounted expected exposure (EE) profile of the netting set. The IMM definition of effective maturity already includes this discount factor, hence DF is set to 1 for IMM banks. Outside IMM, netting set effective maturity is defined as an average of actual trade maturities. This definition lacks discounting, so the supervisory discount factor is added to compensate for this.

[6] $\alpha$ is the multiplier used to convert Effective Expected Positive Exposure (EEPE) to EAD in both SA-CCR and IMM. Its role in the calculation, therefore, is to convert the EAD of the netting set ($EAD_{NS}$) back to EEPE.

map the internal rating to an external rating and assign a risk weight corresponding to either IG or HY. Otherwise, the risk weights corresponding to NR is to be applied.

| Sector of counterparty | Credit quality of counterparty | |
|---|---|---|
| | IG | HY and NR |
| Sovereigns including central banks, multilateral development banks | 0.5% | 3.0% |
| Local government, government-backed non-financials, education and public administration | 1.0% | 4.0% |
| Financials including government-backed financials | 5.0% | 12.0% |
| Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying | 3.0% | 7.0% |
| Consumer goods and services, transportation and storage, administrative and support service activities | 3.0% | 8.5% |
| Technology, telecommunications | 2.0% | 5.5% |
| Health care, utilities, professional and technical activities | 1.5% | 5.0% |
| Other sector | 5.0% | 12.0% |

## 3. Full version of the BA-CVA (hedges are recognised)

### (a) Eligible hedges

15. Only transactions used for the purpose of mitigating the counterparty credit spread component of CVA risk, and managed as such, can be eligible hedges.

16. Only single-name CDS, single-name contingent CDS and index CDS can be eligible CVA hedges.

17. Eligible single-name credit instruments must: (i) reference the counterparty directly; (ii) reference an entity legally related to the counterparty; or (iii) reference an entity that belongs to the same sector and region as the counterparty.

### (b) Calculations

18. Banks that intend to use the full version of BA-CVA must calculate $K_{reduced}$ as well. Under the full version, capital requirement for CVA risk $K_{full}$ is calculated as follows:

$$K_{full} = \beta \cdot K_{reduced} + \left(1 - \beta\right) \cdot K_{hedged}$$

where $\beta$=0.25 and is the supervisory parameter that is used to provide a floor that limits the extent to which hedging can reduce the capital that is required to cover CVA risk.

19. The part of capital requirements that recognises eligible hedges ($K_{hedged}$) is calculated using the following formula, where the summations are taken over all counterparties $c$ that are within scope of the CVA charge:

$$K_{hedged} = \sqrt{\left(\rho \cdot \sum_c (SCVA_c - SNH_c) - IH\right)^2 + \left(1 - \rho^2\right) \sum_c (SCVA_c - SNH_c)^2 + \sum_c HMA_c}$$

where:

- Both the stand-alone CVA capital ($SCVA_C$) and the correlation parameter ($\rho$) are defined in exactly the same way as for the reduced form calculation BA-CVA.

- $SNH_C$ is a parameter that gives recognition to the reduction in CVA risk of the counterparty *c* arising from the bank's use of single-name hedges of credit spread risk. See paragraph 21 for its calculation.
- *IH* is a parameter that gives recognition to the reduction in CVA risk across all counterparties arising from the bank's use of index hedges. See paragraph 22 for its calculation.
- $HMA_C$ is a hedging misalignment parameter, which is designed to limit the extent to which indirect hedges can reduce capital requirements given that they will not fully offset movements in a counterparty's credit spread. That is, with indirect hedges present $K_{hedged}$ cannot reach zero. See paragraph 23 for its calculation.

20. Regarding the main three terms in the formula for $K_{hedged}$ in paragraph 19:

- The first term $\left(\rho \cdot \sum_c (SCVA_c - SNH_c) - IH\right)^2$ aggregates the systematic components of CVA risk arising from the bank's counterparties, the single-name hedges and the index hedges.
- The second term $\left(1-\rho^2\right)\sum_c (SCVA_c - SNH_c)^2$ aggregates the idiosyncratic components of CVA risk arising from the bank's counterparties and the single-name hedges.
- The third term $\sum_c HMA_c$ aggregates the components of indirect hedges that are not aligned with counterparties' credit spreads.

21. The quantity $SNH_c$ is calculated as follows (where the summation is across all single name hedges *h* that the bank has taken out to hedge the CVA risk of counterparty *c*):

$$SNH_c = \sum_{h \in c} r_{hc} \cdot RW_h \cdot M_h^{SN} \cdot B_h^{SN} \cdot DF_h^{SN}$$

where:

- $r_{hc}$ is the supervisory prescribed correlation between the credit spread of counterparty c and the credit spread of a single-name hedge *h* of counterparty *c*. It is set using the table under paragraph 24. It is set at 100% if the hedge directly references the counterparty, and set at lower values if it does not.
- $M_h^{SN}$ is the remaining maturity of single-name hedge *h*.
- $B_h^{SN}$ is the notional of single-name hedge *h*. For single-name contingent CDS, the notional is determined by the current market value of the reference portfolio or instrument.
- $DF_h^{SN}$ is the supervisory discount factor calculated as $\frac{1-e^{-0.05 \cdot M_h^{SN}}}{0.05 \cdot M_h^{SN}}$
- $RW_h$ is the supervisory risk weight of single-name hedge *h* that reflects the volatility of the credit spread of the reference name of the hedging instrument. These risk weights are based on a combination of sector and credit quality of the reference name of the hedging instrument as prescribed in paragraph 14.

22. The quantity *IH* is calculated as follows (where the summation is across all index hedges *i* that the bank has taken out to hedge CVA risk):

$$IH = \sum_i RW_i \cdot M_i^{ind} \cdot B_i^{ind} \cdot DF_i^{ind}$$

where

- $M_i^{ind}$ is the remaining maturity of index hedge *i*.
- $B_i^{ind}$ is the notional of the index hedge *i*.
- $DF_i^{ind}$ is the supervisory discount factor calculated as $\frac{1-e^{-0.05 \cdot M_i^{ind}}}{0.05 \cdot M_i^{ind}}$
- $RW_i$ is the supervisory risk weight of the index hedge *i*. $RW_i$ is taken from the table in paragraph 14 based on the sector and credit quality of the index constituents and adjusted as follows:
  - For indices where all index constituents belong to the same sector and are of the same credit quality, the relevant value in the table in paragraph 14 is multiplied by 0.7 to account for diversification of idiosyncratic risk within the index.
  - For indices spanning multiple sectors or with a mixture of investment grade constituents and other constituents, the name-weighted average of the risk weights from the table in paragraph 14 should be calculated and then multiplied by 0.7.

23. The quantity $HMA_C$ is calculated as follows:

$$HMA_c = \sum_{h \in c} \left(1 - r_{hc}^2\right) \cdot \left(RW_h \cdot M_h^{SN} \cdot B_h^{SN} \cdot DF_h^{SN}\right)^2$$

where the summation is across all single name hedges *h* that have been taken out to hedge the CVA risk of counterparty *c*, and where $r_{hc}$, $M_h^{SN}$, $B_h^{SN}$, $DF_h^{SN}$ and $RW_h$ have the same definitions as set out in paragraph 21.

24. The supervisory prescribed correlations $r_{hc}$ between the credit spread of counterparty *c* and the credit spread of its single-name hedge *h* are set as follows:

| Single-name hedge *h* of counterparty *c* | Value of $r_{hc}$ |
|---|---|
| references counterparty *c* directly | 100% |
| has legal relation with counterparty *c* | 80% |
| shares sector and region with counterparty *c* | 50% |

# C. Standardised approach for CVA

## 1. General provisions

25. The standardised approach for CVA (SA-CVA) is an adaptation of the standardised approach for market risk (SA-TB) under the revised market risk standard. The primary differences of the SA-CVA from the SA-TB are: (i) the SA-CVA features a reduced granularity of market risk factors; (ii) the SA-CVA does not include default risk and curvature risk; (iii) the SA-CVA uses a more conservative risk aggregation; (iv) the SA-CVA uses the conservativeness multiplier $m_{CVA}$.

26. The SA-CVA must be calculated and reported to supervisors at the same monthly frequency as the SA-TB. In addition, banks using the SA-CVA must calculate, and have the ability to produce to their supervisors, SA-CVA calculations on demand.

27. The SA-CVA uses as inputs the sensitivities of regulatory CVA to counterparty credit spreads and market risk factors driving covered transactions' values. Sensitivities must be computed by banks in accordance with the sensitivity validation standards described for the SA-TB in the revised market risk standard.

28. The minimum criteria for the SA-CVA eligibility include the following:

- A bank must be able to model exposure and calculate, on at least a monthly basis, CVA and CVA sensitivities to the market risk factors specified in Section C.6 of this framework.
- A bank must have a CVA desk (or a similar dedicated function) responsible for risk management and hedging of CVA.

## 2. Regulatory CVA calculations

29. Regulatory CVA is the base for the calculation of the CVA risk capital requirement under the SA-CVA. Calculations of regulatory CVA must be performed for each counterparty with which a bank has at least one covered position.

30. Regulatory CVA at a counterparty level must be calculated according to the following principles, with the bank's adherence to the principles to be demonstrated by the bank to its relevant supervisor:

- Regulatory CVA must be calculated as the expectation of future losses resulting from default of the counterparty under the assumption that the bank itself is default risk-free.
- The calculation must be based on at least the following inputs: (i) term structure of market-implied probability of default (PD); (ii) market-consensus expected loss given default (ELGD); (3) simulated paths of discounted future exposure.
- The term structure of market-implied PD must be estimated from credit spreads observed in the markets. For counterparties whose credit is not actively traded (ie illiquid counterparties), the market-implied PD must be estimated from proxy credit spreads estimated for these counterparties according to the following requirements:
  - A bank must estimate the credit spread curves of illiquid counterparties from credit spreads observed in the markets of the counterparty's liquid peers via an algorithm that discriminates on at least three variables: a measure of credit quality (eg rating), industry, and region.
  - In certain cases, mapping an illiquid counterparty to a single liquid reference name can be allowed. A typical example would be mapping a municipality to its home country (ie setting the municipality credit spread equal to the sovereign credit spread plus a premium). A bank must justify to its supervisor every case of mapping to single names.
  - When no credit spreads of any of the counterparty's peers is available due to the counterparty's specific type (eg project finance, funds), a bank is allowed to use a more fundamental analysis of credit risk to proxy the spread of an illiquid counterparty. However, where historical PDs are used as part of this assessment, the resulting spread cannot be based on historical PD only – it must relate to credit markets.
- The market-consensus ELGD value used for regulatory CVA calculation must be the same as the one used to calculate the risk-neutral PD from credit spreads unless the bank can demonstrate that the seniority of the derivative exposure differs from the seniority of senior unsecured bonds. Collateral provided by the counterparty does not change the seniority of the derivative exposure.
- The paths of discounted future exposure are produced via pricing of all derivative transactions with the counterparty on simulated paths of relevant market risk factors and discounting the prices to today using risk-free interest rates along the path.
- All market risk factors material for the transactions with a counterparty must be simulated as stochastic processes for an appropriate number of paths defined on an appropriate set of future time points extending to the maturity of the longest transaction.

- For transactions with a significant level of dependence between exposure and the counterparty's credit quality, this dependence should be taken into account.
- For margined counterparties, collateral is permitted to be recognised as a risk mitigant under the following conditions:
  - Collateral management requirements outlined in paragraph 51(i)–(ii) of Annex 4 of the Basel II framework are satisfied.
  - All documentation used in collateralised transactions must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well-founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability.
- For margined counterparties, the exposure simulation must capture the effects of margining collateral that is recognised as a risk mitigant along each exposure path. All the relevant contractual features such as the nature of the margin agreement (unilateral vs bilateral), the frequency of margin calls, the type of collateral, thresholds, independent amounts, initial margins and minimum transfer amounts must be appropriately captured by the exposure model. To determine collateral available to a bank at a given exposure measurement time point, the exposure model must assume that the counterparty will not post or return any collateral within a certain time period immediately prior to that time point. The assumed value of this time period, known as the margin period of risk (MPoR), cannot be less than a supervisory floor. The supervisory floor is equal to 9 + N business days, where N is the re-margining period specified in the margin agreement (in particular, for margin agreements with daily or intra-daily exchange of margin, the minimum MPoR is 10 business days).

31. The paths of discounted exposure are obtained via exposure models used by a bank for calculating front office/accounting CVA, adjusted (if needed) to meet the requirements imposed for regulatory CVA calculation. Model calibration process (with the exception of the MPoR), market and transaction data used for regulatory CVA calculation must be the same as the ones used for accounting CVA calculation.

32. The generation of market risk factor paths underlying the exposure models must satisfy the following requirements, with the bank's adherence to these requirements to be demonstrated by the bank to its relevant supervisor:

- Drifts of risk factors must be consistent with a risk-neutral probability measure. Historical calibration of drifts is not allowed.
- The volatilities and correlations of market risk factors must be calibrated to market data whenever sufficient data exists in a given market. Otherwise, historical calibration is permissible.
- The distribution of modelled risk factors must account for the possible non-normality of the distribution of exposures, including the existence of leptokurtosis ("fat tails"), where appropriate.

33. Netting recognition is the same as in the accounting CVA calculations. In particular, netting uncertainty can be modelled.

34. The requirements for illiquid positions, which are accounted for at fair value in the revised market risk framework extend to accounting-based CVA calculations. In particular, all components of accounting-based exposure models must be independently validated.

35. The following requirements apply, with the bank's adherence to these requirements to be demonstrated by the bank to its relevant supervisor:

- Exposure models used for calculating regulatory CVA must be part of a CVA risk management framework that includes the identification, measurement, management, approval and internal

reporting of CVA market risk. A bank must have a credible track record in using these exposure models for calculating CVA and CVA sensitivities to market risk factors.

