Consultative Document on reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches

Basel Committee on Banking Supervision (BCBS)

Index

Introduction

The BCBS published in March 2016 a consultative document setting constraints on the use of the foundation internal ratings based approach (F-IRB) and the advanced internal ratings based approach (A-IRB)

Introduction

- In January 2016, it was agreed that the BCBS would complete its work to address the problem of excessive variability in risk-weighted assets (RWAs) by the end of 2016.
- In this regard, and aiming at reducing the complexity of the regulatory framework and improving comparability and addressing excessive variability in the capital requirements for credit risk, the BCBS issued a **consultation document** in March 2016 including constraints to the use of internal models for credit risk, open for consultation until 24 June 2016.

Specifically, the BCBS proposes to:

- **Remove the option to use the IRB approaches** for certain portfolios: banks and other financial institutions; large corporates (i.e. corporates belonging to consolidated groups with total assets exceeding 50 bn€); and equities, where it is judged that the model parameters cannot be estimated sufficiently reliably for regulatory capital purposes.
- Adopt exposure-level, **model-parameter floors** to ensure a minimum level of conservatism for portfolios where the IRB approaches remain available.
- Replace the **current capital floor**.
- Provide greater specification of **parameter estimation** practices to reduce variability in RWAs for portfolios where the IRB approaches remain available.

This document analyses the proposed changes to the advanced internal ratings based approach (A-IRB) and the foundation internal ratings based approach (F-IRB).

Index

Executive Summary

This consultation document sets requirements regarding the use of internal models, parameter floors, output floors and parameter estimation. The final calibration of the proposals will be informed by a QIS

Executive summary

Scope of application

- **Banks that use internal models** as inputs for determining their regulatory capital requirements for credit risk

Regulatory context

- **CP on Revisions to the Standardised Approach for credit risk**, published by the BCBS, in December 2015
- **CP on Review of the Credit Valuation Adjustment Risk Framework**, published by the BCBS in July 2015

Next steps

- Comments shall be submitted by **24 June 2016**
- The **final design and calibration** of the proposals will be informed by a QIS

Main content

Scope of the proposals

- The proposals introduce changes to the **F-IRB** and the **A-IRB**

Use of internal models

Removal of IRB approaches for exposures to:

- Banks and other financial institutions
- Large corporates[1]
- Equities
- Specialised lending

Parameter floors

- Application of floors to the following parameters: PD, LGD and CCF used to determine EAD for off-balance sheet items
- The applicable floors will depend on the type of exposure: corporate or retail

Parameter estimation

- **PD**: requirements related to rating systems, data, granularity, etc.
- **LGD**: supervisory-specified LGDs and floors to banks' own estimations
- **EAD/CCFs**: supervisory-specified CCFs and other constraints to models

Output floors

Replacement of the current capital floor by one of the following options (decision after the QIS):

- An aggregate output floor in the range of 60% - 90%
- Output floors at a more granular level, where appropriate

