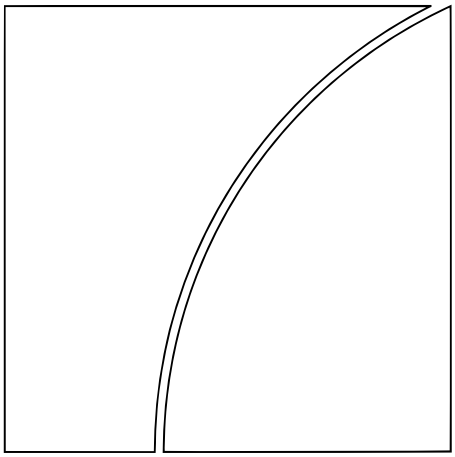
Basel Committee on Banking Supervision

CRE

Calculation of RWA for credit risk

CRE30



IRB approach: overview and asset class definitions

This chapter sets out an overview of the internal ratings-based approach to credit risk, including the categorisation of exposures, a description of the available approaches and the roll-out requirements.

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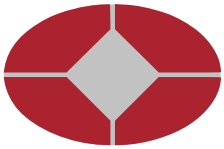
Changes due to the December 2017 Basel III publication and the revised implementation date announced on 27 March 2020.



BANK FOR INTERNATIONAL SETTLEMENTS

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Overview

30.1

This chapter describes the internal ratings-based (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.

30.2

The IRB approach is based on measures of unexpected losses (UL) and expected losses. The risk-weight functions, as outlined in CRE31, produce capital requirements for the UL portion. Expected losses are treated separately, as outlined in CRE35.

30.3

In this chapter, first the asset classes (eg corporate exposures and retail exposures) eligible for the IRB approach are defined. Second, there is a description of the risk components to be used by banks by asset class. Third, the requirements are outlined that relate to 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. Moreover, banks must apply the risk weights referenced in CRE20.61, CRE20.62 and CRE20.109 of the standardised approach to the exposures referenced in those paragraphs (that is, investments that are assessed against certain materiality thresholds).

Categorisation of exposures

30.4

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.

30.5

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.

Definition of corporate exposures

30.6

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 or medium-sized entities (SME), as defined in CRE31.8.

30.7

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, in legal form or economic substance:

1. The exposure is typically to an entity (often a special purpose entity (SPE)) that was created specifically to finance and/or operate physical assets,
2. 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;
3. The terms of the obligation give the lender a substantial degree of control over the asset(s) and the income that it generates; and
4. 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.

30.8

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

Project finance

30.9

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.

30.10

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 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

30.11

OF refers to a method of funding the acquisition of physical assets (eg ships, aircraft, satellites, railcars, or 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

30.12

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.

30.13

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 lending

30.14

IPRE lending 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, or 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 lending

30.15

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:

1. Commercial real estate exposures secured by properties of types that are categorised by the national supervisor as sharing higher volatilities in portfolio default rates;
2. Loans financing any of the land acquisition, development and construction (ADC) phases for properties of those types in such jurisdictions; and
3. 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 or borrower equity are, however, ineligible for the additional reductions for SL exposures described in CRE33.4.

30.16

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.

Definition of sovereign exposures

30.17

This asset class covers all exposures to counterparties treated as sovereigns under the standardised approach. This includes sovereigns (and their central banks), certain public sector entities (PSEs) identified as sovereigns in the standardised approach, multilateral development banks (MDBs) that meet the criteria for a 0% risk weight and referred to in the first footnote of CRE20.14 of the standardised approach, and the entities referred to in CRE20.10 of the standardised approach.

Definition of bank exposures

30.18

This asset class covers exposures to banks as defined in CRE20.16 of the standardised approach for credit risk and those securities firms and other financial institutions set out in CRE20.40 of the standardised approach for credit risk that are treated as exposures to banks. Bank exposures also include covered bonds as defined in CRE20.33 as well as 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 the first footnote to CRE20.14 of the standardised approach). This asset class also includes exposures to the entities listed in this paragraph that are in the form of subordinated debt or regulatory capital instruments (which form their own asset class within the standardised approach), provided that such instruments: (i) do not fall within the scope of equity exposures as defined in CRE30.26; (ii) are not deducted from regulatory capital or risk-weighted at 250% according to CAP30; and (iii) are not risk weighted at 1250% according to CRE20.62.

Definition of retail exposures

30.19

An exposure is categorised as a retail exposure if it meets all of the criteria set out in CRE30.20 (which relate to the nature of the borrower and value of individual exposures) and all of the criteria set out in CRE30.22 (which relate to the size of the pool of exposures).