- Senior management should be actively involved in the risk control process and must regard CVA risk control as an essential aspect of the business to which significant resources need to be devoted.
- Banks must have a process in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the exposure system used for accounting CVA calculations.
- Banks must have an independent control unit that is responsible for the effective initial and ongoing validation of the exposure models. This unit must be independent from business credit and trading units (including the CVA desk), must be adequately staffed and must report directly to senior management of the firm.
- Banks must document the process for initial and ongoing validation of their exposure models to a level of detail that would enable a third party to understand how the model operates, its limitations, and its key assumptions; and recreate the analysis. This documentation must set out the minimum frequency with which ongoing validation will be conducted as well as other circumstances (such as a sudden change in market behaviour). In addition, the documentation must describe how the validation is conducted with respect to data flows and portfolios, what analyses are used and how representative counterparty portfolios are constructed.
- The pricing models used to calculate exposure for a given path of market risk factors must be tested against appropriate independent benchmarks for a wide range of market states as part of the initial and ongoing model validation process. Pricing models for options must account for the non-linearity of option value with respect to market risk factors.
- An independent review of the overall CVA risk management process should be carried out regularly in the bank's own internal auditing process. This review should include both the activities of the CVA desk and of the independent risk control unit.
- Banks must define criteria on which to assess the exposure models and their inputs and have a written policy in place to describe the process by which unacceptable performance will be determined and remedied.
- An exposure model must capture transaction-specific information in order to aggregate exposures at the level of the netting set. Banks must verify that transactions are assigned to the appropriate netting set within the model.
- The exposure models must reflect transaction terms and specifications in a timely, complete, and conservative fashion. The terms and specifications must reside in a secure database that is subject to formal and periodic audit. The transmission of transaction terms and specifications data to the exposure model must also be subject to internal audit, and formal reconciliation processes must be in place between the internal model and source data systems to verify on an ongoing basis that transaction terms and specifications are being reflected in the exposure system correctly or at least conservatively.
- The current and historical market data must be acquired independently of the lines of business and be compliant with accounting. They must be fed into the exposure model in a timely and complete fashion, and maintained in a secure database subject to formal and periodic audit. Banks must also have a well-developed data integrity process to handle the data of erroneous and/or anomalous observations. To the extent that the exposure model relies on proxy market data, internal policies must identify suitable proxies and the bank must demonstrate empirically on an ongoing basis that the proxy provides a conservative representation of the underlying risk under adverse market conditions.

## 3. Eligible hedges

36. Only whole transactions[7] that are used for the purpose of mitigating CVA risk, and managed as such, can be eligible hedges.

37. Hedges of both the counterparty credit spread and exposure components of CVA risk can be eligible.

38. Instruments that cannot be included in the Internal Model Approach for market risk under the revised market risk standard (eg tranched credit derivatives) cannot be eligible CVA hedges.

## 4. Multiplier

39. To compensate for a higher level of model risk in calculation of CVA sensitivities in comparison to sensitivities of market value of trading book instruments, the equivalent measure used in the revised market risk standard is scaled up via a multiplier $m_{CVA}$.

40. Multiplier $m_{CVA}$ has a default value of 1.25. However, the default value of the multiplier can be increased by the bank's supervisory authority if it determines that the bank's CVA model risk warrants it (eg the dependence between the bank's exposure to a counterparty and the counterparty's credit quality is not taken into account in its CVA calculations).

## 5. Calculations

41. The SA-CVA capital requirement is calculated as the sum of the capital requirements for delta and vega risks calculated for the entire CVA portfolio (including eligible hedges).

42. The capital requirement for delta risk is calculated as the simple sum of delta capital requirements calculated independently for the following six risk types: (i) interest rate (IR); (ii) foreign exchange (FX); (iii) counterparty credit spreads; (iv) reference credit spreads (ie credit spreads that drive exposure); (v) equity; (vi) commodity.

43. If an instrument is deemed as an eligible hedge for credit spread delta risk, it must be assigned in its entirety (see footnote 7) either to the counterparty credit spread or to the reference credit spread risk type. Instruments cannot be split between the two risk types.

44. The capital requirement for vega risk is calculated as the simple sum of vega capital requirements calculated independently for the following five risk types: (i) interest rates (IR); (ii) foreign exchange (FX); (iii) reference credit spreads; (iv) equity; (v) commodity. There is no vega capital requirement for counterparty credit spread risk.

45. Delta and vega capital requirements are calculated via the same procedure described below in paragraphs 46 to 52.

46. For a given risk type, calculate the sensitivity of the aggregate CVA, $s_k^{CVA}$, and the sensitivity of the market value of all eligible hedging instruments in the CVA portfolio, $s_k^{Hdg}$, to each risk factor $k$ in the risk type. The sensitivities are defined as the ratio of the change of the quantity in question (aggregate CVA or market value of all CVA hedges) caused by a small change of the risk factor current value to the size of the change. More specific definitions are provided for each asset class in Section C.6. These definitions include specific values of risk factor shifts. However, a bank may use smaller values of risk factor shifts if doing so is consistent with internal risk management calculations.

[7] Transactions cannot be split into several effective transactions.

47. When CVA sensitivities for vega risk are calculated, the volatility shift must apply to both types of volatilities that appear in exposure models: (i) volatilities used for generating risk factor paths; and (ii) volatilities used for pricing options. CVA sensitivities for vega risk are always material and must be calculated regardless of whether or not the portfolio includes options.

48. If a hedging instrument is an index, its sensitivities to all risk factors upon which the value of the index depends must be calculated. The index sensitivity to risk factor $k$ must be calculated via applying the shift of risk factor $k$ to all index constituents that depend on this risk factor and recalculating the index. For example, to calculate delta sensitivity of S&P500 to large financial companies, banks must apply the relevant shift to equity prices of all large financial companies that are constituents of S&P500 and re-compute the index.

49. Obtain the weighted sensitivities $WS_k^{CVA}$ and $WS_k^{Hdg}$ for each risk factor $k$ by multiplying the net sensitivities $s_k^{\text{CVA}}$ and $s_k^{\text{Hdg}}$, respectively, by the corresponding risk weight $RW_k$ (the risk weights applicable to each risk type are specified in Section C.6).

$$WS_k^{CVA} = RW_k \cdot s_k^{CVA} \qquad WS_k^{Hdg} = RW_k \cdot s_k^{Hdg}$$

50. The net weighted sensitivity of the CVA portfolio $s_k$ to risk factor $k$ is obtained via:

$$WS_k = WS_k^{CVA} + WS_k^{Hdg}$$

51. Weighted sensitivities must be aggregated into a capital charge $K_b$ within each bucket $b$ (the buckets and correlation parameters $\rho_{kl}$ applicable to each risk type are specified in Section C.6).

$$K_b = \sqrt{\left[\sum_{k\in b} WS_k^2 + \sum_{k\in b}\sum_{l\in b;l\neq k} \rho_{kl}\cdot WS_k \cdot WS_l\right] + R\cdot\sum_{k\in b}\left[(WS_k^{Hdg})^2\right]}$$

where $R$ is the hedging disallowance parameter, set at 0.01, that prevents the possibility of perfect hedging of CVA risk.

52. Bucket-level capital charges must then be aggregated across buckets within each risk type (the correlation parameters $\gamma_{bc}$ applicable to each risk type are specified in Section C.6.

$$K = m_{CVA}\cdot\sqrt{\sum_b K_b^2 + \sum_b\sum_{c\neq b}\gamma_{bc}\cdot K_b\cdot K_c}$$

Note that this equation differs from the corresponding equation in the revised market risk standard by the absence of a residual value and of quantities $S_b$ and the presence of multiplier $m_{\text{CVA}}$.

## 6. Buckets, risk factors, sensitivities, risk weights and correlations[8]

### (a) Interest rates

53. For interest rate delta and vega risks, buckets are individual currencies.

54. For interest rate delta and vega risks, cross-bucket correlation is $\gamma_{bc} = 0.5$ for all currency pairs.

55. Interest rate delta risk factors for a bank's domestic currency and for the following currencies: USD, EUR, GBP, AUD, CAD, SEK or JPY:

[8] The risk weights and correlations match the ones in the SA-TB, except for interest rate cross-tenor correlations that are obtained via the formula underlying interest rate correlations in the SA-CCR (see pages 14-17 of "Foundations of the standardised approach for measuring counterparty credit risk exposures", www.bis.org/publ/bcbs_wp26.pdf). The numbers in the tables are subject to change if calibration of the SA-TB changes.

- Interest rate delta risk factors are the absolute changes of the inflation rate and of the risk-free yields for the following five tenors: 1 year, 2 years, 5 years, 10 years and 30 years.
- Sensitivities to the abovementioned yields are measured by changing the risk-free yield in a given currency by 1 basis point (0.0001 in absolute terms) and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001. Sensitivity to the inflation rate is obtained by changing the inflation rate by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001.
- Risk weights $RW_k$ are given by:

| Risk factor | 1 year | 2 years | 5 years | 10 years | 30 years | Inflation |
|---|---|---|---|---|---|---|
| Risk weight | 1.59% | 1.33% | 1.06% | 1.06% | 1.06% | 1.59% |

- Correlations $\rho_{kl}$ between pairs of risk factors are:

| | **1 year** | **2 years** | **5 years** | **10 years** | **30 years** | **Inflation** |
|---|---|---|---|---|---|---|
| 1 year | 100% | 91% | 72% | 55% | 31% | 40% |
| 2 years | | 100% | 87% | 72% | 45% | 40% |
| 5 years | | | 100% | 91% | 68% | 40% |
| 10 years | | | | 100% | 83% | 40% |
| 30 years | | | | | 100% | 40% |
| Inflation | | | | | | 100% |

56. Interest rate delta risk factors for any currency not specified in paragraph 55:

- Interest rate risk factors are the absolute change of the inflation rate and the parallel shift of the entire risk-free yield curve for a given currency.
- Sensitivity to the yield curve is measured by shifting all risk-free yield curves in a given currency by 1 basis point (0.0001 in absolute terms) and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001. Sensitivity to the inflation rate is obtained by changing the inflation rate by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001.
- Risk weights for both risk-free yield curve and inflation rate are set at $RW_k = 2.25\%$.
- Correlations between risk-free yield curve and inflation rate are set at $\rho_{kl} = 40\%$.

57. Interest rate vega risk factors for any currency:

- Interest rate vega risk factors are a simultaneous relative change of all volatilities for the inflation rate and a simultaneous relative change of all interest rate volatilities for a given currency.
- Sensitivity to the interest rate (or inflation rate) volatilities is measured by simultaneously shifting all interest rate- (or inflation rate-) volatilities by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights for both interest rate and inflation volatilities are set to $RW_k = RW_\sigma \cdot \sqrt{6}$, where $RW_\sigma$ is set at 55%.
- Correlations between interest rate volatilities and inflation volatilities are set at $\rho_{kl} = 40\%$.

### (b) Foreign exchange (FX)

58. For FX delta and vega risks, buckets are individual currencies except for a bank's domestic currency.

59. For FX delta and vega risks, cross-bucket correlation is $\gamma_{bc} = 0.6$ for all currency pairs.

60. FX delta risk factors for any foreign currency:

- The single FX delta risk factor is the relative change of the FX spot rate between a given foreign currency and a bank's domestic currency (ie only foreign-domestic exchange rates are risk factors).
- Sensitivities to the FX spot rate are measured by shifting a given foreign-domestic exchange rate by 1% relative to its current value and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01. All foreign-foreign rates involving the currency of the shifted foreign-domestic rate are shifted accordingly via the representation of the foreign-foreign rate as the ratio of two foreign-domestic rates (for example, if EUR is the domestic currency and USDEUR is shifted, the shifted value of USDGBP is obtained as the ratio of the shifted value of USDEUR to the unshifted value of GBPEUR).
- Risk weights for all foreign-domestic exchange rates are set at $RW_k = 21\%$.

61. FX vega risk factors for any foreign currency:

- The single FX vega risk factor is a simultaneous relative change of all volatilities for a given foreign-domestic exchange rate.
- Sensitivities to the FX volatilities are measured by simultaneously shifting all volatilities for a given foreign-domestic exchange rate by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01. Volatilities of all foreign-foreign exchange rates involving the shifted currency are shifted according to the representation of the foreign-foreign exchange rate volatility via two foreign-domestic exchange rate volatilities and the relevant implied correlation (the latter is assumed to be fixed).
- Risk weights for FX volatilities are set to $RW_k = RW_\sigma \cdot \sqrt{4}$, where $RW_\sigma$ is set at 55%.

### (c) Counterparty credit spread

62. For counterparty credit spread, vega risk is not calculated. Buckets for delta risk are:

| Bucket number | Sector |
|---|---|
| 1 | a) Sovereigns including central banks, multilateral development banks |
| | b) Local government, government-backed non-financials, education and public administration |
| 2 | Financials including government-backed financials |
| 3 | Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying |
| 4 | Consumer goods and services, transportation and storage, administrative and support service activities |
| 5 | Technology, telecommunications |
| 6 | Health care, utilities, professional and technical activities |
| 7 | Other sector |

63. For counterparty credit spread delta risk, cross-bucket correlations $\gamma_{bc}$ are given by

| Bucket | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | 100% | 10% | 20% | 25% | 20% | 15% |
| 2 | | 100% | 5% | 15% | 20% | 5% |
| 3 | | | 100% | 20% | 25% | 5% |
| 4 | | | | 100% | 25% | 5% |
| 5 | | | | | 100% | 5% |
| 6 | | | | | | 100% |

- For cross-bucket correlations $\gamma_{bc}$ applying across bucket 7 and another bucket, $\gamma_{bc}$ = 0%.

64. Counterparty credit spread delta risk factors for a given bucket:

- Counterparty credit spread delta risk factors are absolute shifts of credit spreads of individual entities (counterparties and reference names for counterparty credit spread hedges) at the following tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.
- For a given entity and tenor point, the sensitivities are measured by shifting the relevant credit spread by 1 basis point (0.0001 in absolute terms) and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001.
- Risk weights $RW_k$ are the same for all tenors and depend on the entity's bucket according to:

| Bucket | 1 a) | 1 b) | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| IG names | 0.5% | 1.0% | 5.0% | 3.0% | 3.0% | 2.0% | 1.5% | 5.0% |
| HY and NR names | 3.0% | 4.0% | 12.0% | 7.0% | 8.5% | 5.5% | 5.0% | 12.0% |

  where IG, HY and NR are the shorthand notations for "investment grade", "high yield" and "not rated". This credit quality designation is the same as in the BA-CVA (see paragraph 14).

- Correlations $\rho_{kl}$ between different tenors for the same entity are set to 90%.

For unrelated entities of the same credit quality (IG and IG or HY/NR and HY/NR):

- Correlations $\rho_{kl}$ between the same tenors are set to 50%.
- Correlations $\rho_{kl}$ between different tenors are set to 45%.