1. Corporates belonging to consolidated groups with total assets exceeding 50 bn€

Index

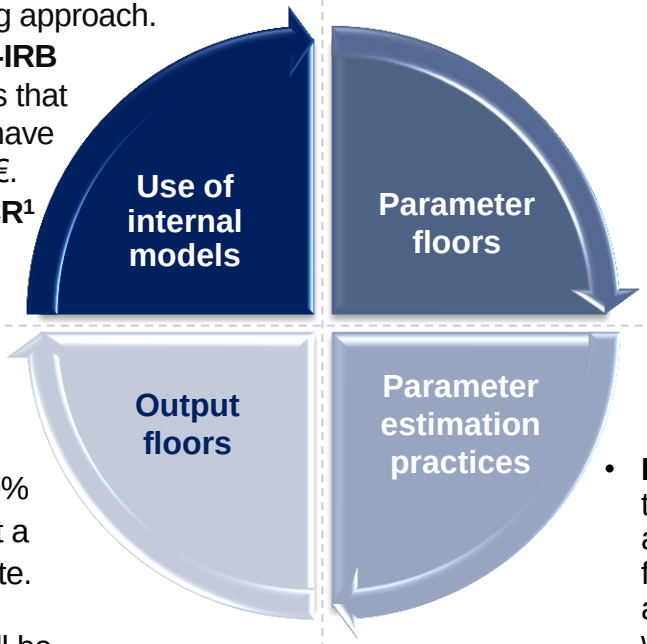
Detail

Summary of proposals

The proposed changes to the framework are the following: to remove the use of IRB approaches for certain exposures, to adopt exposure-level model-parameter floors, to replace the current capital floor and to provide greater specification of parameter estimation

Summary of proposals

- To **remove the IRB approaches** for the following portfolios: banks and other financial institutions; large corporates; equities; and specialised lending that use bank estimates of model parameters instead of the IRB supervisory slotting approach.
- To **remove the option to use the A-IRB** approach for exposures to corporates that are part of consolidated groups that have annual revenues greater than 200 M€.
- To **introduce a floor to the IMM-CCR**[1] based on a percentage of the SA.
- To **remove the IMA-CVA**[2].



- To introduce floors that differentiate between **corporate and retail exposures** to the following model parameters:
  - **PD**: e.g. 5bps for corporate exposures.
  - **LGD**: e.g. 25% for unsecured corporate exposures.
  - **EAD/CCF**: a floor equal to the sum of the on balance sheet exposures and 50% of the off balance sheet exposure using the applicable CCF in the SA.

- To **replace the current capital floor**, currently based on Basel I, with an aggregate output floor which could be calibrated in the range of 60% to 90% or by applying output floors at a more granular level, where appropriate.

- The **final design and calibration** will be informed by a comprehensive quantitative impact study (QIS).

  - **PD**: introduction of requirements related to rating systems, data, granularity and seasoning.
- **LGD**. F-IRB: unsecured exposures use the existing supervisory-specified LGD and fully&partially secured use a simplified formula. A-IRB: unsecured exposures add a long-run average LGD to an add-on, whereas fully&partially secured may use modelled LGD with a floor.
- **EAD/CCFs**: most exposures use supervisory-specified CCFs since there are many constraints to models.

1. Internal model method for counterparty credit risk.
2. Internal model approach for credit valuation adjustment risk.

Detail
Use of internal models

It is proposed to remove the IRB approaches for exposures to banks and other financial institutions, corporates belonging to consolidated groups with total assets exceeding 50 bn€, equities and for certain situations regarding specialised lending

Proposals to remove the use of IRB approaches

Banks and other financial institutions

- Removal of the **IRB approaches** for exposures to banks and other financial institutions (including insurance companies).
- These exposures will be subject to the **standardised approach**.

Large corporates

- Exposures to corporates belonging to **consolidated groups (CG)**, where some conditions regarding total assets and annual revenues are met (described below), should be subject to the following approaches:

	Eligible approach
1 CG with **total assets > 50 bn€**	Standardised Approach
2 CG with **total assets ≤ 50 bn€** and **annual revenues > 200 M€**	SA, F-IRB
3 CG with total **assets ≤ 50 bn€** and **annual revenues ≤ 200 M€**	SA, F-IRB, A-IRB

Equities

- Removal of the **IRB approaches** for equity exposures.
- These exposures will be subject to the **standardised approach**.
- The IRB credit risk capital requirement that applies to equities also applies to the **banking book exposures**.

Specialised lending

- Removal of the **IRB approaches** for specialized lending that use bank's estimates of model parameter, leaving only the **standardised approach** and the **current IRB supervisory slotting approach**.

