

■ Finalising Basel III

On 7 December 2017, the Group of Central Bank Governors and Heads of Supervision (GHOS) concluded an intensive and difficult round of negotiations by endorsing the final Basel III package of reforms. This wrapped up the fundamental reform of the global regulatory framework for banks which had been initiated in response to the financial crisis. The first part of the Basel III reform package, which defined far stricter capital, liquidity and leverage ratio standards, was adopted by the Basel Committee on Banking Supervision back in 2010. The December 2017 round of reforms amend the requirements for the calculation of credit and operational risk which banks are expected to back with capital. Updated minimum capital requirements for market risk had been adopted by the GHOS at the beginning of 2016.

The idea behind the reform package was to make the Basel standards more risk-sensitive and to limit the scope available to institutions which quantify risk – and thus determine their capital requirements – using their own internal models. These regulatory constraints, it is hoped, will curb unwarranted variation in calculation results across banks. Furthermore, the new rules will require institutions to comply with binding leverage ratios, with a surcharge being added for global systemically important banks (G-SIBs). Negotiations on the Basel III reform package proved to be particularly contentious over the calibration of an output floor requirement for institutions which use internal models for measuring risk. That output floor limits the extent to which the capital requirements calculated using banks' internal models can vary from the capital requirements derived under standardised approaches. One group of countries was pushing for banks' internal risk measurement models to play a more prominent role in the calculation of capital requirements, while another wanted to place greater constraints on their use. In the end, it was agreed to calibrate the output floor at 72.5%. What this means is that the capital benefit which a bank can gain from using an internal risk measurement model can be no more than 27.5% of the capital requirement computed solely on the basis of the standardised approaches.

The new Basel standards are scheduled for implementation on 1 January 2022, though a phase-in period running until 1 January 2027 will ease transition to the new output floor, giving banks plenty of time to acclimatise to the new regulatory setting. Implementing the stricter standards will pose a challenge for German institutions, but their sound capital base and the extended phase-in period should make it a manageable task.

The new global Basel III standards will add to the resilience of international financial markets and make for a more level playing field in global markets. Now it is a question of implementing the endorsed standards rigorously and in good time across all the member countries of the Basel Committee.

■ Introduction

The Basel III reform package¹ finalised in December 2017 by the Basel Committee on Banking Supervision (the “Basel Committee”)² forms part of an array of measures which address the vulnerabilities that the 2007-09 financial crisis had exposed in the international regulatory architecture for banks. By endorsing this reform package, the Basel Committee has implemented standards formulated in the action plan aimed at strengthening the resilience of the financial system, which the G20 leaders had adopted in November 2008 in response to the financial crisis and specified at later summits. The initial phase of the Basel III reforms, which was concluded in December 2010,³ saw the Basel Committee adopt stricter capital rules (definition, capital ratios, introduction of capital buffers) and uniform global liquidity standards, besides introducing a leverage ratio.⁴ In Europe, these measures were implemented by way of the EU-wide Capital Requirements Directive (CRD⁵) and Capital Requirements Regulation (CRR⁶), which both entered into force on 1 January 2014.⁷

The Basel Committee then turned its attention to risk matters – in other words, to the techniques used to calculate risk-weighted assets

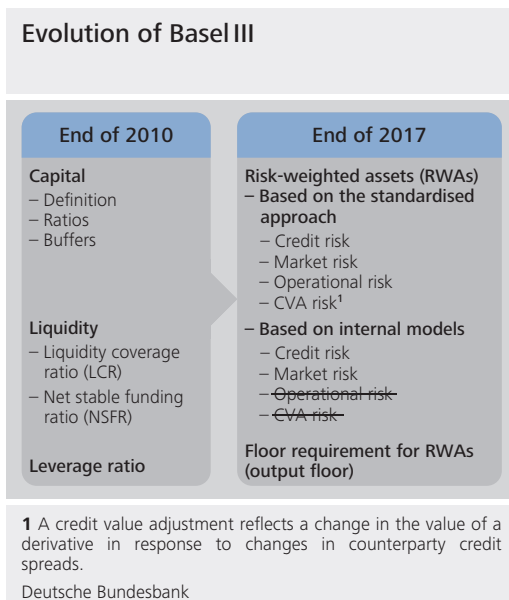
(RWAs). These are the subject of the December 2017 reform package finalising Basel III.

Not covered by the current reform package is the regime governing exposures to central governments and other sovereign entities, which the Basel Committee is discussing as a separate item (see the box on pages 77 and 78).

One key objective of the reform package finalising Basel III was to reduce unwarranted variability in RWA calculations across banks in an effort to restore faith in the results those calculations produced, which had evaporated during the financial crisis. The Basel Committee sought to achieve this goal by enhancing the robustness and risk sensitivity of the standardised approaches for credit and operational risk, curbing the use of internal models, and complementing the risk-weighted capital ratio with a finalised leverage ratio and a revised, more robust output floor.⁸

A range of studies by the Basel Committee had found wide variation in the capital requirements or RWAs which institutions calculated

Goals: reducing RWA variability and curbing model risk while maintaining the balance between risk sensitivity and regulatory complexity



¹ See Basel III: Finalising post-crisis reforms, <https://www.bis.org/bcbs/basel3.htm>

² The Basel Committee on Banking Supervision is the primary global standard-setter for the prudential regulation of banks. It comprises high-level representatives from central banks and authorities with formal responsibility for the supervision of banking business from 28 countries (see <https://www.bis.org/bcbs/membership.htm>). The Basel Committee on Banking Supervision usually convenes every three months. Its standing secretariat is located at the Bank for International Settlements (BIS) in Basel. Germany is currently represented by Dr Andreas Dombret from the Deutsche Bundesbank and Raimund Röseler from the Federal Financial Supervisory Authority (BaFin).