For unrelated entities of different credit quality (IG and HY/NR):

- Correlations $\rho_{kl}$ between the same tenors are set to 40%.
- Correlations $\rho_{kl}$ between different tenors are set to 36%.

For entities that are legally related:

- Correlations $\rho_{kl}$ between the same tenors are set to 90%.
- Correlations $\rho_{kl}$ between different tenors are set to 81%.

### (d) Reference credit spread

65. For reference credit spreads, both delta and vega risks are calculated. Buckets for delta and vega risks are as follows (with the IG, HY and NR credit quality designations the same as in paragraph 14 of the BA-CVA):

| Bucket number | Credit quality | Sector |
|---|---|---|
| 1 | Investment grade (IG) | Sovereigns including central banks, multilateral development banks |
| 2 | | Local government, government-backed non-financials, education and public administration |
| 3 | | Financials including government-backed financials |
| 4 | | Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying |
| 5 | | Consumer goods and services, transportation and storage, administrative and support service activities |
| 6 | | Technology, telecommunications |
| 7 | | Health care, utilities, professional and technical activities |
| 8 | High yield (HY) & non-rated (NR) | Sovereigns including central banks, multilateral development banks |
| 9 | | Local government, government-backed non-financials, education and public administration |
| 10 | | Financials including government-backed financials |
| 11 | | Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying |
| 12 | | Consumer goods and services, transportation and storage, administrative and support service activities |
| 13 | | Technology, telecommunications |
| 14 | | Health care, utilities, professional and technical activities |
| 15 | (Not applicable) | Other sector |

66. For reference credit spread delta and vega risks, cross-bucket correlations $\gamma_{bc}$ within the same credit quality category (ie either IG or HY&NR) are given by

| Bucket | 1/8 | 2/9 | 3/10 | 4/11 | 5/12 | 6/13 | 7/14 |
|---|---|---|---|---|---|---|---|
| 1/8 | 100% | 75% | 10% | 20% | 25% | 20% | 15% |
| 2/9 | | 100% | 5% | 15% | 20% | 15% | 10% |
| 3/10 | | | 100% | 5% | 15% | 20% | 5% |
| 4/11 | | | | 100% | 20% | 25% | 5% |
| 5/12 | | | | | 100% | 25% | 5% |
| 6/13 | | | | | | 100% | 5% |
| 7/14 | | | | | | | 100% |

- For cross-bucket correlations $\gamma_{bc}$ applying across IG and HY&NR categories, these correlations are divided by 2.
- For cross-bucket correlations $\gamma_{bc}$ applying across bucket 15 and another bucket, $\gamma_{bc}$ is set to 0%.

67. Reference credit spread delta risk factors for a given bucket:

- The single reference credit spread delta risk factor is a simultaneous absolute shift of credit spreads of all tenors for all reference names in the bucket.
- Sensitivity to reference credit spreads is measured by shifting the credit spreads of all reference names in the bucket by 1 basis point (0.0001 in absolute terms) and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.0001.

- Risk weights $RW_k$ depend on the reference name's bucket according to:

| IG bucket | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Risk weight | 0.5% | 1.0% | 5.0% | 3.0% | 3.0% | 2.0% | 1.5% |

| HY/NR bucket | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|
| Risk weight | 3.0% | 4.0% | 12.0% | 7.0% | 8.5% | 5.5% | 5.0% | 12.0% |

68. Reference credit spread vega risk factors for a given bucket:

- The single reference credit spread vega risk factor is a simultaneous relative shift of the volatilities of credit spreads of all tenors for all reference names in the bucket.
- Sensitivity to volatility of reference credit spread is measured by shifting the volatilities of credit spreads of all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights for reference credit spread volatilities are set to $RW_k = RW_\sigma \cdot \sqrt{12}$, where $RW_\sigma$ is set at 55%.

(e) Equity

69. For equity delta and vega risks, buckets are defined as:

| Bucket number | Size | Region | Sector |
|---|---|---|---|
| 1 | Large | Emerging market economies | Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities |
| 2 | | | Telecommunications, industrials |
| 3 | | | Basic materials, energy, agriculture, manufacturing, mining and quarrying |
| 4 | | | Financials including government-backed financials, real estate activities, technology |
| 5 | | Advanced economies | Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities |
| 6 | | | Telecommunications, industrials |
| 7 | | | Basic materials, energy, agriculture, manufacturing, mining and quarrying |
| 8 | | | Financials including government-backed financials, real estate activities, technology |
| 9 | Small | Emerging market economies | All sectors described under bucket numbers 1, 2, 3, and 4 |
| 10 | | Advanced economies | All sectors described under bucket numbers 5, 6, 7, and 8 |
| 11 | (Not applicable) | | Other sector |

The terminology used in the equity bucket definition should be understood as follows:

- Market capitalisation ("market cap") is defined as the sum of the market capitalisations of the same legal entity or group of legal entities across all stock markets globally.
- "Large market cap" is defined as a market capitalisation equal to or greater than USD 2 billion and "small market cap" is defined as a market capitalisation of less than USD 2 billion.

- The advanced economies are Canada, the United States, Mexico, the euro area, the non-euro area western European countries (the United Kingdom, Norway, Sweden, Denmark and Switzerland), Japan, Oceania (Australia and New Zealand), Singapore and Hong Kong SAR.
- To assign a risk exposure to a sector, banks must rely on a classification that is commonly used in the market for grouping issuers by industry sector. The bank must assign each issuer to one of the sector buckets in the table above and it must assign all issuers from the same industry to the same sector. Risk positions from any issuer that a bank cannot assign to a sector in this fashion must be assigned to the "other sector" (ie bucket 11). For multinational multi-sector equity issuers, the allocation to a particular bucket must be done according to the most material region and sector in which the issuer operates.

70. For equity delta and vega risks, cross-bucket correlation $\gamma_{bc}$ = 15% for all cross-bucket pairs that fall within bucket numbers 1 to 10. $\gamma_{bc}$ = 0% for all cross-bucket pairs that include bucket 11.

71. Equity delta risk factors for a given bucket:

- The single equity delta risk factor is a simultaneous relative shift of equity spot prices for all reference names in the bucket.
- The sensitivities to equity delta risk factors are measured by shifting the equity spot prices for all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights $RW_k$ depend on the reference name's bucket according to the following table:

| Bucket number | Risk weight |
|---|---|
| 1 | 55% |
| 2 | 60% |
| 3 | 45% |
| 4 | 55% |
| 5 | 30% |
| 6 | 35% |
| 7 | 40% |
| 8 | 50% |
| 9 | 70% |
| 10 | 50% |
| 11 | 70% |

72. Equity vega risk factors for a given bucket:

- The single equity vega risk factor is a simultaneous relative shift of the volatilities for all reference names in the bucket.
- The sensitivities to equity vega risk factors are measured by shifting the volatilities for all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights for equity volatilities are set to $RW_k = RW_\sigma \cdot \sqrt{2}$ for large capitalisation buckets and to $RW_k = RW_\sigma \cdot \sqrt{6}$ for small capitalisation buckets, where $RW_\sigma$ is set at 55%.

(f) Commodity

73. For commodity delta and vega risks, buckets are defined as:

| Bucket | Commodity group | Examples |
|---|---|---|
| 1 | Energy – Solid combustibles | coal, charcoal, wood pellets, nuclear fuel (such as uranium) |
| 2 | Energy – Liquid combustibles | crude oil (such as Light-sweet, heavy, WTI and Brent); biofuels (such as bioethanol and biodiesel); petrochemicals (such as propane, ethane, gasoline, methanol and butane); refined fuels (such as jet fuel, kerosene, gasoil, fuel oil, naptha, heating oil and diesel) |
| 3 | Energy – Electricity and carbon trading | electricity (such as spot, day-ahead, peak and off-peak); carbon emissions trading (such as certified emissions reductions, in-delivery month EUA, RGGI CO2 allowance and renewable energy certificates) |
| 4 | Freight | dry-bulk route (such as capesize, panamex, handysize and supramax); liquid-bulk/gas shipping route (such as suezmax, aframax and very large crude carriers) |
| 5 | Metals – non-precious | base metal (such as aluminium, copper, lead, nickel, tin and zinc); steel raw materials (such as steel billet, steel wire, steel coil, steel scrap and steel rebar, iron ore, tungsten, vanadium, titanium and tantalum); minor metals (such as cobalt, manganese, molybdenum) |
| 6 | Gaseous combustibles | natural gas; liquefied natural gas |
| 7 | Precious metals (including gold) | gold; silver; platinum; palladium |
| 8 | Grains & oilseed | corn; wheat; soybean (such as soybean seed, soybean oil and soybean meal); oats; palm oil; canola; barley; rapeseed (such as rapeseed seed, rapeseed oil, and rapeseed meal); red bean, sorghum; coconut oil; olive oil; peanut oil; sunflower oil; rice |
| 9 | Livestock & dairy | cattle (such live and feeder); hog; poultry; lamb; fish; shrimp; dairy (such as milk, whey, eggs, butter and cheese) |
| 10 | Softs and other agriculturals | cocoa; coffee (such as arabica and robusta); tea; citrus and orange juice; potatoes; sugar; cotton; wool; lumber and pulp; rubber |
| 11 | Other commodity | industrial minerals (such as potash, fertiliser and phosphate rocks), rare earths; terephthalic acid; flat glass |

74. For commodity delta and vega risks, cross-bucket correlation $\gamma_{bc}$ = 20% for all cross-bucket pairs that fall within bucket numbers 1 to 10. $\gamma_{bc}$ = 0% for all cross-bucket pairs that include bucket 11.

75. Commodity delta risk factors for a given bucket:

- The single commodity delta risk factor is a simultaneous relative shift of commodity spot prices for all commodities in the bucket.
- The sensitivities to commodity delta risk factors are measured by shifting the spot prices of all commodities in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights $RW_k$ depend on the reference name's bucket according to the following table:

| Bucket | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RW | 30% | 35% | 60% | 80% | 40% | 45% | 20% | 35% | 25% | 35% | 50% |

76. Commodity vega risk factors for a given bucket:

- The single commodity vega risk factor is a simultaneous relative shift of the volatilities for all commodities in the bucket.
- The sensitivities to commodity vega risk factors are measured by shifting the volatilities for all commodities in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 0.01.
- Risk weights for commodity volatilities are set to $RW_k = RW_\sigma \cdot \sqrt{12}$, where $RW_\sigma$ is set at 55%.

# Minimum capital requirements for operational risk

## 1. Introduction

1. Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk,[1] but excludes strategic and reputational risk.

2. The standardised approach for measuring minimum operational risk capital requirements replaces all existing approaches in the Basel II framework.[2] That is, this standard replaces paragraphs 644 to 683 of the Basel II framework.

3. Consistent with Part I (Scope of Application) of the Basel II Framework, the standardised approach applies to internationally active banks on a consolidated basis. Supervisors retain the discretion to apply the standardised approach framework to non-internationally active banks.

## 2. The standardised approach

4. The standardised approach methodology is based on the following components: (i) the Business Indicator (BI) which is a financial-statement-based proxy for operational risk; (ii) the Business Indicator Component (BIC), which is calculated by multiplying the BI by a set of regulatory determined marginal coefficients ($\alpha_i$); and (iii) the Internal Loss Multiplier (ILM), which is a scaling factor that is based on a bank's average historical losses and the BIC.

### The Business Indicator

5. The Business Indicator (BI) comprises three components: the interest, leases and dividend component (ILDC); the services component (SC), and the financial component (FC).

6. The BI is defined as:

$$BI = ILDC + SC + FC$$

In the formula below, a bar above a term indicates that it is calculated as the average over three years: t, t-1 and t-2, and:[3]

$$ILDC = Min\left[\overline{Abs\left(Interest\ Income - Interest\ Expense\right)};\ 2.25\% \cdot \overline{Interest\ Earning\ Assets}\right] + \overline{Dividend\ Income}$$

$$SC = Max\left[\overline{Other\ Operating\ Income}\ ;\ \overline{Other\ Operating\ Expense}\right] + Max\left[\overline{Fee\ Income};\overline{Fee\ Expense}\right]$$

$$FC = \overline{Abs\left(Net\ P\ \&\ L\ Trading\ Book\right)} + \overline{Abs\left(Net\ P\ \&\ L\ Banking\ Book\right)}$$

[1] Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

[2] Basel Committee on Banking Supervision, *Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework – Comprehensive Version*, June 2006, www.bis.org/pub/bcbs128.htm.

[3] The absolute value of net items (eg, interest income – interest expense) should be calculated first year by year. Only after this year by year calculation should the average of the three years be calculated.

7. The definitions for each of the components of the BI are provided in the annex of this section.

## The Business Indicator Component

8. To calculate the BIC, the BI is multiplied by the marginal coefficients ($\alpha_i$). The marginal coefficients increase with the size of the BI as shown in Table 1. For banks in the first bucket (ie with a BI less than or equal to €1bn) the BIC is equal to BI x 12%. The marginal increase in the BIC resulting from a one unit increase in the BI is 12% in bucket 1, 15% in bucket 2 and 18% in bucket 3. For example, given a BI = €35bn, the BIC = (1 x 12%) + (30-1) x 15% + (35-30) x 18% = €5.37bn.

BI ranges and marginal coefficients — Table 1

| Bucket | BI range (in €bn) | BI marginal coefficients ($\alpha_i$) |
|---|---|---|
| 1 | ≤1 | 12% |
| 2 | 1 < BI ≤30 | 15% |
| 3 | > 30 | 18% |

## The Internal Loss Multiplier

9. A bank's internal operational risk loss experience affects the calculation of operational risk capital through the Internal Loss Multiplier (ILM). The ILM is defined as:

$$ILM = Ln\left(\exp(1) - 1 + \left(\frac{LC}{BIC}\right)^{0.8}\right)$$

where the Loss Component (LC) is equal to 15 times average annual operational risk losses incurred over the previous 10 years. The ILM is equal to one where the loss and business indicator components are equal. Where the LC is greater than the BIC, the ILM is greater than one. That is, a bank with losses that are high relative to its BIC is required to hold higher capital due to the incorporation of internal losses into the calculation methodology. Conversely, where the LC is lower than the BIC, the ILM is less than one. That is, a bank with losses that are low relative to its BIC is required to hold lower capital due to the incorporation of internal losses into the calculation methodology.