Detail
Use of internal models

Additionally, the BCBS has proposed to apply a floor to the IMM-CCR based on a percentage of the applicable SA and to eliminate from the proposed framework the IMA-CVA

Proposals regarding CCR and CVA

Counterparty credit risk

- It is proposed to retain the IMM-CCR, as it is more risk-sensitive than the standardised approaches, but subject to a **floor based on the applicable standardised approach** (under consultation since the publication by the BCBS of the Revisions to the Standardised Approach for credit risk in December 2015).
- This proposal does not preclude the use of IMM to estimate the **exposure to these counterparties**.
- For **derivative exposures**, the applicable approach is the **standardised approach to counterparty credit risk (SA-CCR)**, which consists of two components: replacement cost (RC) and potential future exposure (PFE) for measuring EAD for CCR.
- For **securities financing transactions** (e.g. repos), the applicable approach is the formula set in the proposed new standardised approach for credit risk.

Credit valuation adjustment

- It is proposed to remove the **internal models approach (IMA-CVA)** from the proposed framework on CVA risk that was issued by the BCBS in July 2015.
- Thus, under this proposal banks will be required to use either the **standardised approach** (SA-CVA) and the **basic approach** (BA-CVA) when calculation CVA risk.

Detail
Parameter floors

Parameter floors are set to the PD, LGD and CCF used to determine EAD for off-balance sheet items

Proposals regarding parameter floors

Exposure-level floors

- The proposed floors differentiate between **corporate and retail exposures** and are summarised in the following table:

	PD	LGD[1]		EAD[1]/CCF
		Unsecured	Secured[2]	
Corporate	5bps	25%	Varying by collateral type: • 0% financial • 15% receivables • 15% commercial or residential real estate • 20% other physical	EAD subject to a floor that is the sum of (i) the on balance sheet exposures; and (ii) 50% of the off balance sheet exposure using the applicable CCF in the standardised approach
Retail exposures:				
- Mortgages	5bps	N/A	10%	
- QRRE transactors	5bps	50%	N/A	
- QRRE revolvers	10bps	50%	N/A	
- Other retail	5bps	30%	Varying by collateral type: • 0% financial • 15% receivables • 15% commercial or residential real estate • 20% other physical	

1. LGD and EAD floors are only applicable in A-IRB approaches.
2. LGD floors for secured exposures apply when the exposure is fully secured (i.e. the value of collateral after the application of haircuts exceeds the value of the exposure). LGD floors for a partially secured exposure are calculated as a weighted average of the unsecured. LGD floor for the unsecured portion and the secured LGD floor for the secured portion
3. QRRE stands for qualifying revolving retail exposures. QRRE transactors are facilities such as credit cards and charge cards where the balance has always been repaid at each scheduled repayment date and that at least 6 months have passed since the facility was first used as a means of payment (the repayment date is typically the date after which interest charges come into effect on any balances carried forward). QRRE revolvers are all facilities that do not qualify as QRRE transactors, e.g where balances have been carried forward past the scheduled repayment date.

Detail
Parameter floors

The BCBS has considered some factors to calibrate the parameter floors. Nevertheless, these floors are part of a baseline proposal that will be finally set after conducting a QIS during 2016

Factors considered in the calibration of parameter floors

Calibration of parameter floors

- The floors set out in the previous table are part of a **baseline proposal**. The BCBS intends to test certain alternative values in the QIS exercise that will be conducted during 2016.
- There are **various factors** regarding the appropriate calibrations of the floors that have been considered to calibrate the proposed floors:

Reliability of model estimates

- Floors on individual model parameters can be applied in a targeted way to **address concerns about the reliability of particular inputs** for particular portfolios.

Reduction in RWA variability

- Parameter floors can address RWA variability by **narrowing the range of outcomes** and **eliminating outliers** (on the low side).

National specificities

- **High parameter floors** reduce the effects of some products with specific national features (i.e. particularly in the retail portfolios) that result in lower default and loss rates than similar products in other jurisdictions.

Incentives

- Banks may be incentivised to **shift their exposures to higher risk exposures** to avoid the effect of the parameter floors.

Consistency with SA

- Floors that lead to minimum risk weights that are **significantly higher than those used in the SA** could discourage banks from adopting the IRB approaches and the associated risk management standards.