³ See Basel III: A global regulatory framework for more resilient banks and banking systems, <https://www.bis.org/publ/bcbs189.pdf>, and Basel III: International framework for liquidity risk measurement, standards and monitoring, <https://www.bis.org/publ/bcbs188.pdf>

⁴ The liquidity coverage ratio (LCR) already applies as a mandatory minimum requirement in Europe on account of the CRR. The net stable funding ratio (NSFR) and the leverage ratio are scheduled for introduction as compulsory minimum standards when the CRR is revised (CRR II).

⁵ Directive 2013/36/EU of 26 June 2013.

⁶ Regulation (EU) No 575/2013 of 26 June 2013.

⁷ See Deutsche Bundesbank, Implementing Basel III in European and national law, Monthly Report, June 2013, pp 55-71.

⁸ See <https://www.bis.org/bcbs/publ/d424.htm>

Chronology

Date	Measures	Implementation
July 1988	Basel I ¹ <ul style="list-style-type: none"> – Minimum capital ratio of 8% for credit risk – Capital requirements for market risk added in 1996² 	EU law: Solvency Directive ³ Own Funds Directive ⁴ National law: Banking Act (<i>Kreditwesengesetz</i> , or KWG), Principle I ⁵
June 2004	Basel II ⁶ (enhancement to the Basel I Capital Accord) <ul style="list-style-type: none"> – Introduction of a three-pillar approach: <ul style="list-style-type: none"> – Pillar 1: capital requirements for credit, market and operational risk; introduction of internal ratings-based (IRB) approaches – Pillar 2: qualitative prudential principles (supervisory review process) and risk management principles – Pillar 3: disclosure requirements to strengthen market discipline 	EU law: Banking Directive ⁷ Capital Adequacy Directive ⁸ National law: ⁹ KWG, Solvency Regulation (<i>Solvabilitätsverordnung</i> , or SolvV), Minimum Requirements for Risk Management (<i>Mindestanforderungen an das Risikomanagement</i> , or MaRisk)
July 2009 (updated in 2010 and 2011)	Basel 2.5 ¹⁰ (initial short-term measures adopted in response to the financial crisis; enhancements to the Basel II framework) <ul style="list-style-type: none"> – Higher capital requirements for securitisation and market risk – Higher risk management and disclosure standards 	EU law: Capital Requirements Directive (CRD) National law: KWG, SolvV, MaRisk
December 2010 (revised in June 2011)	Basel III ¹¹ (further measures adopted in response to the financial crisis) <ul style="list-style-type: none"> – Stricter capital requirements plus capital buffers – Revised definition of capital – Leverage ratio – Liquidity requirements (liquidity coverage ratio (LCR), net stable funding ratio (NSFR)) 	EU law: CRR, CRD National law: ¹² KWG, SolvV
December 2017	Finalisation of Basel III ¹³ <ul style="list-style-type: none"> – Revision of the rules on calculating capital requirements for <ul style="list-style-type: none"> – Credit risk¹⁴ – Operational risk – Market risk¹⁵ – Adjustment of the output floor – Leverage ratio surcharge for global systemically important banks 	Implementation by amending the following legal frameworks: EU law: CRR, ¹⁶ CRD National law: KWG

¹ International convergence of capital measurement and capital standards, <https://www.bis.org/publ/bcbs04a.pdf> ² Amendment to the Capital Accord to incorporate market risks, <https://www.bis.org/publ/bcbs24.htm> ³ Council Directive 89/647/EEC (no longer in force). ⁴ Council Directive 89/299/EEC (no longer in force). ⁵ See Deutsche Bundesbank, The new Principle I, Monthly Report, May 1998, pp 65-73. ⁶ International convergence of capital measurement and capital standards: A revised framework (comprehensive version), <https://www.bis.org/publ/bcbs128.pdf> ⁷ Directive 2006/48/EC (repealed by Directive 2013/36/EU). ⁸ Directive 2006/49/EC (repealed by Directive 2013/36/EU). ⁹ See Deutsche Bundesbank, The new Basel Capital Accord (Basel II), Monthly Report, April 2001, pp 15-41. ¹⁰ Enhancements to the Basel II framework, <https://www.bis.org/publ/bcbs157.pdf> ¹¹ See Basel III: A global regulatory framework for more resilient banks and banking systems, <https://www.bis.org/publ/bcbs189.pdf>, and Basel III: International framework for liquidity risk measurement, standards and monitoring, <https://www.bis.org/publ/bcbs188.pdf> ¹² See Deutsche Bundesbank, Implementing Basel III in European and national law, Monthly Report, June 2013, pp 55-71. ¹³ See Basel III: Finalising post-crisis reforms, <https://www.bis.org/bcbs/basel3.htm> ¹⁴ The securitisation framework had already been revised in 2014 (see Revisions to the securitisation framework, <https://www.bis.org/bcbs/publ/d303.htm>). ¹⁵ The revised minimum capital requirements for market risk had already been endorsed in January 2016; see <https://www.bis.org/bcbs/publ/d352.pdf> ¹⁶ The validity of the floor provisions set out in Article 500(1) of CRR had been limited until 31 December 2017.

using internal models that could not be explained solely by differences in the riskiness of their portfolios. A degree of variability is unproblematic for supervisors, given that it can be attributed to idiosyncrasies in individual banks' risk management practices. In an effort to curb undesirable excessive variability in the calculation of RWAs, the Basel Committee fundamentally revised the relevant areas of the regulatory architecture, singling out the rules governing the calculation of capital requirements for credit and operational risk as well as the standards for market risk. Another new feature is the introduction of a surcharge on the minimum leverage ratio for global systemically important banks (G-SIBs).