10. The calculation of average losses in the Loss Component must be based on 10 years of high-quality annual loss data. The qualitative requirements for loss data collection are outlined in paragraphs 19 to 31. As part of the transition to the standardised approach, banks that do not have 10 years of high-quality loss data may use a minimum of five years of data to calculate the Loss Component.[4] Banks that do not have five years of high-quality loss data must calculate the capital requirement based solely on the BI Component. Supervisors may however require a bank to calculate capital requirements using fewer than five years of losses if the ILM is greater than 1 and supervisors believe the losses are representative of the bank's operational risk exposure.

## The standardised approach operational risk capital requirement

11. The operational risk capital requirement is determined by the product of the BIC and the ILM. For banks in bucket 1 (ie with BI ≤ €1 billion), internal loss data does not affect the capital calculation. That is, the ILM is equal to 1, so that operational risk capital is equal to the BIC (=12% · BI).

[4] This treatment is not expected to apply to banks that currently use the advanced measurement approaches for determining operational risk capital requirements.

12. At national discretion, supervisors may allow the inclusion of internal loss data into the framework for banks in bucket 1, subject to meeting the loss data collection requirements specified in paragraphs 19 to 31. In addition, at national discretion, supervisors may set the value of ILM equal to 1 for all banks in their jurisdiction. In case this discretion is exercised, banks would still be subject to the full set of disclosure requirements summarised in paragraph 32.

13. Minimum operational risk capital (ORC) is calculated by multiplying the BIC and the ILM:[5]

$$ORC = BIC \cdot ILM$$

## 3. Application of the standardised approach within a group

14. At the consolidated level, the standardised approach calculations use fully consolidated BI figures, which net all the intragroup income and expenses. The calculations at a sub-consolidated level use BI figures for the banks consolidated at that particular sub-level. The calculations at the subsidiary level use the BI figures from the subsidiary.

15. Similar to bank holding companies, when BI figures for sub-consolidated or subsidiary banks reach bucket 2, these banks are required to use loss experience in the standardised approach calculations. A sub-consolidated bank or a subsidiary bank uses only the losses it has incurred in the standardised approach calculations (and does not include losses incurred by other parts of the bank holding company).

16. In case a subsidiary of a bank belonging to bucket 2 or higher does not meet the qualitative standards for the use of the Loss Component, this subsidiary must calculate the standardised approach capital requirements by applying 100% of the BI Component. In such cases supervisors may require the bank to apply an ILM which is greater than 1.

## 4. Minimum standards for the use of loss data under the standardised approach

17. Banks with a BI greater than €1bn are required to use loss data as a direct input into the operational risk capital calculations. The soundness of data collection and the quality and integrity of the data are crucial to generating capital outcomes aligned with the bank's operational loss exposure. The minimum loss data standards are outlined in paragraphs 19 to 31. National supervisors should review the quality of banks' loss data periodically.

18. Banks which do not meet the loss data standards are required to hold capital that is at a minimum equal to 100% of the BIC. In such cases supervisors may require the bank to apply an ILM which is greater than 1. The exclusion of internal loss data due to non-compliance with the loss data standards, and the application of any resulting multipliers, must be publicly disclosed.

## 5. General criteria on loss data identification, collection and treatment

19. The proper identification, collection and treatment of internal loss data are essential prerequisites to capital calculation under the standardised approach. The general criteria for the use of the LC are as follows:

[5] Risk-weighted assets for operational risk are equal to 12.5 times ORC.

(a) Internally generated loss data calculations used for regulatory capital purposes must be based on a 10-year observation period. When the bank first moves to the standardised approach, a five-year observation period is acceptable on an exceptional basis when good-quality data are unavailable for more than five years.

(b) Internal loss data are most relevant when clearly linked to a bank's current business activities, technological processes and risk management procedures. Therefore, a bank must have documented procedures and processes for the identification, collection and treatment of internal loss data. Such procedures and processes must be subject to validation before the use of the loss data within the operational risk capital requirement measurement methodology, and to regular independent reviews by internal and/or external audit functions.

(c) For risk management purposes, and to assist in supervisory validation and/or review, a supervisor may request a bank to map its historical internal loss data into the relevant Level 1 supervisory categories as defined in Annex 9 of the Basel II Framework and to provide this data to supervisors. The bank must document criteria for allocating losses to the specified event types.

(d) A bank's internal loss data must be comprehensive and capture all material activities and exposures from all appropriate subsystems and geographic locations. The minimum threshold for including a loss event in the data collection and calculation of average annual losses is set at €20,000. At national discretion, for the purpose of the calculation of average annual losses, supervisors may increase the threshold to €100,000 for banks in buckets 2 and 3 (ie where the BI is greater than €1 bn).

(e) Aside from information on gross loss amounts, the bank must collect information about the reference dates of operational risk events, including the date when the event happened or first began ("date of occurrence"), where available; the date on which the bank became aware of the event ("date of discovery"); and the date (or dates) when a loss event results in a loss, reserve or provision against a loss being recognised in the bank's profit and loss (P&L) accounts ("date of accounting"). In addition, the bank must collect information on recoveries of gross loss amounts as well as descriptive information about the drivers or causes of the loss event.[6] The level of detail of any descriptive information should be commensurate with the size of the gross loss amount.

(f) Operational loss events related to credit risk and that are accounted for in credit risk RWAs should not be included in the loss data set. Operational loss events that relate to credit risk, but are not accounted for in credit risk RWAs should be included in the loss data set.

(g) Operational risk losses related to market risk are treated as operational risk for the purposes of calculating minimum regulatory capital under this framework and will therefore be subject to the the standardised approach for operational risk.

(h) Banks must have processes to independently review the comprehensiveness and accuracy of loss data.

[6] Tax effects (eg reductions in corporate income tax liability due to operational losses) are not recoveries for purposes of the standardised approach for operational risk.

# 6. Specific criteria on loss data identification, collection and treatment

## Building of the standardised approach loss data set

20. Building an acceptable loss data set from the available internal data requires that the bank develop policies and procedures to address several features, including gross loss definition, reference date and grouped losses.

## Gross loss, net loss, and recovery definitions

21. Gross loss is a loss before recoveries of any type. Net loss is defined as the loss after taking into account the impact of recoveries. The recovery is an independent occurrence, related to the original loss event, separate in time, in which funds or inflows of economic benefits are received from a third party.[7]

22. Banks must be able to identify the gross loss amounts, non-insurance recoveries, and insurance recoveries for all operational loss events. Banks should use losses net of recoveries (including insurance recoveries) in the loss dataset. However, recoveries can be used to reduce losses only after the bank receives payment. Receivables do not count as recoveries. Verification of payments received to net losses must be provided to supervisors upon request.

23. The following items must be included in the gross loss computation of the loss data set:

(a) Direct charges, including impairments and settlements, to the bank's P&L accounts and write-downs due to the operational risk event;

(b) Costs incurred as a consequence of the event including external expenses with a direct link to the operational risk event (eg legal expenses directly related to the event and fees paid to advisors, attorneys or suppliers) and costs of repair or replacement, incurred to restore the position that was prevailing before the operational risk event;

(c) Provisions or reserves accounted for in the P&L against the potential operational loss impact;

(d) Losses stemming from operational risk events with a definitive financial impact, which are temporarily booked in transitory and/or suspense accounts and are not yet reflected in the P&L ("pending losses").[8] Material pending losses should be included in the loss data set within a time period commensurate with the size and age of the pending item; and

(e) Negative economic impacts booked in a financial accounting period, due to operational risk events impacting the cash flows or financial statements of previous financial accounting periods (timing losses").[9] Material "timing losses" should be included in the loss data set when they are due to operational risk events that span more than one financial accounting period and give rise to legal risk.

[7] Examples of recoveries are payments received from insurers, repayments received from perpetrators of fraud, and recoveries of misdirected transfers.

[8] For instance, in some countries, the impact of some events (eg legal events, damage to physical assets) may be known and clearly identifiable before these events are recognised through the establishment of a reserve. Moreover, the way this reserve is established (eg the date of discovery) can vary across banks or countries.

[9] Timing impacts typically relate to the occurrence of operational risk events that result in the temporary distortion of an institution's financial accounts (eg revenue overstatement, accounting errors and mark-to-market errors). While these events do not represent a true financial impact on the institution (net impact over time is zero), if the error continues across more than one financial accounting period, it may represent a material misrepresentation of the institution's financial statements.

24. The following items should be excluded from the gross loss computation of the loss data set:

(a) Costs of general maintenance contracts on property, plant or equipment;

(b) Internal or external expenditures to enhance the business after the operational risk losses: upgrades, improvements, risk assessment initiatives and enhancements; and

(c) Insurance premiums.

25. Banks must use the date of accounting for building the loss data set. The bank must use a date no later than the date of accounting for including losses related to legal events in the loss data set. For legal loss events, the date of accounting is the date when a legal reserve is established for the probable estimated loss in the P&L.

26. Losses caused by a common operational risk event or by related operational risk events over time, but posted to the accounts over several years, should be allocated to the corresponding years of the loss database, in line with their accounting treatment.

## 7. Exclusion of losses from the Loss Component

27. Banking organisations may request supervisory approval to exclude certain operational loss events that are no longer relevant to the banking organisation's risk profile. The exclusion of internal loss events should be rare and supported by strong justification. In evaluating the relevance of operational loss events to the bank's risk profile, supervisors will consider whether the cause of the loss event could occur in other areas of the bank's operations. Taking settled legal exposures and divested businesses as examples, supervisors expect the organisation's analysis to demonstrate that there is no similar or residual legal exposure and that the excluded loss experience has no relevance to other continuing activities or products.

28. The total loss amount and number of exclusions must be disclosed under Pillar 3 with appropriate narratives, including total loss amount and number of exclusions.

29. A request for loss exclusions is subject to a materiality threshold to be set by the supervisor (for example, the excluded loss event should be greater than 5% of the bank's average losses). In addition, losses can only be excluded after being included in a bank's operational risk loss database for a minimum period (for example, three years), to be specified by the supervisor. Losses related to divested activities will not be subject to a minimum operational risk loss database retention period.

## 8. Exclusions of divested activities from the Business Indicator

30. Banking organisations may request supervisory approval to exclude divested activities from the calculation of the BI. Such exclusions must be disclosed under Pillar 3.

## 9. Inclusion of losses and BI items related to mergers and acquisitions

31. Losses and the measurement of the BI must include losses and BI items that result from acquisitions of relevant business and mergers.

## 10. Disclosure

32. All banks with a BI greater than €1bn, or which use internal loss data in the calculation of operational risk capital, are required to disclose their annual loss data for each of the ten years in the ILM calculation window. This includes banks in jurisdictions that have opted to set ILM equal to one. Loss data is required to be reported on both a gross basis and after recoveries and loss exclusions. All banks are required to disclose each of the BI sub-items for each of the three years of the BI component calculation window.[10]

## Annex: Definition of Business Indicator components

Business Indicator definitions

| BI Component | P&L or balance sheet items | Description | Typical sub-items |
|---|---|---|---|
| Interest, lease and dividend | Interest income | Interest income from all financial assets and other interest income (includes interest income from financial and operating leases and profits from leased assets) | • Interest income from loans and advances, assets available for sale, assets held to maturity, trading assets, financial leases and operational leases<br>• Interest income from hedge accounting derivatives<br>• Other interest income<br>• Profits from leased assets |
| | Interest expenses | Interest expenses from all financial liabilities and other interest expenses (includes interest expense from financial and operating leases, losses, depreciation and impairment of operating leased assets) | • Interest expenses from deposits, debt securities issued, financial leases, and operating leases<br>• Interest expenses from hedge accounting derivatives<br>• Other interest expenses<br>• Losses from leased assets<br>• Depreciation and impairment of operating leased assets |
| | Interest earning assets (balance sheet item) | Total gross outstanding loans, advances, interest bearing securities (including government bonds), and lease assets measured at the end of each financial year | |
| | Dividend income | Dividend income from investments in stocks and funds not consolidated in the bank's financial statements, including dividend income from non-consolidated subsidiaries, associates and joint ventures. | |
| Services | Fee and commission income | Income received from providing advice and services. Includes income received by the bank as an outsourcer of financial services. | Fee and commission income from:<br>• Securities (issuance, origination, reception, transmission, execution of orders on behalf of customers)<br>• Clearing and settlement; Asset management; Custody; Fiduciary transactions; Payment services; Structured finance; Servicing of securitisations; Loan commitments |

[10] The Committee will undertake a separate public consultation on the operational risk disclosure templates.

| | | | |
|---|---|---|---|
| | | | and guarantees given; and foreign transactions |
| | Fee and commission expenses | Expenses paid for receiving advice and services. Includes outsourcing fees paid by the bank for the supply of financial services, but not outsourcing fees paid for the supply of non-financial services (eg logistical, IT, human resources) | Fee and commission expenses from:<br>• Clearing and settlement; Custody; Servicing of securitisations; Loan commitments and guarantees received; and Foreign transactions |
| | Other operating income | Income from ordinary banking operations not included in other BI items but of similar nature<br>(income from operating leases should be excluded) | • Rental income from investment properties<br>• Gains from non-current assets and disposal groups classified as held for sale not qualifying as discontinued operations (IFRS 5.37) |
| | Other operating expenses | Expenses and losses from ordinary banking operations not included in other BI items but of similar nature and from operational loss events (expenses from operating leases should be excluded) | • Losses from non-current assets and disposal groups classified as held for sale not qualifying as discontinued operations (IFRS 5.37)<br>• Losses incurred as a consequence of operational loss events (eg fines, penalties, settlements, replacement cost of damaged assets), which have not been provisioned/reserved for in previous years<br>• Expenses related to establishing provisions/reserves for operational loss events |
| Financial | Net profit (loss) on the trading book | • Net profit/loss on trading assets and trading liabilities (derivatives, debt securities, equity securities, loans and advances, short positions, other assets and liabilities)<br>• Net profit/loss from hedge accounting<br>• Net profit/loss from exchange differences | |
| | Net profit (loss) on the banking book | • Net profit/loss on financial assets and liabilities measured at fair value through profit and loss<br>• Realised gains/losses on financial assets and liabilities not measured at fair value through profit and loss (loans and advances, assets available for sale, assets held to maturity, financial liabilities measured at amortised cost)<br>• Net profit/loss from hedge accounting<br>• Net profit/loss from exchange differences | |

The following P&L items do not contribute to any of the items of the BI:

- Income and expenses from insurance or reinsurance businesses
- Premiums paid and reimbursements/payments received from insurance or reinsurance policies purchased
- Administrative expenses, including staff expenses, outsourcing fees paid for the supply of non-financial services (eg logistical, IT, human resources), and other administrative expenses (eg IT, utilities, telephone, travel, office supplies, postage)
- Recovery of administrative expenses including recovery of payments on behalf of customers (eg taxes debited to customers)
- Expenses of premises and fixed assets (except when these expenses result from operational loss events)

- Depreciation/amortisation of tangible and intangible assets (except depreciation related to operating lease assets, which should be included in financial and operating lease expenses)
- Provisions/reversal of provisions (eg on pensions, commitments and guarantees given) except for provisions related to operational loss events
- Expenses due to share capital repayable on demand
- Impairment/reversal of impairment (eg on financial assets, non-financial assets, investments in subsidiaries, joint ventures and associates)
- Changes in goodwill recognised in profit or loss
- Corporate income tax (tax based on profits including current tax and deferred).

