

Basel Committee on Banking Supervision

RBC

Risk-based capital
requirements

RBC20

Calculation of minimum risk-
based capital requirements

**Version effective as of
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Changes to output floor and approaches
available to calculate credit and operational risk
capital requirements, as set out in the December
2017 Basel III publication.



BANK FOR INTERNATIONAL SETTLEMENTS

Minimum risk-based capital requirements

20.1 Banks must meet the following requirements at all times:

- (1) Common Equity Tier 1 must be at least 4.5% of risk-weighted assets (RWA).
- (2) Tier 1 capital must be at least 6% of RWA.
- (3) Total capital must be at least 8.0% of RWA.¹

Footnotes

¹ *In addition, a Common Equity Tier 1 capital conservation buffer is set at 2.5% of RWA for all banks. Banks may also be subject to a countercyclical capital buffer or higher loss absorbency requirements for systemically important banks. These buffers are described in [RBC30](#) and [RBC40](#).*

20.2 The components of capital referred to in [RBC20.1](#) are defined in [CAP10](#) and must be used net of regulatory adjustments (defined in [CAP30](#)) and subject to the transitional arrangements in [CAP90](#). RWA are defined in [RBC20.3](#) and [RBC20.4](#).

Risk-weighted assets

20.3 The Basel framework describes how to calculate RWA for credit risk, market risk and operational risk. The requirements for calculating RWA for credit risk and market risk allow banks to use different approaches, some of which banks may only use with supervisory approval. The nominated approaches of a bank comprise all the approaches that the bank is using to calculate regulatory capital requirements, other than those approaches used solely for the purpose of the output floor calculation outlined below. The nominated approaches of a bank may include those that it has supervisory approval to use and those for which supervisory approval is not required.

20.4 The RWA that banks must use to determine compliance with the requirements set out in [RBC20.1](#) (and the buffers in [RBC30](#) and [RBC40](#)) is the higher of:

- (1) the sum of the following three elements, calculated using the bank's nominated approaches:
 - (a) RWA for credit risk (as calculated in [RBC20.6](#) to [RBC20.8](#));
 - (b) RWA for market risk (as calculated in [RBC20.9](#)); and
 - (c) RWA for operational risk (as calculated in [RBC20.10](#)); and
- (2) 72.5% of the sum of the elements listed in point (1) above, calculated using only the standardised approaches listed in [RBC20.11](#). This element of this requirement is referred to as the output floor, and the RWA amount that is multiplied by 72.5% is referred to as the base of the output floor. This requirement is subject to transitional arrangements set out in [RBC90].

Banking book and trading book boundary

20.5 Before a bank can calculate RWA for credit risk and RWA for market risk, it must follow the requirements of [RBC25](#) to identify the instruments that are in the trading book. The banking book comprises all instruments that are not in the trading book and all other assets of the bank (hereafter "banking book exposures").

RWA for credit risk

20.6 RWA for credit risk (including counterparty credit risk) is calculated as the sum of the following:

- (1) Credit RWA for banking book exposures, except the RWA listed in (2) to (6) below, calculated using:
 - (a) The standardised approach, set out in [CRE20](#) to [CRE22](#); or
 - (b) The internal ratings-based (IRB) approach, set out in [CRE30](#) to [CRE36](#).
- (2) RWA for counterparty credit risk arising from banking book exposures and from trading book instruments (as specified in [CRE55](#)), except the exposures listed in (3) to (6) below, using the methods outlined in [CRE51](#).

- (3) Credit RWA for equity investments in funds that are held in the banking book calculated using one or more of the approaches set out in [CRE60](#):
 - (a) The look-through approach.
 - (b) The mandate-based approach.
 - (c) The fall-back approach.
- (4) RWA for securitisation exposures held in the banking book, calculated using one or more of the approaches set out in [CRE40](#) to [CRE44](#):
 - (a) Securitisation Standardised Approach (SEC-SA).
 - (b) Securitisation External Ratings-Based Approach (SEC-ERBA).
 - (c) Internal Assessment Approach (IAA).
 - (d) Securitisation Internal Ratings-Based Approach (SEC-IRBA).
 - (e) A risk weight of 1250% in cases where the bank cannot use (a) to (d) above.
- (5) RWA for exposures to central counterparties in the banking book and trading book, calculated using the approach set out in [CRE54](#).
- (6) RWA for the risk posed by unsettled transactions and failed trades, where these transactions are in the banking book or trading book and are within scope of the rules set out in [CRE70](#).

20.7 The approaches listed in [RBC20.6](#) specify how banks must measure the size of their exposures (ie the exposure at default) and determine their RWA. Certain types of transactions in the banking book and trading book (such a derivatives and securities financing transactions) give rise to counterparty credit risk, for which the measurement of the size of the exposure can be complex. Therefore, the approaches listed in [RBC20.6](#) include, or cross refer to, the following methods available to determine the size of counterparty credit risk exposures (see [CRE51](#) for an overview of the counterparty credit risk requirements including the types of transactions to which the methods below can be applied):

- (1) The standardised approach for measuring counterparty credit risk exposures (SA-CCR), set out in [CRE52](#).
- (2) The comprehensive approach, set out in [CRE22.40](#) to [CRE22.65](#).
- (3) The value at risk (VaR) models approach, set out in [CRE32.39](#) to [CRE32.41](#).