GHOS expectation that finalising Basel III should not significantly increase capital requirements posed a particular challenge

The expectation articulated by the GHOS that finalising Basel III should not, on average, significantly increase overall capital requirements posed a particular challenge while wrapping up the Basel III package. Differences in financial systems across stakeholder countries made it difficult to strike a universally acceptable balance. One example of the difficulties the Basel Committee faced was the calibration of the output floor, where it was only possible to reach a compromise following intensive and difficult talks.⁹

Standardised approach for credit risk

CRSA a standalone procedure and a floor for the IRB approach

The regulatory standardised approach for credit risk (CRSA) is a methodology used for calculating a bank's minimum capital requirements for credit risk. In future, banks using internal ratings-based (IRB) approaches to calculate their credit risk will be expected to quantify their capital requirements under the CRSA as well, since the latter will then be used to determine the output floor. This will make the CRSA significantly more important, including for large institutions. In light of this development, the revision primarily set out to forge stronger links between the CRSA and the internal model methods (eg by harmonising the definitions

used), enhance risk sensitivity by boosting the granularity of risk weights, and adjust the CRSA's calibration to incorporate recent loss experience.

The fourth major objective – reducing mechanistic reliance on external ratings – was put on the backburner after it came in for heavy criticism from many members of the Basel Committee and the banking community. The idea of doing away with external ratings altogether as a means of calibrating CRSA risk weights was rejected because alternative risk drivers (financial metrics such as revenues and leverage in the case of exposures to corporates) are neither straightforward nor sufficiently risk-sensitive. What is more, external ratings of corporates and banks had proven to be a valuable source of information in the past. Institutions will, however, be expected to perform due diligence on the ratings released by external credit rating agencies and also raise their risk weights as appropriate.

External ratings still permissible risk indicators

The revised CRSA offers two techniques for determining the capital requirements for inter-bank exposures: the external credit risk assessment (ECRA) approach and the standardised credit risk assessment (SCRA) approach. In a move that is aimed at loosening the sovereign-bank nexus, it will now no longer be possible to derive the risk weight of the obligor bank from the risk weight of the jurisdiction in which it is incorporated. While the risk weight can continue to be determined using the external rating of the obligor bank itself under the ECRA approach, the ratings used here are not allowed to incorporate any assumptions of implicit government support. The SCRA is used for any exposures without an external rating and in jurisdictions which no longer use external ratings for regulatory purposes, such as the United States. In the SCRA approach, the lending bank, having taken into account the prudential capital and liquidity metrics and performed due

Two techniques for determining capital requirements for inter-bank exposures

⁹ See the speech by Andreas Dombret, Look ahead, 14 November 2017, <https://www.bis.org/review/r171116b.htm>

Regulatory treatment of sovereign exposures

In parallel to the publication of the finalised Basel III standard, the Basel Committee on Banking Supervision published a discussion paper on the regulatory treatment of sovereign exposures.¹ While the Basel reforms were finalised, the issue of sovereign exposures was handled separately, as they play a special role in many ways. Take, for example, the importance of exposures to central banks and central governments for the implementation of monetary policy measures. What is more, these exposures often have a key role to play in financial markets, as collateral and reference instruments for financial market transactions.

Currently, the regulatory treatment of sovereign exposures is more favourable than that of other asset classes in various respects. The Basel framework allows for sovereign exposures denominated and funded in domestic currency to be given a zero risk weight under the standardised approach for credit risk. This means that no capital has to be held against them. Moreover, sovereign exposures are exempted from the large exposure limit of 25% of Tier 1 capital, which applies to other exposure classes.

However, sovereign exposures entail various risks, which can affect the banking system and the broader economy through a number of channels. In particular, an overly strong sovereign-bank nexus poses a risk to financial stability, as high levels of sovereign exposures on bank balance sheets could threaten the solvency of those institutions if sovereign debt sustainability were to deteriorate. Because credit and concentration risk are not taken into account, banks' sovereign bond portfolios often lack diversification. Regulation should therefore aim to re-

duce the sovereign-bank nexus through suitable measures.

The discussion paper centres on three reform elements: a better definition of sovereign counterparties, and capital requirements for both credit risk and concentration risk. The special economic functions of sovereign exposures outlined above mainly apply to exposures to central governments. It is therefore appropriate to afford this exposure class preferential treatment. The conditions under which this treatment can be extended to include other sovereign entities, such as regional and local governments, is a key component of the discussion paper. In this context, it is necessary to bear in mind that the institutional settings of implicit and explicit guarantees between other sovereign entities and their central government differ from one country to the next.

The paper discusses positive risk weights for sovereign exposures as a way to take credit risk into account. As described above, central governments would receive a positive risk weight, preferential to other sovereign entities, depending on their rating. Other sovereign entities could receive the same regulatory treatment as central governments provided they are either supported by their central government or are autonomous. Sovereign entities which receive guarantees from their central government would meet the support criterion. The autonomy criterion would allow other sovereign entities to receive the same regulatory treatment as central governments provided

¹ Basel Committee on Banking Supervision, Discussion paper, The regulatory treatment of sovereign exposures, December 2017, <https://www.bis.org/bcbs/publ/d425.htm>

that those entities are able to service their liabilities autonomously, by levying taxes, for example, and thus without the support of the central government. In this case, the other sovereign entity would also be given a preferential risk weight, but based on its own credit rating – in other words, it would be treated as a central government in its own right. All remaining other sovereign entities would receive a non-preferential, and therefore higher, risk weight to cover credit risk.

As for the mitigation of concentration risk, the paper does not propose upper limits, but instead discusses incremental risk weight add-ons that would vary based on the exposure amount. This kind of price-based approach sets incentives to limit excessive exposures to a sovereign entity. The exposures that would be consolidated to determine the risk weights for concentration risk would hinge on the above definition of sovereign entities. All exposures to other sovereign entities that meet the support criterion would be combined with exposures to their central government. The capital add-on for concentration risk would therefore be higher. Exposures to “autonomous” entities would be treated separately. Exposures to all remaining other sovereign entities would be subject to a 25% Tier 1 capital limit. This approach sets incentives for banks to hold more broadly diversified sovereign portfolios.

As constitutional and economic settings of liability between a country’s sovereign entities vary widely across the world, the aforementioned criteria will have to be subject to national discretion. Allocating an entity to the central government would reduce risk weights for credit risk. But if capital requirements for concentration risk were introduced at the same time, this would result in higher risk weight add-ons

for this risk, as described, leading national authorities to weigh up their decision on sovereign definitions.