# Output floor

## Introduction

1. To reduce excessive variability of risk-weighted assets and to enhance the comparability of risk-weighted capital ratios, banks will be subject to a floor requirement that is applied to risk-weighted assets. The output floor will ensure that banks' capital requirements do not fall below a certain percentage of capital requirements derived under standardised approaches.

## Output floor requirements

2. As set out in the Basel III framework, banks must meet the following capital requirements:

- Common Equity Tier 1 must be at least 4.5% of risk-weighted assets at all times.
- Tier 1 capital must be at least 6.0% of risk-weighted assets at all times.
- Total Capital (Tier 1 capital and Tier 2 capital) must be at least 8.0% of risk-weighted assets at all times.[1]

3. In addition, a Common Equity Tier 1 capital conservation buffer is set at 2.5% of risk-weighted assets for all banks.[2] Banks may also be subject to a countercyclical capital buffer requirement. Banks identified as global systemically-important banks (G-SIBs) are also subject to additional higher-loss absorbency requirements and total loss-absorbing capacity requirements.[3]

4. The risk-weighted assets that banks must use to determine compliance with the requirements set out in paragraphs 2 to 3 above must be calculated as the maximum of: (i) the total risk-weighted assets calculated using the approaches that the bank has supervisory approval to use in accordance with the Basel capital framework (including both standardised and internally-modelled based approaches); and (ii) 72.5% of the total risk weighted assets, calculated using only the standardised approaches listed in paragraph 6. The latter element of this requirement is referred to as the output floor.

5. In light of the forthcoming accounting revisions for expected credit loss, the Committee will review the consistency in the treatment of provisions for the purpose of calculating the output floor.

## Calculation of the output floor

6. The standardised approaches to be used when calculating the output floor described in paragraph 4 are as follows:

- Credit risk: the standardised approach for credit risk.[4] When calculating the degree of credit risk mitigation, banks must use the carrying value when applying the simple approach or the

[1] The Basel III framework is available at www.bis.org/publ/bcbs189.pdf.

[2] As set out in the Basel III framework, available at www.bis.org/publ/bcbs189.pdf.

[3] As set out in the FSB TLAC term sheet, available at www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf.

[4] As set out in the revised standardised approach for credit risk described in this document.

comprehensive approach with standard supervisory haircuts. This also includes failed trades and non-delivery-versus-payment transactions as set out in Annex 3 of the Basel II framework (June 2006).

- Counterparty credit risk: to calculate the exposure for derivatives, banks must use the standardised approach for measuring counterparty credit risk (SA-CCR). The exposure amounts must then be multiplied by the relevant borrower risk weight using the standardised approach for credit risk to calculate RWA under the standardised approach for credit risk.
- Credit valuation adjustment risk: the standardised approach for CVA (SA-CVA), the Basic Approach (BA-CVA) or 100% of a bank's counterparty credit risk capital requirement (depending on which approach the bank uses for CVA risk).[5]
- Securitisation framework: the external ratings-based approach (SEC-ERBA), the standardised approach (SEC-SA) or a risk-weight of 1250%[6]
- Market risk: the standardised approach for market risk. The SEC-ERBA, SEC-SA or a risk-weight of 1250% must also be used when determining the default risk charge component for securitisations held in the trading book.[7]
- Operational risk: the standardised approach for operational risk.[8]

7. The table below provides a simple example of how the capital floor must be calculated.

| | Pre-floor RWAs | Standardised RWAs | 72.5% of standardised RWAs |
|---|---|---|---|
| Credit risk | 62 | 124 | 89.9 |
| - of which Asset Class A | 45 | 80 | 58 |
| - of which Asset Class B | 5 | 32 | 23.2 |
| - of which Asset Class C (not modelled) | 12 | 12 | 8.7 |
| Market risk | 2 | 4 | 2.9 |
| Operational risk (not modelled) | 12 | 12 | 8.7 |
| **Total RWA** | 76 | 140 | 101.5 |

As the floored RWAs (101.5) are higher than the pre-floor RWAs (76) in this example, the bank would use the former to determine the capital requirements set out in paragraphs 2 to 4.

## Disclosure requirements

8. Banks must disclose two sets of risk-weighted capital ratios: (i) ratios that exclude the capital floor in the calculation of risk-weighted assets; and (ii) ratios that include the capital floor in the calculation of risk-weighted assets. In addition, banks must disclose more granular information related to the calculation of their risk-weighted assets under internally-modelled and standardised approaches, which will be set out in forthcoming disclosure templates as part of the Committee's Pillar 3 disclosure framework.

[5] As set out in the revised credit valuation adjustment framework in this document.

[6] As set out in the securitisation framework, available at www.bis.org/bcbs/publ/d374.pdf.

[7] As set out in the revised market risk framework, available at www.bis.org/bcbs/publ/d352.pdf.

[8] As set out in the revised operational risk framework in this document.

## Implementation date and transitional measures

9. The output floor will be implemented as of 1 January 2022 , based on the following calibration phase-in arrangement:

| Date | Output floor calibration |
|---|---|
| 1 Jan 2022 | 50% |
| 1 Jan 2023 | 55% |
| 1 Jan 2024 | 60% |
| 1 Jan 2025 | 65% |
| 1 Jan 2026 | 70% |
| 1 Jan 2027 | 72.5% |

10. During the phase-in period, supervisors may exercise national discretion to cap the incremental increase in a bank's total RWAs that results from the application of the floor. This transitional cap will be set at 25% of a bank's RWAs before the application of the floor. In the example shown in paragraph 7, the application of this national discretion by the supervisor would cap the bank's RWAs to 95 (ie a 25% increase of its pre-floor RWAs of 76).

# Leverage ratio

## Introduction

1. An underlying cause of the global financial crisis was the build-up of excessive on- and off-balance sheet leverage in the banking system. In many cases, banks built up excessive leverage while reporting strong risk-based capital ratios. At the height of the crisis, financial markets forced the banking sector to reduce its leverage in a manner that amplified downward pressures on asset prices. This deleveraging process exacerbated the feedback loop between losses, falling bank capital and contracting credit availability.

2. The Basel III framework introduced a simple, transparent, non-risk-based leverage ratio to act as a credible supplementary measure to the risk-based capital requirements.[1] The leverage ratio is intended to:

- restrict the build-up of leverage in the banking sector to avoid destabilising deleveraging processes that can damage the broader financial system and the economy; and
- reinforce the risk-based requirements with a simple, non-risk-based "backstop" measure.

3. The Committee is of the view that a simple leverage ratio framework is critical and complementary to the risk-based capital framework, and that the leverage ratio should adequately capture both the on- and off-balance sheet sources of banks' leverage.

## Definition and requirements

4. The leverage ratio is defined as the capital measure (the numerator) divided by the exposure measure (the denominator), with this ratio expressed as a percentage:

$$\text{Leverage ratio} = \frac{\text{Capital measure}}{\text{Exposure measure}}$$

5. The capital measure for the leverage ratio is Tier 1 capital – comprising Common Equity Tier 1 and/or Additional Tier 1 instruments – as defined in paragraphs 49 to 96 of the Basel III framework. In other words, the capital measure used for the leverage ratio at any particular point in time is the Tier 1 capital measure applicable at that time under the risk-based framework. The exposure measure for the leverage ratio is defined in paragraphs 20 to 59 of this section.

6. Both the capital measure and the exposure measure are to be calculated on a quarter-end basis. However, banks may, subject to supervisory approval, use more frequent calculations (eg daily or monthly averaging) as long as they do so consistently.

7. Banks must meet a 3% leverage ratio minimum requirement at all times.

8. In addition, to maintain the relative roles of the risk-weighted and leverage ratio requirements, banks identified as global systemically-important banks (G-SIBs) according the G-SIB standard must also meet a leverage ratio buffer requirement.[2] Consistent with the capital measure required to meet the

[1] Basel Committee on Banking Supervision, *Basel III: A global regulatory framework for more resilient banks and banking systems*, June 2011, www.bis.org/publ/bcbs189.pdf.

[2] See Basel Committee on Banking Supervision, *Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement*, July 2013, www.bis.org/publ/bcbs255.pdf.

leverage ratio minimum described in paragraph 5, G-SIBs must meet the leverage ratio buffer with Tier 1 capital.

9. The leverage ratio buffer will be set at 50% of a G-SIB's higher-loss absorbency risk-weighted requirements. For example, a G-SIB subject to a 2% higher-loss absorbency requirement would be subject to a 1% leverage ratio buffer requirement.

10. The design of the leverage ratio buffer is akin to the capital buffers in the risk-weighted framework. As such, the leverage ratio buffer will include minimum capital conservation ratios divided in five ranges. Capital distribution constraints will be imposed on a G-SIB which does not meet its leverage ratio buffer requirement.

11. The capital distribution constraints imposed on G-SIBs will depend on the G-SIB's CET1 risk-weighted ratio and its leverage ratio. A G-SIB which meets both its CET1 risk-weighted requirements (defined as a 4.5% minimum requirement, a 2.5% capital conservation buffer, the G-SIB higher loss-absorbency requirement and countercyclical capital buffer if applicable) and its Tier 1 leverage ratio requirement (defined as a 3% leverage ratio minimum requirement and the G-SIB leverage ratio buffer) will not be subject to minimum capital conservation standards. A G-SIB which does not meet one of these requirements will be subject to the associated minimum capital conservation standards. A G-SIB which does not meet both requirements will be subject to the higher minimum capital conservation standard related to its risk-weighted capital requirement or leverage ratio.

12. As an example, the table below shows the minimum capital conservation standards for the CET1 risk-weighted requirements and Tier 1 leverage ratio requirements of a G-SIB in the first bucket of the higher loss-absorbency requirements (ie where a 1% risk-weighted G-SIB capital buffer applies).

| CET1 risk-weighted ratio | Tier 1 leverage ratio | Minimum capital conservation ratios (expressed as a percentage of earnings) |
|---|---|---|
| 4.5%–5.375% | 3%–3.125% | 100% |
| > 5.375%–6.25% | > 3.125%–3.25% | 80% |
| > 6.25%–7.125% | > 3.25%–3.375% | 60% |
| > 7.125%–8% | > 3.375%–3.50% | 40% |
| > 8.0% | > 3.50% | 0% |

## Implementation and monitoring

13. The implementation timeline for the leverage ratio requirement is as follows:

- 1 January 2018: Implementation of Pillar 1 minimum requirement per the January 2014 version of the standard[3] (in addition to ongoing Pillar 3 disclosure per the same version of the standard).[4]
- 1 January 2022: Implementation of Pillar 1 minimum requirement (in addition to any applicable G-SIB buffer requirement) and associated Pillar 3 disclosure requirements[5] per the revised version of the standard described in this section.

14. The leverage ratio buffer requirement on 1 January 2022 shall be based on the Financial Stability Board's 2020 list of G-SIBs (based on end-2019 data). For banks that are subsequently identified as G-SIBs or which are no longer identified as G-SIBs, the same transitional arrangements will apply as in the higher-loss absorbency requirement framework

15. The leverage ratio buffer requirement will be updated annually to reflect the annual updated list of G-SIB requirements. G-SIBs subject to a revised higher-loss absorbency requirement would also be subject to a revised leverage ratio buffer requirement, calibrated at 50% of the former requirement. Both requirements would follow the same implementation arrangements. Jurisdictions may impose a higher leverage ratio buffer requirement.

16. The Committee will continue to monitor the impact of the leverage ratio framework by means of the Basel III monitoring Quantitative Impact Study (QIS) exercise. The focus of the Committee's monitoring will include assessments of any impact the standard might have on banks' business activities and financial markets in general, including reviewing any impact on SFT markets and market liquidity.

17. In addition, the Committee will continue to monitor the impact of the leverage ratio's treatment of client cleared derivative transactions and, within two years after this publication of this document, conclude a review of the impact of the leverage ratio on banks' provision of clearing services and any consequent impact on the resilience of central counterparty clearing.

## Scope of consolidation

18. The leverage ratio framework follows the same scope of regulatory consolidation, including consolidation criteria, as is used for the risk-based capital framework.[6] This is set out in Part I (Scope of Application) of the Basel II framework (June 2006).

19. *Treatment of investments in the capital of banking, financial, insurance and commercial entities that are outside the regulatory scope of consolidation*: where a banking, financial, insurance or commercial entity is outside the scope of regulatory consolidation, only the investment in the capital of such entities (ie only the carrying value of the investment, as opposed to the underlying assets and other exposures of the investee) is to be included in the leverage ratio exposure measure. However, investments in the capital of such entities that are deducted from Tier 1 capital as set out in paragraph 22 may be excluded from the leverage ratio exposure measure.

[3] Basel Committee on Banking Supervision, *Basel III leverage ratio framework and disclosure requirements*, January 2014, www.bis.org/publ/bcbs270.pdf.

[4] The leverage ratio disclosure requirements were implemented on 1 January 2015. Pillar 3 disclosure requirements for the January 2014 version of the leverage ratio framework were consolidated into a consultative document on Pillar 3 requirements published in March 2016. See Basel Committee on Banking Supervision, *Consultative Document – Pillar 3 disclosure requirements – consolidated and enhanced framework*; March 2016, www.bis.org/bcbs/publ/d356.pdf.