(4) The internal models method (IMM), set out in [CRE53](#).

20.8 For banks that have supervisory approval to use IMM to calculate counterparty credit risk exposures, RWA for credit risk must be calculated as the higher of:

- (1) the sum of elements (1) to (6) in [RBC20.6](#) calculated using IMM with current parameter calibrations; and
- (2) the sum of the elements in [RBC20.6](#) using IMM with stressed parameter calibrations.

RWA for market risk

20.9 RWA for market risk is calculated as the sum of the following:

- (1) RWA for market risk for instruments in the trading book and for foreign exchange risk and commodities risk for exposures in the banking book, calculated using one or more of the following approaches:
 - (a) The standardised approach for market risk, set out in [MAR20](#) to [\[MAR23\]](#);
 - (b) The internal models approach (IMA) for market risk, set out in [MAR30](#) to [\[MAR33\]](#); or
 - (c) The simplified standardised approach for market risk, set out in [\[MAR40\]](#).
- (2) RWA for credit valuation adjustment (CVA) risk in the banking and trading book, calculated using one of the following methods set out in [MAR50](#):
 - (a) The basic approach to CVA risk (BA-CVA).
 - (b) The standardised approach to CVA risk (SA-CVA).
 - (c) 100% of the bank's RWA for counterparty credit risk, for banks that have exposures below a materiality threshold (see [MAR50.9](#)).

RWA for operational risk

20.10 RWA for operational risk is calculated using the standardised approach for operational risk, set out in [OPE25](#).

Calculation of the output floor

20.11 To reduce excessive variability of RWA and to enhance the comparability of risk-based capital ratios, banks are subject to a floor requirement that is applied to RWA. The output floor ensures that banks' capital requirements do not fall below a certain percentage of capital requirements derived under standardised approaches. The standardised approaches to be used to calculate the base of the output floor referenced in [RBC20.4\(2\)](#) are as follows:

- (1) The standardised approach for credit risk.
- (2) The bank's nominated approach for equity investments in funds.
- (3) For securitisation exposures in the banking book and when determining the default risk charge component for securitisation exposures in the trading book:
 - (a) if a bank does not use SEC-IRBA or SEC-IAA, its nominated approach; or
 - (b) if a bank does use SEC-IRBA or SEC-IAA, then the SEC-ERBA, SEC-SA or a risk-weight of 1250% as determined per the hierarchy of approaches.
- (4) For counterparty credit risk exposure measurement:
 - (a) if a bank does not use IMM or the VaR models approach, then its nominated approach; or
 - (b) if a bank does use IMM or the VaR models approach, then the SA-CCR or the comprehensive approach.
- (5) For market risk:
 - (a) If a bank uses the IMA for market risk, then the standardised approach for market risk; or
 - (b) If a bank does not use the IMA for market risk, then its nominated approach.
- (6) The bank's nominated approach for CVA risk.
- (7) The standardised approach for operational risk.

20.12 [RBC20.11](#) above means that the following approaches are not permitted to be used, directly or by cross reference,² in the calculation of the base of the output floor:

- (1) IRB approach to credit risk;
- (2) SEC-IRBA;
- (3) the IMA for market risk;
- (4) the VaR models approach to counterparty credit risk; and
- (5) the IMM for counterparty credit risk.

Footnotes

2 As examples:

- *Although the requirements for calculating exposures to central counterparties ([CRE54](#)) cross refer to IMM as a possible method for calculating exposure values, IMM may not be used when these rules are applied for calculating the base of the output floor.*
- *For the look-through and mandate-based approaches for equity investments in funds, banks must use the standardised approach for credit risk when calculating the RWA of the underlying assets of the funds for the base of the output floor.*
- *Although there is a cross reference in the standardised approach for market risk to the securitisation chapters of the credit risk standard ([CRE40](#) to [CRE44](#)), SEC-IRBA may not be used when the standardised approach for market risk is calculated for the base of the output floor.*

20.13 The table below provides a simple example of how the capital floor must be calculated.

Illustration of output floor calculation Table 1

	Pre-floor RWAs	Standardised RWAs	72.5% of standardised RWAs
Credit risk	62	124	-
- of which Asset Class A	45	80	-
- of which Asset Class B	5	32	-
- of which Asset Class C (not modelled)	12	12	-
Market risk	2	4	-
Operational risk (not modelled)	12	12	-
Total RWA	76	140	101.5

As the floored RWAs (101.5) are higher than the pre-floor RWA (76) in this example, the bank would use the former to determine compliance with the requirements set out in [RBC20.1](#) (and the buffers in [RBC30](#) and [RBC40](#)).

Minimum standards and use of internal models

20.14 While the Basel framework permits 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 internally modelled approaches but instead only implements the basic or standardised approaches is compliant with the Basel framework.