The discussion paper envisages that exposures to central banks will continue to be exempted from any regulatory treatment. This reflects the cash-like nature of a deposit with the central bank and prevents any potential friction with the conduct of monetary policy. Interested stakeholders are now invited to comment on the ideas presented in the discussion paper by responding to the specific questions it contains, and thus to actively inform the Basel Committee’s thinking.² Even though the Basel Committee has made clear that it does not currently intend to change the existing rules for sovereign exposures, a complete overhaul at the global level is a possible option in the long term. In the shorter term, ideas on this topic could be taken up at the national or European level, and this debate is already underway, especially in the European context. Amongst others, a recently published study commissioned by the European Parliament outlined similar approaches to mitigating concentration risk as those offered in the discussion paper.³ In the continuing discussions about deepening the banking union, Europe needs to actively debate risk reduction. The Bundesbank considers the regulatory treatment of sovereign exposures to be a pivotal issue in this debate.⁴

² <https://www.bis.org/bcbs/publ/d425.htm>

³ European Parliament (external author: Nicolas Véron), Sovereign concentration charges: A new regime for banks’ sovereign exposures, November 2017.

⁴ See the speech by Andreas Dombret, The other side of the coin – why European supervision needs international regulation, 15 May 2017, <https://www.bis.org/review/r170515a.htm>

diligence, is required to assign the obligor bank to one of three risk weight buckets, which indicates the appropriate risk weight to be applied.

Covered bonds – a new exposure class

A fresh addition to the Basel framework is a separate exposure class for covered bonds, for which the relevant risk weights are derived either from the issue-specific external rating of the covered bond or from the issuing institution's risk weight. These requirements are essentially consistent with the legislation which is already in force in the European Union in the shape of the CRR.

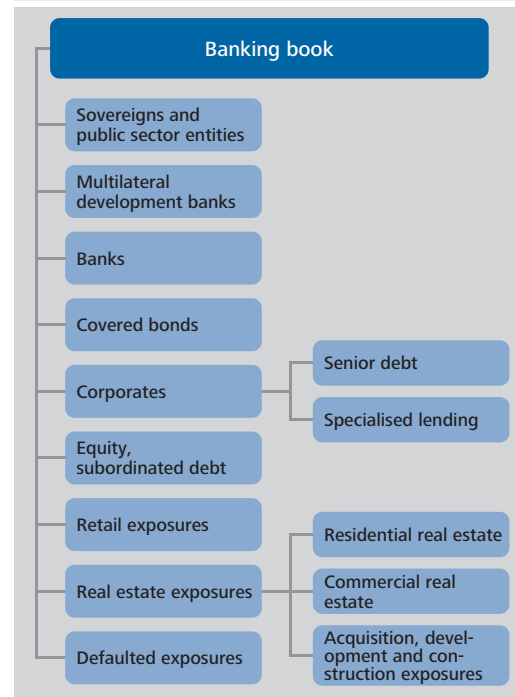
More granular approach for exposures to corporates, ...

A more granular approach has also been introduced for the corporates exposure class. In future, it will be possible to apply a risk weight of 85% to exposures to small and medium-sized enterprises (SMEs), ie entities with consolidated annual revenues of less than €50 million. This provision acknowledges that while these exposures are often secured, the collateral usually cannot be taken into account in determining an institution's minimum capital requirements. In addition, specialised lending exposures – loans where the primary source of repayment is the income generated by the financed assets or projects – should also be allocated to a separate exposure class. As hitherto, the risk weights of all corporate exposures will be based on external ratings (eg 20% for an external rating of between AAA and AA-). A flat risk weight of 100% is assigned, as before, to unrated exposures and to the bulk of unrated specialised lending exposures. Here again, there is a procedure for jurisdictions that no longer permit the use of external ratings for regulatory purposes which allows a risk weight of 65%, rather than 100%, to be applied if the lending bank assesses the corporate in question to be "investment grade". That procedure is only available if the corporate in question has securities listed on an exchange, however.

... equity, ...

To account for the higher risk of loss from subordinated exposures and equity, these risk positions will likewise be assigned to a separate exposure class in future. The risk weight treat-

Exposure classes in the revised standardised approach for credit risk (CRSA)



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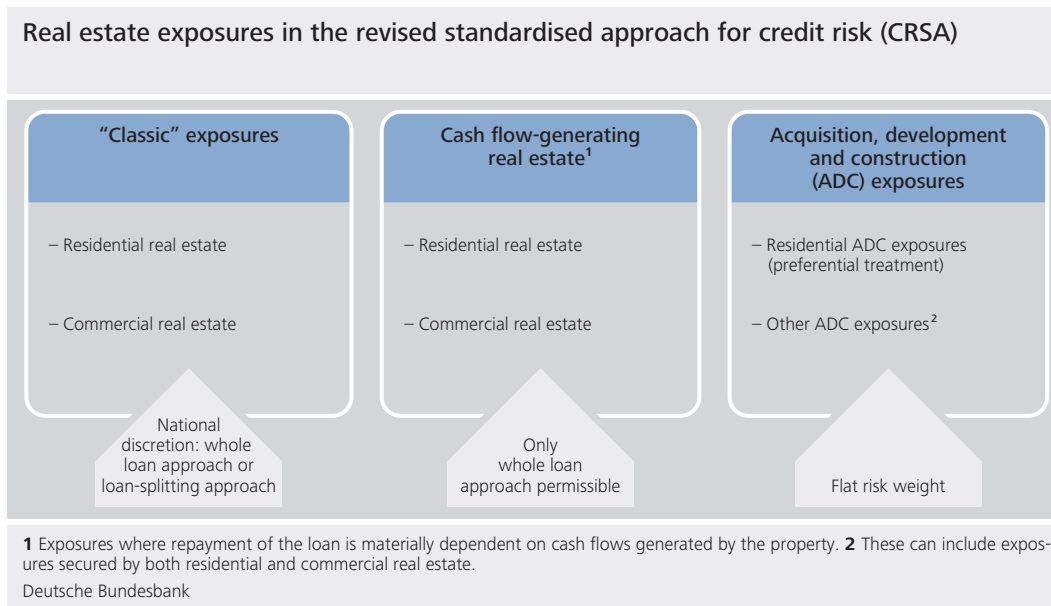
ment here varies by riskiness, and can be as high as 400% for speculative unlisted equity exposures, for example.