[5] The Committee will propose revisions to disclosure requirements to address the revised version of the leverage ratio framework in a forthcoming phase of the Pillar 3 review process.

[6] For example, if proportional consolidation is applied for regulatory consolidation under the risk-based framework, the same criteria shall be applied for leverage ratio purposes.

## Exposure measure

20. The leverage ratio exposure measure generally follows gross accounting values.

21. Unless specified differently below, banks must not take account of physical or financial collateral, guarantees or other credit risk mitigation techniques to reduce the leverage ratio exposure measure, nor may banks net assets and liabilities.

22. To ensure consistency, any item deducted from Tier 1 capital according to the Basel III framework and regulatory adjustments other than those related to liabilities may be deducted from the leverage ratio exposure measure. Three examples follow:

- where a banking, financial or insurance entity is not included in the regulatory scope of consolidation as set out in paragraph 18, the amount of any investment in the capital of that entity that is totally or partially deducted from Common Equity Tier 1 (CET1) capital or from Additional Tier 1 capital of the bank following the corresponding deduction approach in paragraphs 84 to 89 of the Basel III framework may also be deducted from the leverage ratio exposure measure;
- for banks using the internal ratings-based (IRB) approach to determining capital requirements for credit risk, paragraph 73 of the Basel III framework requires any shortfall in the stock of eligible provisions relative to expected loss amounts to be deducted from CET1 capital. The same amount may be deducted from the leverage ratio exposure measure; and
- prudent valuation adjustments (PVAs) for exposures to less liquid positions, other than those related to liabilities, that are deducted from Tier 1 capital as per paragraph 718 (cxii) of the Basel II framework as amended by the standard *Minimum capital requirements for market risk*[7] (hereafter "market risk framework") may be deducted from the leverage ratio exposure measure.

23. Liability items must not be deducted from the leverage ratio exposure measure. For example, gains/losses on fair valued liabilities or accounting value adjustments on derivative liabilities due to changes in the bank's own credit risk as described in paragraph 75 of the Basel III framework must not be deducted from the leverage ratio exposure measure.

24. With regard to traditional securitisations, an originating bank may exclude securitised exposures from its leverage ratio exposure measure if the securitisation meets the operational requirements for the recognition of risk transference according to paragraph 24 of the standard *Revisions to the securitisation framework*.[8] Banks meeting these conditions must include any retained securitisation exposures in their leverage ratio exposure measure. In all other cases, eg traditional securitisations that do not meet the operational requirements for the recognition of risk transference or synthetic securitisations, the securitised exposures must be included in the leverage ratio exposure measure.[9]

25. Banks and supervisors should be particularly vigilant to transactions and structures that have the result of inadequately capturing banks' sources of leverage. Examples of concerns that might arise in such leverage ratio exposure measure minimising transactions and structures may include: securities financing transactions where exposure to the counterparty increases as the counterparty's credit quality decreases or securities financing transactions in which the credit quality of the counterparty is positively correlated

[7] Basel Committee on Banking Supervision, *Minimum capital requirements for market risk*, January 2016, www.bis.org/bcbs/publ/d352.pdf.

[8] Basel Committee on Banking Supervision, *Revisions to the securitisation framework*, December 2014 (rev. July 2016), www.bis.org/bcbs/publ/d374.pdf.

[9] The Committee confirms the treatment specified in paragraph 24 as an interpretation of the January 2014 version of the leverage ratio standard. Therefore, the treatment may also be applied in the January 2014 version of the leverage ratio standard while that version serves as the Pillar 1 minimum requirement.

with the value of the securities received in the transaction (ie the credit quality of the counterparty falls when the value of the securities falls); banks that normally act as principal but adopt an agency model to transact in derivatives and SFTs in order to benefit from the more favourable treatment permitted for agency transactions under the leverage ratio framework; collateral swap trades structured to mitigate inclusion in the leverage ratio exposure measure; or use of structures to move assets off the balance sheet. This list of examples is by no means exhaustive. Where supervisors are concerned that such transactions are not adequately captured in the leverage ratio exposure measure or may lead to a potentially destabilising deleveraging process, they should carefully scrutinise these transactions and consider a range of actions to address such concerns. Supervisory actions may include requiring enhancements in banks' management of leverage, imposing operational requirements (eg additional reporting to supervisors) and/or requiring that the relevant exposure is adequately capitalised through a Pillar 2 capital charge. These examples of supervisory actions are merely indicative and by no means exhaustive.

26. At national discretion, and to facilitate the implementation of monetary policies, a jurisdiction may temporarily exempt central bank reserves from the leverage ratio exposure measure in exceptional macroeconomic circumstances. To maintain the same level of resilience provided by the leverage ratio, a jurisdiction applying this discretion must also increase the calibration of the minimum leverage ratio requirement commensurately to offset the impact of exempting central bank reserves. In addition, in order to maintain the comparability and transparency of the Basel III leverage ratio framework, banks will be required to disclose the impact of any temporary exemption alongside ongoing public disclosure of the leverage ratio without application of such exemption.[10]

27. A bank's total leverage ratio exposure measure is the sum of the following exposures: (a) on-balance sheet exposures (excluding on-balance sheet derivative and securities financing transaction exposures); (b) derivative exposures; (c) securities financing transaction (SFT) exposures; and (d) off-balance sheet (OBS) items. The specific treatments for these four main exposure types are defined below.

### (a) On-balance sheet exposures

28. Banks must include all balance sheet assets in their leverage ratio exposure measure, including on-balance sheet derivatives collateral and collateral for SFTs, with the exception of on-balance sheet derivative and SFT assets that are covered in paragraphs 32 to 56 below.[11]

29. On-balance sheet, non-derivative assets are included in the leverage ratio exposure measure at their accounting values less deductions for associated specific provisions. In addition, general provisions or general loan loss reserves as defined in paragraph 60 of the Basel III framework which have reduced Tier 1 capital may be deducted from the leverage ratio exposure measure.[12]

30. The accounting for regular-way purchases or sales[13] of financial assets that have not been settled (hereafter "unsettled trades") differs across and within accounting frameworks, with the result that those unsettled trades can be accounted for either on the trade date (*trade date accounting*) or on the settlement

[10] The treatment specified in paragraph 26 may also be applied in the January 2014 version of the leverage ratio standard while that version serves as the Pillar 1 minimum requirement.

[11] Where a bank according to its operative accounting framework recognises fiduciary assets on the balance sheet, these assets can be excluded from the leverage ratio exposure measure provided that the assets meet the IFRS 9 criteria for derecognition and, where applicable, IFRS 10 for deconsolidation.

[12] Although paragraph 60 of the Basel III framework specifies the treatment of general provisions/general loan-loss reserves for banks using the standardised approach for credit risk, for the purposes of the leverage ratio exposure measure the definition of general provisions/general loan-loss reserves specified in paragraph 60 of the Basel III framework applies to all banks regardless of whether they use the standardised approach or the internal ratings-based (IRB) approach for credit risk for their risk-based capital calculations.

[13] For the purposes of this treatment, "regular-way purchases or sales" are purchases or sales of financial assets under contracts for which the terms require delivery of the assets within the time frame established generally by regulation or convention in the marketplace concerned.

date (*settlement date accounting*). For the purpose of the leverage ratio exposure measure, banks using trade date accounting must reverse out any offsetting between cash receivables for unsettled sales and cash payables for unsettled purchases of financial assets that may be recognised under the applicable accounting framework, but may offset between those cash receivables and cash payables (regardless of whether such offsetting is recognised under the applicable accounting framework) if the following conditions are met:

- the financial assets bought and sold that are associated with cash payables and receivables are fair valued through income and included in the bank's regulatory trading book as specified by paragraphs 8 to 20 of the market risk framework; and
- the transactions of the financial assets are settled on a delivery-versus-payment (DVP) basis.

Banks using settlement date accounting will be subject to the treatment set out in paragraphs 57 to 59 and paragraph 9 of the Annex.

31. Cash pooling refers to arrangements involving treasury products whereby a bank combines the credit and/or debit balances of several individual participating customer accounts into a single account balance to facilitate cash and/or liquidity management. For purposes of the leverage ratio exposure measure, where a cash pooling arrangement entails a transfer at least on a daily basis of the credit and/or debit balances of the individual participating customer accounts into a single account balance, the individual participating customer accounts are deemed to be extinguished and transformed into a single account balance upon the transfer provided the bank is not liable for the balances on an individual basis upon the transfer. Thus, the basis of the leverage ratio exposure measure for such a cash pooling arrangement is the single account balance and not the individual participating customer accounts. When the transfer of credit and/or debit balances of the individual participating customer accounts does not occur daily, for purposes of the leverage ratio exposure measure, extinguishment and transformation into a single account balance is deemed to occur and this single account balance may serve as the basis of the leverage ratio exposure measure provided all of the following conditions are met:

- in addition to providing for the several individual participating customer accounts, the cash pooling arrangement provides for a single account, into which the balances of all individual participating customer accounts can be transferred and thus extinguished;
- the bank (i) has a legally enforceable right to transfer the balances of the individual participating customer accounts into a single account so that the bank is not liable for the balances on an individual basis and (ii) at any point in time, the bank must have the discretion and be in a position to exercise this right;
- the bank's supervisor does not deem as inadequate the frequency by which the balances of individual participating customer accounts are transferred to a single accont;
- there are no maturity mismatches among the balances of the individual participating customer accounts included in the cash pooling arrangement or all balances are either overnight or on demand; and
- the bank charges or pays interest and/or fees based on the combined balance of the individual participating customer accounts included in the cash pooling arrangement.

In the event the abovementioned conditions are not met, the individual balances of the participating customer accounts must be reflected separately in the leverage ratio exposure measure.

### (b) Derivative exposures

32. *Treatment of derivatives*: for the purpose of the leverage ratio exposure measure, exposures to derivatives are included by means of two components: (a) replacement cost (RC); and (b) potential future

exposure (PFE). The leverage ratio framework uses the method set out below to capture both of these components.

33. Banks must calculate their exposures associated with all derivative transactions, including where a bank sells protection using a credit derivative, as a scalar multiplier alpha set at 1.4 times the sum of the RC[14] and the PFE, as described in paragraph 34. If the derivative exposure is covered by an eligible bilateral netting contract as specified in the Annex, a specific treatment may be applied.[15] Written credit derivatives are subject to an additional treatment, as set out in paragraphs 44 to 49 below.

34. For derivative transactions not covered by an eligible bilateral netting contract as specified in paragraphs 4 and 5 of the Annex, the amount to be included in the leverage ratio exposure measure is determined, for each transaction separately, as follows:

*exposure measure = alpha * (RC + PFE)*

where

- *alpha* = 1.4;
- *RC* = the replacement cost calculated according to paragraph 2 of the Annex; and
- *PFE* = an amount for PFE calculated according to paragraph 3 of the Annex.

35. *Bilateral netting*: when an eligible bilateral netting contract is in place as specified in paragraphs 4 and 5 of the Annex, the formula in paragraph 34 is applied at the netting set level as described in paragraphs 2 and 3 of the Annex.

36. *Treatment of related collateral*: collateral received in connection with derivative contracts has two countervailing effects on leverage:

- it reduces counterparty exposure; but
- it can also increase the economic resources at the disposal of the bank, as the bank can use the collateral to leverage itself.

37. C*ollateral received* in connection with derivative contracts does not necessarily reduce the leverage inherent in a bank's derivative position, which is generally the case if the settlement exposure arising from the underlying derivative contract is not reduced. As a general principle of the Basel III leverage ratio framework, collateral received may not be netted against derivative exposures whether or not netting is permitted under the bank's operative accounting or risk-based framework. Hence, when calculating the exposure amount by applying paragraphs 33 to 35 above, a bank must not reduce the leverage ratio exposure measure amount by any collateral received from the counterparty. This implies that the RC cannot be reduced by collateral received and that the multiplier referenced in paragraph 3 of

[14] If, under a bank's national accounting standards, there is no accounting measure of exposure for certain derivative instruments because they are held (completely) off balance sheet, the bank must use the sum of positive fair values of these derivatives as the replacement cost.

[15] These are netting rules of the Basel II framework excepting the rules for cross-product netting in Annex 4, Section III (ie netting across product categories such as derivatives and SFTs is not permitted in determining the leverage ratio exposure measure). However, where a bank has a cross-product netting agreement in place that meets the eligibility criteria of paragraphs 4 and 5 of the Annex, it may choose to perform netting separately in each product category provided that all other conditions for netting in this product category that are applicable to the current framework are met.

the Annex is fixed at one for the purpose of the PFE calculation. However, the maturity factor in the PFE add-on calculation can recognise the PFE-reducing effect from the regular exchange of variation margin as specified in paragraph 3 of the Annex.

38. Similarly, with regard to *collateral provided*, banks must gross up their leverage ratio exposure measure by the amount of any derivatives collateral provided where the provision of that collateral has reduced the value of their balance sheet assets under their operative accounting framework.

39. *Treatment of cash variation margin*: in the treatment of derivative exposures for the purpose of the leverage ratio exposure measure, the cash portion of variation margin exchanged between counterparties may be viewed as a form of pre-settlement payment if the following conditions are met:

(i) For trades not cleared through a *qualifying* central counterparty (QCCP)[16] the cash received by the recipient counterparty is not segregated. Cash variation margin would satisfy the non-segregation criterion if the *recipient* counterparty has no restrictions by law, regulation, or any agreement with the counterparty on the ability to use the cash received (ie the cash variation margin received is used as its own cash).

(ii) Variation margin is calculated and exchanged on at least a daily basis based on mark-to-market valuation of derivative positions. To meet this criterion, derivative positions must be valued daily and cash variation margin must be transferred at least daily to the counterparty or to the counterparty's account, as appropriate. Cash variation margin exchanged on the morning of the subsequent trading day based on the previous, end-of-day market values would meet this criterion.

(iii) The variation margin is received in a currency specified in the derivative contract, governing master netting agreement (MNA), credit support annex (CSA) to the qualifying MNA or as defined by any netting agreement with a CCP.