Detail

Parameter estimation practices

The BCBS proposes to increase the simplicity and comparability of the IRB approaches by introducing requirements to PD estimation regarding rating systems, data, granularity and seasoning

Probability of default (PD)

The following requirements apply to both the F-IRB and the A-IRB

General requirements[1]

- **Rating systems**:
  - Assignments to rating categories should generally **remain stable over time** and throughout business cycles.
  - Migration from one category to another should generally be due to **idiosyncratic or industry-specific changes**.
- **Data used to calculate PDs**: estimation shall be based on observed historical average one-year default rate, which must include a representative mix of good and bad years, with a minimum weighting of data from downturn years of one in ten.
- **Granularity of PDs**: at a minimum, PD should be estimated for each rating grade.

Requirements for retail exposures

- **Seasoning**: banks should take account of seasoning as a risk factor in their models.

1. Applied to corporate exposures and, where relevant, retail exposures

Detail

Parameter estimation practices

Under the F-IRB framework, unsecured exposures retain the existing supervisory-specified LGDs whereas a simplified single formula is proposed when calculating LGDs for fully and partially secured exposures

Loss given default (LGD)

F-IRB framework

Unsecured exposures: only relevant for exposures to corporates

- Retain the existing **45%** and **75%** respectively for senior and subordinated unsecured exposures.

Fully & partially secured exposures: only relevant for exposures to corporates

- Simplification of the framework by introducing a **single formula**[2] to determine downturn LGD for secured exposures (LGD*) instead of the two existing approaches:

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

Where:

- E = current value of the exposure.
- H_E= % increase in exposure values that banks have to assume when formula is used to calculate CCR. If a bank is owed cash only, H_E is 0.
- E_S = amount of the exposure that is collateralised (i.e. collateral after applying the supervisory prescribed haircut (capped at E*(1 + H_E)).
- E_U = E*(1+H_E)-E_S: exposure value (increased by 1+ H_E when formula is used to calculate CCR) minus the amount of collateralised exposure.
- LGD_U = the relevant supervisory-prescribed downturn LGD for unsecured exposures.
- LGD_S = the supervisory-prescribed downturn LGD on a fully secured exposure. The prescribed amount(s) provide the floor on the overall downturn LGD for secured exposures.

1. Only relevant for exposures to corporates
2. See annex for further detail on changes of substance

Detail

Parameter estimation practices

Regarding the A-IRB framework, banks shall estimate LGDs for unsecured exposures by adding two components (a long-run average of LGD for each exposure and an add-on), whereas for fully and partially secured exposures banks may use their own LGD estimations but subject to a floor

Loss given default (LGD)

A-IRB framework

Unsecured exposures: corporate and retail

- The LGD parameter will be the sum of two components that banks must separately estimate for non-defaulted assets:
  - A **long-run average LGD** for each exposure.
  - An **add-on** to reflect the impact of downturn conditions (to which the BCBS will consider applying a floor). As an alternative, the BCBS is considering whether to use supervisor-specified add-ons.

Fully and partially secured exposures: corporate and retail

- Banks shall be permitted to **directly estimate their downturn LGDs** for fully and partially secured exposures, but **subject to a floor** calculated using the following formula:

$$Floor = LGD_{Ufloor} * \frac{E_U}{E} + LGD_{Sfloor} * \frac{E_S}{E}$$

  - The proposed calibration of the floors is covered in page 10, which in the case of LGD_{Sfloor} will vary with the type of collateral securing the exposure.
  - E_U and E_S are calculated as set out in page 13 for corporate exposures and for exposures in the 'other retail' category (i.e. the collateral haircuts set out in annex 1 (1) should also be used for other retail exposures).
  - LGD_S and LGD_U are taken from page 10.
  - The above formula does not apply to exposures in the residential mortgages portfolio.

Detail

Parameter estimation practices

Banks shall use the supervisory CCFs specified in the SA for exposures under the F-IRB and A-IRB frameworks. However, certain exposures within the A-IRB framework that comply with 3 specific conditions, and subject to some constraints, may use their own estimations of CCFs

Exposure at default (EAD)

F-IRB framework

- Banks are required to use the **supervisory CCFs** set out in the SA.