The future prudential treatment of retail exposures distinguishes between revolvers (where credit is typically drawn down) and transactors (where the facility is solely to facilitate transactions). The latter category includes credit card claims, for instance. If the bank can demonstrate that drawdowns of a transacting credit facility are repaid regularly, supervisors will assume that there is a lower risk of loss and apply a risk weight of 45%, rather than the flat 75% risk weight normally applied to retail exposures.

... and retail exposures

The most extensive, and, for Germany's banking sector, particularly significant changes made by the Basel III reform package affected the treatment of real estate exposures. First, the requirements governing the prudential recognition of real estate collateral were specified

A major overhaul of the rules for mortgage loans



in greater detail in the CRSA as well so as to bring them into line with the existing rules under the IRB approach. For instance, a bank wishing to count real estate as collateral in its calculation of minimum capital requirements must now ensure the legal enforceability of the collateral agreement as well as the prudent valuation of the property, and make sure that the value of the property does not depend materially on the performance of the borrower and that the borrower is able to service the debt. Exposures secured by mortgages must be assigned to separate exposure classes.

A distinction must be made between residential and commercial real estate collateral. Furthermore, banks are required to assess whether the mortgage loan can be repaid out of the borrower's income ("classic" real estate exposure) or whether repayment is materially dependent on cash flows generated by the property or properties. This is an area where the Basel Committee has taken note of a phenomenon observed in a large number of countries during the financial crisis, namely that the latter exposure type (income-producing real estate) can be more at risk of default than the "classic" variety. Income-producing real estate will therefore be subject to stricter capital requirements in future.

In the CRSA approach, the risk weight applied to real estate exposures is determined by the loan-to-value ratio (LTV) – the higher the LTV ratio, the higher the capital requirements. In the case of "classic" real estate exposures, national authorities implementing the Basel regime can choose between two techniques for determining the minimum capital requirements. The first, the whole loan approach, provides separate LTV buckets to which the entire exposure is assigned according to its LTV ratio and which show what risk weight should be applied.

LTV used as a risk indicator

The second technique, the loan-splitting approach, is already used in the European Union. In this approach, a portion of the exposure (LTV of up to 55%) is deemed to be secured by the property and is assigned a fixed risk weight (20% for residential real estate exposures and 60% for commercial real estate exposures). The remainder of the exposure is treated as unsecured and is assigned the same risk weight that would be applied to any other unsecured exposure to the same obligor (eg 75% in the case of a retail obligor in a residential real estate exposure). The risk weight of the entire exposure is then calculated as the weighted average of the risk weights for the "secured" and "unsecured" portions of the exposure. Since loans for which repayment is materially de-

pendent on cash flows generated by the property or properties are not based on the obligor's underlying capacity to service the debt from other sources, only the whole loan approach is normally permitted in these cases. If, however, loss rates from commercial real estate lending in a given country do not exceed certain ceilings (based on what is known as the "hard test"¹⁰), national competent authorities may allow the rules for "classic" real estate exposures, ie the loan-splitting approach as well, to be applied. The option of applying the loan-splitting approach, together with the hard test, take greater regulatory account of conditions in national property markets.

The third category of mortgage loans introduced by the Basel III package of reforms concerns loans to companies or special-purpose vehicles (SPVs) financing land acquisition for development and construction purposes, or development and construction of any residential or commercial property (ADC exposures). Here again, the prudential risk assessment is geared to the property value, which means that these exposures are assigned fixed risk weights regardless of the borrower's creditworthiness. As a general rule, a risk weight of 150% is applied to ADC exposures.

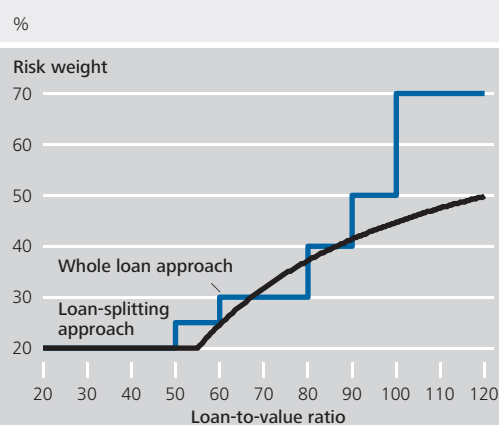
Capital requirements higher for exposures in foreign currency

Also new is a risk weight multiplier for unhedged foreign currency exposures, ie exposures where the lending currency differs from the currency of the borrower's source of income. This currency mismatch multiplier is applied to regulatory retail exposures and residential real estate exposures and covers the risk that a marked appreciation in the value of the lending currency against the currency of the borrower's source of income might leave the borrower unable to service its debts.

CCFs also for unconditionally cancellable commitments (UCCs)

In a departure from the Basel II regime, commitments that are unconditionally cancellable at any time (UCCs), which currently are not subject to capital requirements, must be recognised as an exposure under the revised CRSA by applying a credit conversion factor (CCF)

Comparison of risk weights in the whole loan and loan-splitting approaches*



* Residential real estate exposure, counterparty risk weight: 75%.
 Deutsche Bundesbank

equal to 10% of their nominal amount and be backed with capital according to the borrower's risk weight. The previous rationale for exempting institutions from the requirement to set aside capital, which gave credit institutions the ability to cancel the commitments of customers whose creditworthiness had deteriorated as a way of preventing them from drawing down the credit line, is not considered feasible in practice. To guarantee that the credit line can always be cancelled in good time (for only then would exemption from the requirement to set aside capital truly be justified), the institution would have to be in a position to judge the customer's creditworthiness, and any changes in that status, better and more quickly than the customer itself.