(iv) Variation margin exchanged is the full amount that would be necessary to extinguish the mark-to-market exposure of the derivative subject to the threshold and minimum transfer amounts applicable to the counterparty.[17]

(v) Derivative transactions and variation margins are covered by a single MNA between the legal entities that are the counterparties in the derivative transaction. The MNA must explicitly stipulate that the counterparties agree to settle net any payment obligations covered by such a netting agreement, taking into account any variation margin received or provided if a credit event occurs involving either counterparty. The MNA must be legally enforceable and effective (ie it satisfies the conditions in paragraph 4 (c) and paragraph 5 of the Annex) in all relevant jurisdictions, including in the event of default and bankruptcy or insolvency. For the purposes of this paragraph, the term "MNA" includes any netting agreement that provides legally enforceable rights of offset[18] and a Master MNA may be deemed to be a single MNA.

40. If the conditions in paragraph 39 are met, the cash portion of variation margin received may be used to reduce the replacement cost portion of the leverage ratio exposure measure, and the receivables assets from cash variation margin provided may be deducted from the leverage ratio exposure measure as follows:

[16] A QCCP is defined as in Annex 4, Section I, A. General Terms of the Basel II framework as amended by the standard *Capital requirements for bank exposures to central counterparties* (Basel Committee on Banking Supervision, *Capital requirements for bank exposures to central counterparties*, April 2014, www.bis.org/publ/bcbs282.pdf).

[17] In situations where a margin dispute arises, the amount of non-disputed variation margin that has been exchanged can be recognised.

[18] This is to take into account the fact that, for netting agreements employed by CCPs, no standardisation has currently emerged that would be comparable with respect to over-the-counter netting agreements for bilateral trading.

- In the case of cash variation margin received, the receiving bank may reduce the replacement cost (but not the PFE component) of the exposure amount of the derivative asset as specified in paragraph 2 of the Annex.
- In the case of cash variation margin provided to a counterparty, the posting bank may deduct the resulting receivable from its leverage ratio exposure measure where the cash variation margin has been recognised as an asset under the bank's operative accounting framework, and instead include the cash variation margin provided in the calculation of the derivative replacement cost as specified in paragraph 2 of the Annex.

41. *Treatment of clearing services*: where a bank acting as clearing member (CM)[19] offers clearing services to clients, the CM's trade exposures to the central counterparty (CCP) that arise when the CM is obligated to reimburse the client for any losses suffered due to changes in the value of its transactions in the event that the CCP defaults must be captured by applying the same treatment that applies to any other type of derivative transaction. However, if the CM, based on the contractual arrangements with the client, is not obligated to reimburse the client for any losses suffered in the event that a QCCP defaults, the CM need not recognise the resulting trade exposures to the QCCP in the leverage ratio exposure measure. In addition, where a bank provides clearing services as a "higher level client" within a multi-level client structure,[20] the bank need not recognise in its leverage ratio exposure measure the resulting trade exposures to the CM or to an entity that serves as a higher level client to the bank in the leverage ratio exposure measure if it meets all of the following conditions:

- The offsetting transactions are identified by the QCCP as higher level client transactions and collateral to support them is held by the QCCP and/or the CM, as applicable, under arrangements that prevent any losses to the higher level client due to: (i) the default or insolvency of the CM, (ii) the default or insolvency of the CM's other clients, and (iii) the joint default or insolvency of the CM and any of its other clients;[21]
- The bank must have conducted a sufficient legal review (and undertake such further review as necessary to ensure continuing enforceability) and have a well-founded basis to conclude that, in the event of legal challenge, the relevant courts and administrative authorities would find that such arrangements mentioned above would be legal, valid, binding and enforceable under relevant laws of the relevant jurisdiction(s);
- Relevant laws, regulation, rules, contractual or administrative arrangements provide that the offsetting transactions with the defaulted or insolvent CM are highly likely to continue to be indirectly transacted through the QCCP, or by the QCCP, if the CM defaults or becomes insolvent.[22] In such circumstances, the higher level client positions and collateral with the QCCP will be transferred at market value unless the higher level client requests to close out the position at market value; and

[19] For the purposes of this paragraph, the terms "clearing member", "trade exposure", "central counterparty" and "qualifying central counterparty" are defined as in Annex 4, Section I, A. General Terms of the Basel II framework as amended.

[20] A multi-level client structure is one in which banks can centrally clear as indirect clients; that is, when clearing services are provided to the bank by an institution which is not a direct clearing member, but is itself a client of a clearing member or another clearing client. The term "higher level client" refers to the institution that provides clearing services.

[21] That is, upon the insolvency of the clearing member, there is no legal impediment (other than the need to obtain a court order to which the client is entitled) to the transfer of the collateral belonging to clients of a defaulting clearing member to the QCCP, to one of more other surviving clearing members or to the client or the client's nominee.

[22] If there is a clear precedent for transactions being ported at a QCCP and industry intent for this practice to continue, then these factors must be considered when assessing if trades are highly likely to be ported. The fact that QCCP documentation does not prohibit client trades from being ported is not sufficient to say they are highly likely to be ported.

- The bank is not obligated to reimburse its client for any losses suffered in the event of default of either the CM or the QCCP.

42. Where a client enters directly into a derivative transaction with the CCP and the CM guarantees the performance of its client's derivative trade exposures to the CCP, the bank acting as the CM for the client to the CCP must calculate its related leverage ratio exposure resulting from the guarantee as a derivative exposure as set out in paragraphs 33 to 40, as if it had entered directly into the transaction with the client, including with regard to the receipt or provision of cash variation margin.

43. For the purposes of paragraphs 41 and 42, an entity affiliated to the bank acting as a CM may be considered a client if it is outside the relevant scope of regulatory consolidation at the level at which the leverage ratio is applied. In contrast, if an affiliate entity falls within the regulatory scope of consolidation, the trade between the affiliate entity and the CM is eliminated in the course of consolidation but the CM still has a trade exposure to the CCP. In this case, the transaction with the CCP will be considered proprietary and the exemption in paragraph 41 will not apply.

44. *Additional treatment for written credit derivatives*: in addition to the CCR exposure arising from the fair value of the contracts, written credit derivatives create a notional credit exposure arising from the creditworthiness of the reference entity. The Committee therefore believes that it is appropriate to treat written credit derivatives consistently with cash instruments (eg loans, bonds) for the purposes of the leverage ratio exposure measure.

45. In order to capture the credit exposure to the underlying reference entity, in addition to the above treatment for derivatives and related collateral, the effective notional amount referenced by a written credit derivative is to be included in the leverage ratio exposure measure unless the written credit derivative is included in a transaction cleared on the behalf of a client of the bank acting as a CM (or acting as a clearing services provider in a multi-level client structure as referenced in paragraph 41) and the transaction meets the requirements of paragraph 41 for the exclusion of trade exposures to the QCCP (or, in the case of a multi-level client structure, the requirements of paragraph 41 for the exclusion of trade exposures to the CM or the QCCP). The "effective notional amount" is obtained by adjusting the notional amount to reflect the true exposure of contracts that are leveraged or otherwise enhanced by the structure of the transaction. Further, the effective notional amount of a written credit derivative may be reduced by any negative change in fair value amount that has been incorporated into the calculation of Tier 1 capital with respect to the written credit derivative.[23, 24] The resulting amount may be further reduced by the effective notional amount of a purchased credit derivative on the same reference name, provided that:

- the credit protection purchased through credit derivatives is otherwise subject to the same or more conservative material terms as those in the corresponding written credit derivative. This ensures that if a bank provides written protection via some type of credit derivative, the bank

[23] For example, if a written credit derivative had a positive fair value of 20 on one date and has a negative fair value of 10 on a subsequent reporting date, the effective notional amount of the credit derivative may be reduced by 10. The effective notional amount cannot be reduced by 30. However, if on the subsequent reporting date the credit derivative has a positive fair value of five, the effective notional amount cannot be reduced at all.

[24] This treatment is consistent with the rationale that the effective notional amounts included in the exposure measure may be capped at the level of the maximum potential loss, which means that the maximum potential loss at the reporting date is the notional amount of the credit derivative minus any negative fair value that has already reduced Tier 1 capital.

may only recognise offsetting from another purchased credit derivative to the extent that the purchased protection is certain to deliver a payment in all potential future states. Material terms include the level of subordination, optionality, credit events, reference and any other characteristics relevant to the valuation of the derivative;[25]

- the remaining maturity of the credit protection purchased through credit derivatives is equal to or greater than the remaining maturity of the written credit derivative;
- the credit protection purchased through credit derivatives is not purchased from a counterparty whose credit quality is highly correlated with the value of the reference obligation in the sense specified in paragraph 101 of the Basel III framework;[26]
- in the event that the effective notional amount of a written credit derivative is reduced by any negative change in fair value reflected in the bank's Tier 1 capital, the effective notional amount of the offsetting credit protection purchased through credit derivatives must also be reduced by any resulting positive change in fair value reflected in Tier 1 capital; and
- the credit protection purchased through credit derivatives is not included in a transaction that has been cleared on behalf of a client (or that has been cleared by the bank in its role as a clearing services provider in a multi-level client services structure as referenced in paragraph 41) and for which the effective notional amount referenced by the corresponding written credit derivative is excluded from the leverage ratio exposure measure according to this paragraph.

46. For the purposes of paragraph 45, the term "written credit derivative" refers to a broad range of credit derivatives through which a bank effectively provides credit protection and is not limited solely to credit default swaps and total return swaps. For example, all options where the bank has the obligation to provide credit protection under certain conditions qualify as "written credit derivatives". The effective notional amount of such options sold by the bank may be offset by the effective notional amount of options by which the bank has the right to purchase credit protection which fulfils the conditions of paragraph 45. For example, the condition of same or more conservative material terms as those in the corresponding written credit derivatives as referenced in paragraph 45 can be considered met only when the strike price of the underlying purchased credit protection is equal to or lower than the strike price of the underlying sold credit protection.

47. For the purposes of paragraph 45, two reference names are considered identical only if they refer to the same legal entity. Credit protection on a pool of reference names purchased through credit derivatives may offset credit protection sold on individual reference names if the credit protection purchased is economically equivalent to purchasing credit protection separately on each of the individual names in the pool (this would, for example, be the case if a bank were to purchase credit protection on an entire securitisation structure). If a bank purchases credit protection on a pool of reference names through credit derivatives, but the credit protection purchased does not cover the entire pool (ie the protection covers only a subset of the pool, as in the case of an nth-to-default credit derivative or a securitisation tranche), then the written credit derivatives on the individual reference names may not be offset. However,

[25] For example, the application of the same material terms condition would result in the following treatments:
- in the case of single name credit derivatives, the credit protection purchased through credit derivatives is on a reference obligation which ranks pari passu with or is junior to the underlying reference obligation of the written credit derivative. Credit protection purchased through credit derivatives that references a subordinated position may offset written credit derivatives on a more senior position of the same reference entity as long as a credit event on the senior reference asset would result in a credit event on the subordinated reference asset;
- for tranched products, the credit protection purchased through credit derivatives must be on a reference obligation with the same level of seniority.

[26] Specifically, the credit quality of the counterparty must not be positively correlated with the value of the reference obligation (ie the credit quality of the counterparty falls when the value of the reference obligation falls and the value of the purchased credit derivative increases). In making this determination, there does not need to exist a legal connection between the counterparty and the underlying reference entity.

such purchased credit protection may offset written credit derivatives on a pool provided that the credit protection purchased through credit derivatives covers the entirety of the subset of the pool on which the credit protection has been sold.

48. Where a bank purchases credit protection through a total return swap (TRS) and records the net payments received as net income, but does not record offsetting deterioration in the value of the written credit derivative (either through reductions in fair value or by an addition to reserves) in Tier 1 capital, the credit protection will not be recognised for the purpose of offsetting the effective notional amounts related to written credit derivatives.

49. Since written credit derivatives are included in the leverage ratio exposure measure at their effective notional amounts, and are also subject to amounts for PFE, the leverage ratio exposure measure for written credit derivatives may be overstated. Banks may therefore choose to exclude from the netting set for the PFE calculation the portion of a written credit derivative which is not offset according to paragraph 45 and for which the effective notional amount is included in the leverage ratio exposure measure.

### (c) Securities financing transaction exposures

50. SFTs[27] are included in the leverage ratio exposure measure according to the treatment described below. The treatment recognises that secured lending and borrowing in the form of SFTs is an important source of leverage, and ensures consistent international implementation by providing a common measure for dealing with the main differences in the operative accounting frameworks.

51. *General treatment (bank acting as principal)*: the sum of the amounts in subparagraphs (i) and (ii) below is to be included in the leverage ratio exposure measure:

(i) Gross SFT assets[28] recognised for accounting purposes (ie with no recognition of accounting netting),[29] adjusted as follows:

- excluding from the leverage ratio exposure measure the value of any securities received under an SFT, where the bank has recognised the securities as an asset on its balance sheet;[30] and
- cash payables and cash receivables in SFTs with the same counterparty may be measured net if all the following criteria are met:

  (a) transactions have the same explicit final settlement date; in particular, transactions with no explicit end date but which can be unwound at any time by either party to the transaction are not eligible;

[27] SFTs are transactions such as repurchase agreements, reverse repurchase agreements, security lending and borrowing, and margin lending transactions, where the value of the transactions depends on market valuations and the transactions are often subject to margin agreements.

[28] For SFT assets subject to novation and cleared through QCCPs, "gross SFT assets recognised for accounting purposes" are replaced by the final contractual exposure, ie the exposure to the QCCP after the process of novation has been applied, given that pre-existing contracts have been replaced by new legal obligations through the novation process. However, banks can only net cash receivables and cash payables with a QCCP if the criteria in paragraph 51 (i) are met. Any other netting permitted by the QCCP is not permitted for the purposes of the Basel III leverage ratio.

[29] Gross SFT assets recognised for accounting purposes must not recognise any *accounting* netting of cash payables against cash receivables (eg as currently permitted under the IFRS and US GAAP accounting frameworks). This regulatory treatment has the benefit of avoiding inconsistencies from netting which may arise across different accounting regimes.

[30] This may apply, for example, under US GAAP, where securities received under an SFT may be recognised as assets if the recipient has the right to rehypothecate but has not done so.