A-IRB framework

CCFs in the SA

- Banks are required to use the **CCFs specified in the SA** for a larger range of exposures than is currently required: commitments[1] to counterparties for which the SA to credit risk must be used under the proposal in page 10 (e.g exposures to banks and other financial institutions) and all non-revolving commitments to other counterparties.

EAD modelling[2]

Conditions:

i. The exposure is to a counterparty for which the **IRB approach to credit risk is available** (eg certain corporates and retail)
ii. The exposure is an **undrawn revolving commitment** to extend credit, purchase assets or issue credit substitutes
iii. The exposure is **not subject to a CCF of 100%** in the SA.

Constraints :

i. EAD/CCF estimates should be based on **reference data** that reflect the customer, product & bank management practice characteristics.
ii. EAD/CCF estimates shall be effectively quarantined from the potential effects of the **region of instability** associated with facilities close to being fully drawn at the reference date.
iii. EAD reference data should not be capped to the **principal amount outstanding or facility limits**. Interest payments due and limit excesses should be included in EAD/CCF reference data.
iv. The approach used to estimate EAD should confirm that the **basic downturn requirement** of the framework is met.
v. EAD estimates must use a **12-month fixed horizon**.

1. The BCBS has proposed a new definition of commitment for both the SA and IRB
2. The EAD will be subject to a floor

Detail

Parameter estimation practices

The maturity parameter under the F-IRB remains unchanged whereas, under the A-IRB, it shall be based on the expiry date of a facility. The CRM framework has been modified regarding guarantees and derivatives recognition, double default treatment, collateral haircuts, VaR, among others

Maturity (m) and Credit Risk Mitigation (CRM)

Maturity

- **F-IRB**: the fixed 2.5 year maturity parameter remains unchanged.
- **A-IRB**: banks are required to determine the maturity parameter (M) based on the expiry date of a facility (i.e. the use of the repayment date of a current drawn amount would be explicitly prohibited).

Credit Risk Mitigation

The following amendments are introduced to the CRM framework:

Guarantees and credit derivatives recognition

- Removal of the option to replace the PD of the exposure with some grade between the underlying obligor and the guarantor's borrow grade regarding the covered portion of the exposure within the F-IRB framework.

Double default treatment

- Removal of the treatment due to its complexity and the lack of evidence of its use by banks.

Collateral haircuts

- Removal of the option for banks to use their own estimates of collateral haircuts when applying the comprehensive formula, under the F-IRB.

VaR

- Banks applying the IRB approaches may still use the VaR model approach to determine their exposures subject to CCR for securities financing transactions.
- The text outlining the VaR is proposed to be reinserted into the IRB section of the framework since it was removed from the SA.

Conditional guarantees

- Later on, the BCBS will propose changes in order to prohibit them. However, It will also clarify which types of guarantees are regarded as conditional.

Nth-to default credit derivatives

- F-IRB banks shall no longer recognise CRM arising from first-to default and more generally nth-to-default credit derivatives.
- A-IRB banks shall only recognise the first-to-default credit derivatives.

Detail

Output floors

The current capital floor is proposed to be modified by considering an aggregate output floor calibrated in the range of 60% to 90% or by applying output floors at a more granular level, where appropriate. The final design and calibration will informed by a QIS

Proposals regarding the capital floors

Design and calibration

- Despite the current proposals, the BCBS is still considering the design and calibration of **capital floors** based on standardised approaches. In fact, the **final design and calibration** will be informed by a **comprehensive quantitative impact study (QIS)**.
- However, the BCBS has already proposed to replace the current capital floor due to three purposes:
  1. The current capital floor is based on **Basel I capital requirements** and was designed as a transitional floor.
  2. The proposed revisions to the standardised approach for credit risk are not aimed at **increasing overall standardised approach capital requirements**.
  3. The BCBS is mindful of the **relative calibration** of the standardised and IRB approaches.