Changes were also made to the rules governing how collateral is treated when calculating minimum capital requirements. For one thing, the supervisory haircuts applied when counting financial collateral have been brought into line with market developments observed of late. For another, institutions using the CRSA will be required to apply the supervisory haircuts, rather than their own estimates, in future.

Some collateral eligibility provisions revised

¹⁰ See Basel III: Finalising post-crisis reforms, op cit, footnote 49.

Internal ratings-based (IRB) approaches

IRB approaches reformed to reduce RWA variability

IRB approaches allow credit institutions to use their own internal parameters to calculate their capital requirements for credit risk. A distinction is made between the foundation IRB approach, under which institutions are only permitted to use their own borrower PD (probability of default) estimates, and the advanced IRB approach, which allows them to also estimate LGD (loss given default) as well as CCFs (credit conversion factors) for off-balance-sheet items. The Basel Committee revised the IRB approaches primarily with a view to reducing excessive RWA variability among banks. RWA variability occurs when different institutions assess similar risks in different ways, resulting in varying levels of capital requirements. Those differences can occur, for instance, if risk parameters are estimated on the basis of poor data or different practices are used in the development and approval of internal models.

The Basel Committee's deliberations on reducing RWA variability sought to get to the bottom of a fundamental question: in which portfolios does it make sense to use internal modelling in the first place? Low-default portfolios especially (ie portfolios exhibiting only small numbers of loss events) were sometimes found

to differ significantly across institutions in terms of parameter estimates, even though those portfolios had a similar profile.

In light of the problems observed in the estimation of LGDs and CCFs for low-default portfolios, the Basel Committee decided to no longer permit the use of the advanced IRB approach in the banks and financial institutions exposure classes. In the corporates exposure class, its use is confined to corporates with consolidated annual revenues of €500 million or less. The advanced IRB approach will be retained for the retail and specialised lending exposures classes and for sovereigns. Since the treatment of sovereign exposures was excluded from the finalisation of Basel III, the new rules fail to address a problem which might face the low-default portfolio of sovereign exposures – that of inappropriate internal modelling and instable parameter estimates whenever loss event data are scarce.

While the new rules constrain the use of internal models overall, banks will still be able to use them for the bulk of their portfolios in future.

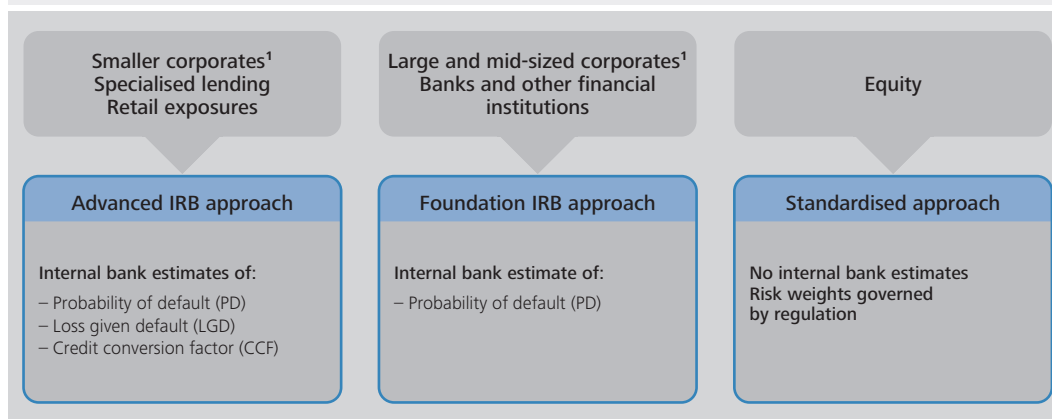
The second key measure aimed at reducing RWA variability was the adoption of minimum input floor values for bank-estimated risk par-

Use of the advanced IRB approach curbed

Foundation IRB approach largely retained

Pros and cons of input floors for risk parameters

Internal ratings-based (IRB) approaches and their use by exposure class



¹ Smaller corporates: consolidated annual revenues ≤ €500 million; large and mid-sized corporates: consolidated annual revenues > €500 million.

Input floor overview				
Item	Probability of default (PD)	Loss given default (LGD)		Credit conversion factor (CCF)
		Unsecured	Secured	
Corporate exposures	0.05%	25%	Varying by collateral type: – 0% financial – 10% residential or commercial real estate – 10% receivables – 15% other physical	50% of the corresponding credit conversion factor in the standardised approach
Retail classes: Mortgages	0.05%	–	5%	
Qualifying revolving retail exposures:				
– transactors	0.05%	50%	–	
– revolvers	0.10%	50%	–	
Other retail	0.05%	30%	Varying by collateral type: – 0% financial – 10% residential or commercial real estate – 10% receivables – 15% other physical	

Deutsche Bundesbank

ameters. The thinking behind this measure was as follows: the smaller a parameter value – the PD of a low-default portfolio, for example – the greater the number of observations needed to validate that parameter value to a statistically significant degree. However, since observations are often scarce in practice, it is not possible to sufficiently validate small parameter values, hence the risk of underestimating the risks involved. One impact of the use of input floors, though, is that the resulting increase in parameter values will primarily affect risks previously deemed to be minor. As a result, there is the danger that institutions will tend to take on greater risks which promise superior returns but will lead to similar capital requirements on account of the input floor.