(b) the right to set off the amount owed to the counterparty with the amount owed by the counterparty is legally enforceable both currently in the normal course of business and in the event of the counterparty's (i) default; (ii) insolvency; or (iii) bankruptcy; and

(c) the counterparties intend to settle net, settle simultaneously, or the transactions are subject to a settlement mechanism that results in the functional equivalent of net settlement – that is, the cash flows of the transactions are equivalent, in effect, to a single net amount on the settlement date. To achieve such equivalence, both transactions are settled through the same settlement system and the settlement arrangements are supported by cash and/or intraday credit facilities intended to ensure that settlement of both transactions will occur by the end of the business day and any issues arising from the securities legs of the SFTs do not interfere with the completion of the net settlement of the cash receivables and payables. In particular, this latter condition means that the failure of any single securities transaction in the settlement mechanism may delay settlement of only the matching cash leg or create an obligation to the settlement mechanism, supported by an associated credit facility. If there is a failure of the securities leg of a transaction in such a mechanism at the end of the window for settlement in the settlement mechanism, then this transaction and its matching cash leg must be split out from the netting set and treated gross.[31]

(ii) A measure of CCR calculated as the current exposure without an add-on for PFE, calculated as follows:

- Where a qualifying MNA[32] is in place, the current exposure ($E^*$) is the greater of zero and the total fair value of securities and cash lent to a counterparty for all transactions included in the qualifying MNA ($\sum E_i$), less the total fair value of cash and securities received from the counterparty for those transactions ($\sum C_i$). This is illustrated in the following formula:

$$E^* = \max \{0, [\sum E_i - \sum C_i]\}$$

- Where no qualifying MNA is in place, the current exposure for transactions with a counterparty must be calculated on a transaction-by-transaction basis – that is, each transaction $i$ is treated as its own netting set, as shown in the following formula:

$$E_i^* = \max \{0, [E_i - C_i]\}$$

$E_i^*$ may be set to zero if (i) $E_i$ is the cash lent to a counterparty, (ii) this transaction is treated as its own netting set and (iii) the associated cash receivable is not eligible for the netting treatment in paragraph 51 (i).

For the purposes of this subparagraph, the term "counterparty" includes not only the counterparty of the bilateral repo transactions but also triparty repo agents that receive collateral in deposit and manage the collateral in the case of triparty repo transactions. Therefore, securities deposited at triparty repo agents are included in "total value of securities and cash lent to a counterparty" (E) up to the amount effectively lent to the counterparty in a repo transaction. However, excess collateral that has been deposited at triparty agents but that has not been lent out may be excluded.

[31] Specifically, the criteria in paragraph 51 (i) (c) above are not intended to preclude a DVP settlement mechanism or other type of settlement mechanism, provided that the settlement mechanism meets the functional requirements set out in paragraph 51 (i) (c). For example, a settlement mechanism may meet these functional requirements if any failed transactions (ie the securities that failed to transfer and the related cash receivable or payable) can be re-entered in the settlement mechanism until they are settled.

[32] A "qualifying" MNA is one that meets the requirements under paragraphs 6 and 7 of the Annex.

52. *Sale accounting transactions*: leverage may remain with the lender of the security in an SFT whether or not sale accounting is achieved under the operative accounting framework. As such, where sale accounting is achieved for an SFT under the bank's operative accounting framework, the bank must reverse all sales-related accounting entries, and then calculate its exposure as if the SFT had been treated as a financing transaction under the operative accounting framework (ie the bank must include the sum of amounts in subparagraphs (i) and (ii) of paragraph 51 for such an SFT) for the purpose of determining its leverage ratio exposure measure.

53. *Bank acting as agent*: a bank acting as agent in an SFT generally provides an indemnity or guarantee to only one of the two parties involved, and only for the difference between the value of the security or cash its customer has lent and the value of collateral the borrower has provided. In this situation, the bank is exposed to the counterparty of its customer for the difference in values rather than to the full exposure to the underlying security or cash of the transaction (as is the case where the bank is one of the principals in the transaction).

54. Where a bank acting as agent in an SFT provides an indemnity or guarantee to a customer or counterparty for any difference between the value of the security or cash the customer has lent and the value of collateral the borrower has provided and the bank does not own or control the underlying cash or security resource, then the bank will be required to calculate its leverage ratio exposure measure by applying only subparagraph (ii) of paragraph 51.[33]

55. A bank acting as agent in an SFT and providing an indemnity or guarantee to a customer or counterparty will be considered eligible for the exceptional treatment set out in paragraph 54 only if the bank's exposure to the transaction is limited to the guaranteed difference between the value of the security or cash its customer has lent and the value of the collateral the borrower has provided. In situations where the bank is further economically exposed (ie beyond the guarantee for the difference) to the underlying security or cash in the transaction,[34] a further exposure equal to the full amount of the security or cash must be included in the leverage ratio exposure measure.

56. Where a bank acting as agent provides an indemnity or guarantee to both parties involved in an SFT (ie securities lender and securities borrower), the bank will be required to calculate its leverage ratio exposure measure in accordance with paragraphs 53 to 55 separately for each party involved in the transaction.

### (d) Off-balance sheet (OBS) items

57. This section explains the treatment of OBS items for inclusion in the leverage ratio exposure measure. These treatments reflect those defined in the *standardised approach for credit risk* and the *standard Revisions to the securitisation framework*, as well as treatments unique to the leverage ratio framework. OBS items include commitments (including liquidity facilities), whether or not unconditionally cancellable, direct credit substitutes, acceptances, standby letters of credit and trade letters of credit. If the OBS item is treated as a derivative exposure per the bank's relevant accounting standard, then the item must be measured as a derivative exposure for the purpose of the leverage ratio exposure measure. In this case, the bank does not need to apply the OBS item treatment to the exposure.

[33] Where, in addition to the conditions in paragraphs 53 to 55, a bank acting as an agent in an SFT does not provide an indemnity or guarantee to any of the involved parties, the bank is not exposed to the SFT and therefore need not recognise those SFTs in its leverage ratio exposure measure.

[34] For example, due to the bank managing collateral received in the bank's name or on its own account rather than on the customer's or borrower's account (eg by on-lending or managing unsegregated collateral, cash or securities). However, this does not apply to client omnibus accounts that are used by agent lenders to hold and manage client collateral provided that client collateral is segregated from the bank's proprietary assets and the bank calculates the exposure on a client-by-client basis.

58. In the risk-based capital framework, OBS items are converted under the standardised approach for credit risk into credit exposure equivalents through the use of credit conversion factors (CCFs). For the purpose of determining the exposure amount of OBS items for the leverage ratio, the CCFs set out in the Annex must be applied to the notional amount.

59. In addition, specific and general provisions set aside against OBS exposures that have decreased Tier 1 capital may be deducted from the credit exposure equivalent amount of those exposures (ie the exposure amount after the application of the relevant CCF). However, the resulting total off-balance sheet equivalent amount for OBS exposures cannot be less than zero.

# Annex: Leverage ratio

This annex includes the relevant provisions applicable for the purpose of calculating the leverage ratio.

## Derivative exposures

1. The calculation of derivative exposures for the leverage ratio exposure measure is based on a modified version of the standard set out in Annex 4 of the Basel II framework as amended by *The Standardised Approach for measuring counterparty credit risk exposures* (hereafter "SA-CCR framework").[35]

### Calculation of replacement cost

2. The replacement cost of a transaction or netting set is measured as follows:

$$RC = \max\left\{V - CVM_r + CVM_p, 0\right\}$$

where (i) V is the market value of the individual derivative transaction or of the derivative transactions in a netting set; (ii) $CVM_r$ is the cash variation margin *received* that meets the conditions set out in paragraph 39 and for which the amount has not already reduced the market value of the derivative transaction V under the bank's operative accounting standard; and (iii) $CVM_p$ is the cash variation margin *provided* by the bank and that meets the same conditions.

### Calculation of potential future exposure

3. The potential future exposure (PFE) for derivative exposures must be calculated in accordance with paragraphs 146 to 187 of Annex 4 of the SA-CCR framework. Mathematically:

$$PFE = multiplier \cdot AddOn^{aggregate}$$

For the purposes of the leverage ratio framework, the multiplier is fixed at one. Moreover, when calculating the add-on component, for all margined transactions the maturity factor set out in paragraph 164 of Annex 4 of the SA-CCR framework may be used. Further, as written options create an exposure to the underlying, they must be included in the leverage ratio exposure measure by applying the treatment described in this Annex, even if certain written options are permitted the zero exposure at default (EAD) treatment allowed in the risk-based framework.

### Bilateral netting

4. For the purposes of the leverage ratio exposure measure, the following will apply:

(a) Banks may net transactions subject to novation under which any obligation between a bank and its counterparty to deliver a given currency on a given value date is automatically amalgamated with all other obligations for the same currency and value date, legally substituting one single amount for the previous gross obligations.

[35] Basel Committee on Banking Supervision, *The standardised approach for measuring counterparty credit risk exposures*, March 2014 (rev. April 2014), www.bis.org/publ/bcbs279.pdf.

(b) Banks may also net transactions subject to any legally valid form of bilateral netting not covered in (a), including other forms of novation.

(c) In both cases (a) and (b), a bank will need to satisfy its national supervisors that it has:

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

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

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

The national supervisor, after consultation when necessary with other relevant supervisors, must be satisfied that the netting is enforceable under the laws of each of the relevant jurisdictions;[36] and

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

5. Contracts containing walkaway clauses will not be eligible for netting for the purpose of calculating the leverage ratio exposure measure pursuant to this framework. A walkaway clause is a provision that permits a non-defaulting counterparty to make only limited payments, or no payment at all, to the estate of a defaulter, even if the defaulter is a net creditor.

## Securities financing transaction exposures

6. *Qualifying master netting agreement*: the effects of bilateral netting agreements[37] for covering SFTs will be recognised on a counterparty-by-counterparty basis if the agreements are legally enforceable in each relevant jurisdiction upon the occurrence of an event of default and regardless of whether the counterparty is insolvent or bankrupt. In addition, netting agreements must:

(a) provide the non-defaulting party with the right to terminate and close out in a timely manner all transactions under the agreement upon an event of default, including in the event of insolvency or bankruptcy of the counterparty;

(b) provide for the netting of gains and losses on transactions (including the value of any collateral) terminated and closed out under it so that a single net amount is owed by one party to the other;

(c) allow for the prompt liquidation or setoff of collateral upon the event of default; and

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

[37] The provisions related to qualifying master netting agreements for SFTs are intended for the calculation of the counterparty credit risk measure of SFTs as set out in paragraph 51 (ii) only.

(d) be, together with the rights arising from provisions required in (a) and (c) above, legally enforceable in each relevant jurisdiction upon the occurrence of an event of default regardless of the counterparty's insolvency or bankruptcy.

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

(a) all transactions are marked to market daily; and

(b) the collateral instruments used in the transactions are recognised as eligible financial collateral in the banking book.

## Off-balance sheet (OBS) items

8. For the purposes of the leverage ratio, OBS items will be converted into credit exposures by multiplying the committed but undrawn amount by a credit conversion factor (CCF). For these purposes, commitment means any contractual arrangement that has been offered by the bank and accepted by the client to extend credit, purchase assets or issue credit substitutes. It includes any such arrangement that can be unconditionally cancelled by the bank at any time without prior notice to the obligor.[38] It also includes any such arrangement that can be cancelled by the bank if the obligor fails to meet conditions set out in the facility document, including conditions that must be met by the obligor prior to any initial or subsequent drawdown arrangement.

9. A 100% CCF will be applied to the following items:

- Direct credit substitutes, eg general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptances).
- Forward asset purchases, forward forward deposits and partly paid shares and securities, which represent commitments with certain drawdown.
- The exposure amount associated with unsettled financial asset purchases (ie the commitment to pay) where regular-way unsettled trades are accounted for at settlement date. Banks may offset commitments to pay for unsettled purchases and cash to be received for unsettled sales provided that the following conditions are met: (i) the financial assets bought and sold that are associated with cash payables and receivables are fair valued through income and included in the bank's regulatory trading book as specified by paragraphs 8 to 20 of the market risk framework; and (ii) the transactions of the financial assets are settled on a DVP basis.

[38] At national discretion, a jurisdiction may exempt certain arrangements from the definition of commitments provided that the following conditions are met: (i) the bank receives no fees or commissions to establish or maintain the arrangements; (ii) the client is required to apply to the bank for the initial and each subsequent drawdown; (iii) the bank has full authority, regardless of the fulfilment by the client of the conditions set out in the facility documentation, over the execution of each drawdown; and (iv) the bank's decision on the execution of each drawdown is only made after assessing the creditworthiness of the client immediately prior to drawdown. Exempted arrangements that met the above criteria are confined to certain arrangements for corporates and SMEs, where counterparties are closely monitored on an ongoing basis.

- Off-balance sheet items that are credit substitutes not explicitly included in any other category.

10. A 50% CCF will be applied to note issuance facilities (NIFs) and revolving underwriting facilities (RUFs) regardless of the maturity of the underlying facility.

11. A 50% CCF will be applied to certain transaction-related contingent items (eg performance bonds, bid bonds, warranties and standby letters of credit related to particular transactions).

12. A 40% CCF will be applied to commitments, regardless of the maturity of the underlying facility, unless they qualify for a lower CCF.

13. A 20% CCF will be applied to both the issuing and confirming banks of short-term[39] self-liquidating trade letters of credit arising from the movement of goods (eg documentary credits collateralised by the underlying shipment).

14. A 10% CCF will be applied to commitments that are unconditionally cancellable at any time by the bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness. National supervisors should evaluate various factors in the jurisdiction, which may constrain banks' ability to cancel the commitment in practice, and consider applying a higher CCF to certain commitments as appropriate.

15. Where there is an undertaking to provide a commitment on an off-balance sheet item, banks are to apply the lower of the two applicable CCFs.[40]

16. OBS securitisation exposures must be treated as per the second bullet of paragraph 20 of the Basel III securitisation framework.[41]

[39] That is, with a maturity below one year. For further details see Basel Committee on Banking Supervision, *Treatment of trade finance under the Basel capital framework*, October 2011, www.bis.org/publ/bcbs205.pdf.

[40] For example, if a bank has a commitment to open short-term self-liquidating trade letters of credit arising from the movement of goods, a 20% CCF will be applied (instead of a 40% CCF); and if a bank has an unconditionally cancellable commitment described in paragraph 59 to issue direct credit substitutes, a 10% CCF will be applied (instead of a 100% CCF).

[41] Basel Committee on Banking Supervision, *Revisions to the securitisation framework*, December 2014 (rev July 2016), www.bis.org/bcbs/publ/d303.pdf.