Proposed capital floor

- In **replacing the current capital floor**, the BCBS has considered two options:
  - by considering an **aggregate output floor** which could be calibrated in the **range of 60% to 90%** or;
  - by applying **output floors at a more granular level**, where appropriate.

Index

Next steps

The final design and calibration of the proposals will be informed by a QIS and comments on these proposals shall be submitted by 24 June 2016

Next steps

- Comments on the proposals described in this consultative document shall be submitted **by 24 June 2016.**
- The final design and calibration of the proposals will be informed by a comprehensive **quantitative impact study** (QIS).

Index

Annex 1
Parameter estimation practices

Although the formula proposed to determine downturn LGD for secured exposures (LGD*) is largely a presentational change, there are some changes of substance regarding increase in haircuts for non-financial collateral and decrease in LGD_S for eligible non-financial collateral…

Changes of substance regarding the LGD calculation formula (1/2)

1. **Increase in haircuts for non-financial collateral**. The F-IRB approach permits the recognition of the following collateral types: (i) eligible financial collateral; (ii) receivables; (iii) commercial and residential real estate (CRE/RRE); and (iv) other physical collateral. The supervisory haircuts applied to eligible financial collateral will continue to mirror those prescribed in the standardised approach. However, the Committee has some evidence that the realised value of other collateral types during stressed periods is significantly less than the carrying value of that collateral one year prior to default. As such, the Committee proposes to increase the current haircuts applied to receivables, CRE/RRE and other physical collateral to 50% (from the implied haircut levels in the current framework of 20% for receivables and 28.6% for CRE/RRE and other physical collateral).
2. **Decrease in LGD_S for eligible non-financial collateral**. Partly reflecting the above higher supervisory collateral haircuts, the Committee proposes to adjust LGD_S, which is the LGD that applies to fully secured exposures. The table below sets out the current values and the proposed new values for exposures secured by each type of collateral:

Collateral type	Current value of LGDs	Proposed new value of LGDs
Eligible financial collateral	0%	0%
Receivables	35%	20%
CRE/RRE	35%	20%
Other physical collateral	40%	25%

The Committee will continue to consider the appropriateness of a 0% LGD for exposures fully secured by eligible financial collateral, and the related zero exposure value that can be achieved in the SA for such exposures.

Annex 1
Parameter estimation practices

… along with the removal of required minimum collateral and grossing-up exposure values for securities lent or posted

Changes of substance regarding the LGD calculation formula (2/2)

3. **Removal of required minimum collateral**. The current framework for eligible IRB collateral includes a minimum collateralisation requirement. For example, if a bank has a corporate loan that is secured by CRE with a value equivalent to 25% of the loan, this falls below the minimum collateralisation requirement of 30% set out in paragraph 295 of Basel II. As a result, the CRE collateral receives no recognition as a credit risk mitigant and the corporate loan is treated as fully unsecured. In the proposed formula, the minimum collateralisation requirement has been removed to: (a) align the treatment with the recognition of financial collateral, where no such minimum collateral requirement exists; and (b) increase risk-sensitivity through greater recognition of the presence of collateral.

4. **Grossing-up exposure values for securities lent or posted**. The current approach to the recognition of financial collateral is designed (i) to calculate the risk of secured loans; and (ii) to calculate counterparty credit risk when the bank has lent out non-cash items and taken collateral (ie in the case of securities financing transactions), or when the bank has posted collateral. When it is used to calculate counterparty credit risk, a bank must gross-up exposure values (ie multiply E by 1+HE, where HE is a value that varies by exposure type). The gross-up requirement, however, does not currently apply to exposures secured by non-financial collateral. The Committee proposes to extend the application of the gross-up requirement to non-cash exposures secured by nonfinancial collateral for the following reasons: a. The gross-up requirement captures the potential future exposure that can occur if the noncash item that has been lent or posted rises in value; and b. The potential future exposure from any rise in value of the non-cash item lent or posted should be independent of whether the collateral received is in the form of financial collateral or non-financial collateral.