The existing input floor for PD was raised from three to five basis points, while an input floor equal to half of the corresponding CCFs from the CRSA has been introduced for the CCFs in the advanced IRB approach. As regards LGDs,

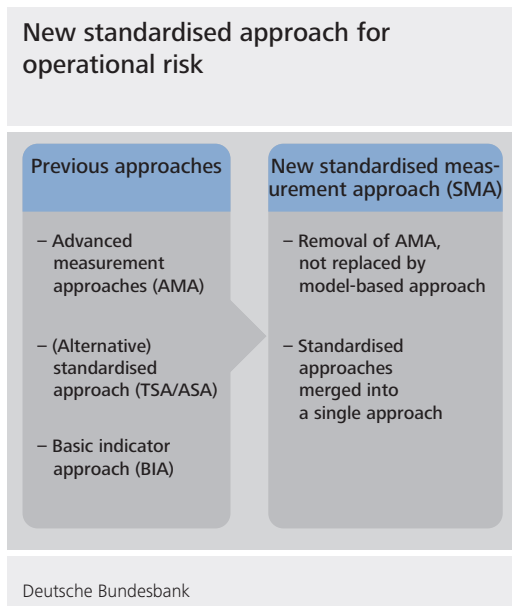
the input floor calibration varies by exposure class for unsecured exposures and by collateral type for secured exposures.

Furthermore, the new rules change a number of technical details. The foundation IRB approach, which will now play a greater role due to the constraints placed on the advanced IRB approach, has been recalibrated to account for the regulatory LGD parameter values. This will slightly reduce the overall capital requirements under the foundation IRB approach for the exposures in question.

The Basel Committee also decided that the 1.06 scaling factor currently applied to risk weights under the IRB approach will no longer apply. Introduced in 2004, this scaling factor prevented an excessive reduction in capital requirements under the IRB approach adopted as part of Basel II. Following the comprehensive recalibration of the CRSA and the IRB approach, that scaling factor is now no longer required.

Foundation IRB approach recalibrated and ...

... 1.06 scaling factor removed



Operational risk

Further changes

In the area of operational risk, the capital requirement can currently be determined using three approaches. Two of them, the basic indicator approach and the standardised approach, use the institution's average gross income for the last three years as a basis on which the calculations for operational risk are made. The capital requirement is then determined as a percentage, prescribed by supervisors, of this average income. In the third option, the advanced measurement approaches, institutions may determine their capital requirement themselves using internal models, provided these have been audited and approved by supervisors.

Removal of internal models

In the course of the revision of the rules, it was found that gross income is not a suitable proxy for operational risk in a financial crisis. In the case of banks which use an advanced measurement approach, no uniform methodology could be established, which led to the calculated capital requirements varying excessively. Against this background, banks may now determine their capital requirements only on the basis of a single, new standardised measurement approach; internal approaches are no longer permitted for this purpose.

The new standardised measurement approach is similar to the basic indicator approach in its main features. The capital requirement is calculated as a percentage of the three-year average of a relevant indicator. Gross income will no longer be used as this indicator, instead being replaced by the business indicator. This is made up of three components:

- Net interest income including income from leases
- Maximum of fee income and fee expenses as well as maximum of other operating income and other operating expenses
- Net profit and loss on the trading book and the banking book.

All components feed into the indicator with a positive sign, which means that even if the trading book result is negative, for example, the indicator increases.

As large institutions are exposed to comparatively higher operational risk, a variable supervisory coefficient will be used for the first time. For example, the capital requirement for small institutions is just 12% of the business indicator, whereas it can be up to 18% for large institutions. In order to increase the risk sensitivity of the standardised measurement approach, a loss component has been newly introduced. The capital requirement increases if the losses incurred by an institution are higher than average in a long-term comparison. If the losses incurred are relatively low, the capital requirement for operational risk can be reduced by just under half. However, the loss component is not mandatory and can, at national discretion, also be disregarded.

Higher multiplier for large banks

Market risk

The Fundamental review of the trading book (FRTB) is a part of the supervisory reforms triggered by the last financial crisis.

In response to the financial crisis, the Basel Committee introduced a more comprehensive measurement methodology for market risk (Basel 2.5) in 2009, which increased the capital requirement for banks using market risk models by a factor of roughly 2.5 at the national and EU level.

The Basel Committee has since fundamentally revised the concepts and methods in both the standardised approach and the internal models-based approach and has refined the trading book definition. The FRTB, which sets out a revised Basel market risk framework, was already adopted and published in January 2016. The EU implementation process for the FRTB began in November 2016 with the publication of the European Commission's CRR review proposal. In parallel with the adoption of the Basel III reform package on 7 December 2017, the GHOS decided to postpone the deadline for the implementation of the new market risk rules from the start of 2019 to 1 January 2022, bringing it into line with the entry into force of the finalised Basel III package.¹¹

Banks therefore have more time to make the necessary enhancements to the systems infrastructure that will be needed to apply the complex framework. A number of issues concerning the modelling requirements are still being clarified by the Basel Committee. These include a review of the calibrations of the capital requirements under the standardised and internal models-based approaches.

New definition of the trading book boundary

The boundary between the trading book and the banking book has been revised with the aim of making instruments attributable to the trading book more consistent across banks. The key criterion for assigning instruments to the trading book is still the trading intent. Whereas in the current regulatory framework, credit institutions have themselves determined the criteria for the intention to trade in relation to their trading instruments, under the FRTB there are a number of instruments that must be assigned to the trading book. Exceptions to this

rule, as well as shifting positions between the trading book and the banking book, require supervisory approval.

The internal models-based approach will continue to use internal, mathematical-statistical models to measure market risk, accompanied by a series of processes concerning, for example, data quality. In contrast to previous practice, the supervisory approval of an internal models-based approach will no longer be granted for entire risk categories (such as general interest rate risk, specific interest rate risk, commodity risk). Instead, it will be granted on a more granular basis per trading desk, for which equity risk, interest rate risk, commodity risk, exchange rate risk and credit spread risk are determined in each case.

New internal models-based approach

A key change in the new approach is that the previously used risk measure value-at-risk (VaR), as well as stressed VaR introduced under Basel 2.5, will be replaced by the risk measure expected shortfall (ES). The risk measure ES is determined for a pre-defined stress period for the approved trading desks.

A weakness of previous market risk models was that they assumed that all instruments were equally liquid and had a uniform liquidity horizon of ten days. The new framework provides for horizons of between ten and 120 days, depending on risk factor categories.

Adequate modelling of market risk requires sufficiently broad data of good quality. Where data is inadequate, the capital requirements will be determined separately and conservatively within the internal models-based approach.