30.20

The criteria related to the nature of the borrower and value of the individual exposures are as follows:

1. Exposures to individuals – such as revolving credits and lines of credit (eg credit cards, overdrafts, or 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, or 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.
2. Where a loan is a residential mortgage (including first and subsequent liens, term loans and revolving home equity lines of credit) it is eligible for retail treatment regardless of exposure size so long as the credit is:
    1. an exposure to an individual; or
    2. 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. Where loans are extended to small businesses and managed as retail exposures they 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.

30.21

It is expected that supervisors provide flexibility in the practical application of the thresholds set out in CRE30.20, 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.

30.22

The criteria related to the size of the pool of exposures are as follows:

1. The exposure must be one of a large pool of exposures, which are managed by the bank on a pooled basis.
2. Where a loan gives rise to a small business exposure below €1 million, it 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.

30.23

Within the retail asset class category, banks are required to identify separately three sub-classes of exposures:

1. residential mortgage loans, as defined above;
2. qualifying revolving retail exposures, as defined in the following paragraph; and
3. all other retail exposures.

Definition of qualifying revolving retail exposures

30.24

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.

1. 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.
2. The exposures are to individuals.
3. The maximum exposure to a single individual in the sub-portfolio is €100,000 or less.
4. 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.
5. Data on loss rates for the sub-portfolio must be retained in order to allow analysis of the volatility of loss rates.
6. The supervisor must concur that treatment as a qualifying revolving retail exposure is consistent with the underlying risk characteristics of the sub-portfolio.

30.25

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 CRE20.64 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, including QRRE exposures with less than 12 months of repayment history.

Definition of equity exposures

30.26

This asset class covers exposures to equities as defined in CRE20.54 to CRE20.56 of the standardised approach for credit risk.

Definition of eligible purchased receivables

30.27

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

Retail receivables

30.28

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 chapters CRE34 and CRE36.

Corporate receivables

30.29

In general, for purchased corporate receivables, banks are expected to assess the default risk of individual obligors as specified in CRE31.3 to CRE31.12 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.

30.30

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:

1. The receivables are purchased from unrelated, third party sellers, and as such the bank has not originated the receivables either directly or indirectly.
2. 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.)
3. The purchasing bank has a claim on all proceeds from the pool of receivables or a pro-rata interest in the proceeds.
4. 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.

30.31

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 CRE34.4 to CRE34.7 for purchased receivables and the bank meets the eligibility criteria and operational requirements.

Foundation and advanced approaches

30.32

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

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

30.33

For certain 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 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.

30.34

For exposures to equities, as defined in CRE30.26 above, the IRB approaches are not permitted (see CRE30.43). In addition, the A-IRB approach cannot be used for the following:

1. Exposures to general corporates (ie exposures to corporates that are not classified as specialised lending) belonging to a group with total consolidated annual revenues greater than €500m.
2. Exposures in the bank asset class CRE30.18, and other securities firms and financial institutions (including insurance companies and any other financial institutions in the corporate asset class).

30.35

In making the assessment for the revenue threshold in CRE30.34 above, the amounts must be as reported in the audited financial statements of the corporates or, for corporates that are

part of consolidated groups, 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.

Corporate, sovereign and bank exposures

30.36

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.

30.37

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

30.38

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

30.39

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’.

30.40

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 these requirements for HVCRE exposures 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 CRE31.11.

30.41

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 CRE31.11.

Retail exposures

30.42

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

Equity exposures

30.43

All equity exposures are subject to the approach set out in CRE20.57 of the standardised approach for credit risk, with the exception of equity investments in funds that are subject to the requirements set out in CRE60.

Eligible purchased receivables

30.44

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 CRE30.29, 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 CRE34.6 to CRE34.7 only for exposures to individual corporate obligors that are eligible for the A-IRB approach according to CRE30.34 and CRE30.35. 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.

Adoption of the IRB approach for asset classes

30.45

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:

1. Sovereigns
2. Banks
3. Corporates (excluding specialised lending and purchased receivables)
4. Specialised lending
5. Corporate purchased receivables
6. QRRE
7. Retail residential mortgages
8. Other retail (excluding purchased receivables)
9. Retail purchased receivables

30.46

The Committee recognises 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 class at the same time (for example, exposures that are in the same asset class, but are in different business units).

30.47

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.

30.48

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 an 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.

30.49

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 the supervisory review process standard (SRP) for such positions.

30.50

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.

30.51

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.

30.52

Irrespective of the materiality, exposures to central counterparties arising from over-the-counter derivatives, exchange traded derivatives transactions and securities financing transactions must be treated according to the dedicated treatment laid down in CRE54.