In comparison with the internal models-based approach, the standardised approach is a methodologically simpler approach for measuring market risk that is fully prescribed by super-

New standardised approach for market risk

¹¹ See <https://www.bis.org/press/p171207.htm>

visors.¹² The new standardised approach measures linear risks using price sensitivities and takes risk-reducing diversification effects into account. For options, non-linear risks are also considered. Unlike the previous standardised approach, the new standardised approach also covers default risk. The new standardised approach is also to be used in combination with the internal models-based approach and serves as a fallback solution in case the latter cannot or may not be used for given trading desks. For small institutions, the existing (Basel II) standardised approach will be maintained as a simplified approach.

Credit valuation adjustment risk

The credit value adjustment (CVA) framework is aimed at OTC derivatives. These harbour not only market risk, but also credit risk. If, for example, the credit quality of the derivative counterparty worsens, this negatively affects the value of the derivative. In order to measure this relationship between market risk and credit risk, one looks at the difference in value between two portfolios: a credit-risk-free portfolio and an identical portfolio that takes into account potentially changing creditworthiness. This difference in value is called the CVA. Credit institutions are required to measure the risk of a change in CVA values (CVA risk). As described above, a change in CVA values can be caused by a change in the credit quality of the counterparty (credit risk), by a change in the absolute price of the derivative (market risk), or by a combination of the two.

During the financial crisis, banks incurred significant CVA losses, and it was therefore decided to introduce a capital requirement for CVA in the Basel III framework. Therefore, barring some exceptions, capital must be held against CVA risk for all OTC derivatives. This framework has now been revised. One of the aims was to establish methodological consistency with the FRTB. In future, procedures based

on internal models will no longer be permitted for calculating the CVA capital requirement.

The standardised approach for CVA is consistent with the standardised approach used in the aforementioned revised market risk framework (FRTB). It is intended for banks with a more sophisticated derivatives portfolio. In particular, this approach must be approved by the competent supervisory authorities. While the current CVA framework already takes into account hedges of derivatives' credit risk, the new CVA framework also recognises hedges of derivatives' market risk.

Standardised approach for CVA

The basic approach is intended as a method of calculating the CVA capital requirement for institutions that are not authorised to use the standardised approach. It is relatively easy to implement and uses data that have already been determined for the calculation of counterparty credit risk and which, therefore, are already available to credit institutions. With regard to CVA hedges, credit risk hedges are only taken into account under certain conditions, whereas market risk hedges are (on the other hand) not recognised at all.

Basic approach for CVA

The simplified method is intended for institutions whose aggregate notional amount of non-centrally cleared derivatives is less than €100 billion. These institutions can set their CVA capital equal to 100% of the bank's capital requirement for counterparty credit risk. The capital requirements for counterparty credit risk are thereby doubled. A bank's relevant supervisory authority can, however, remove this option if CVA risk materially contributes to the bank's overall risk.

Simplified method

¹² The new standardised approach corresponds to a variance-covariance approach with correlations prescribed by supervisors.

Output floor: minimum capital requirement

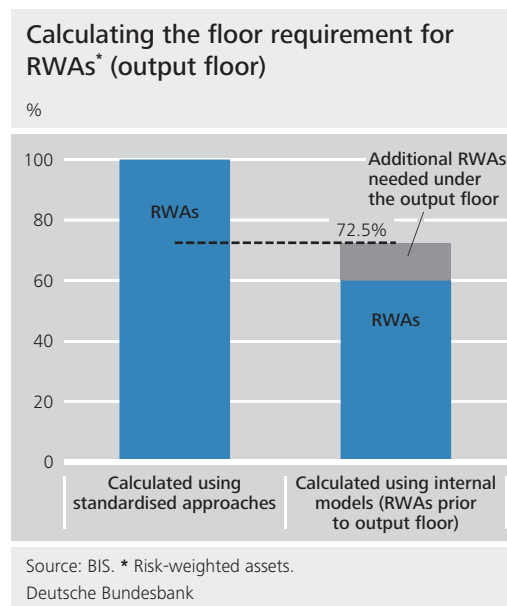
Motivation for an output floor

When institutions calculate their risks with internal models rather than supervisory standardised methods, they can usually reduce their regulatory capital requirement. This is intended to create incentives for banks to improve their internal risk management. The calculation of RWAs based on internal models usually leads to lower capital requirements than under the standardised approach, especially for low-risk exposures. As banks hold different portfolios, the RWAs determined for the same exposure class differ from one bank to another (desired variability). At the same time, banks have considerable room for discretion when using their internal models. If institutions make use of this to unduly reduce their capital requirements, this constitutes unwarranted variability of RWAs. Furthermore, internal models can also impede the comparability of capital requirements between institutions and jurisdictions if the calculated RWAs for the same or similar risks turn out to vary excessively.

Supervisors limit unwarranted variability by means of approval inspections and ongoing monitoring.¹³ Furthermore, some members of the Basel Committee advocated restricting the potential capital benefit gained from the use of internal models by imposing an output floor in order to limit the variability of RWAs and thus ensure a minimum capital level in the banking system. However, the output floor has the shortcoming of limiting both desired and unwarranted RWA variability.

Calculating the output floor

The output floor set by the Basel Committee following intense negotiations defines, on the basis of the standardised approaches of the Basel III framework, a lower bound for the RWAs that must be backed by regulatory capital. It only concerns institutions that use internal models for the calculation of credit and/or market risk. Under the output floor, the RWAs of an institution must amount to at least 72.5% of the RWAs that would be calculated if



the entire portfolio of the institution had been assessed solely using standardised approaches. The capital benefit that a bank using internal models can derive relative to the standardised approaches is therefore limited to 27.5%. The output floor is calculated at the level of the bank as a whole. When calculating the output floor, all risk categories are therefore included, irrespective of whether an internal model is authorised or not. This is why the regulatory framework refers to it as an “aggregate” output floor.

In the calibration of the output floor, it was important that regulation should not unduly hamper incentives for the use of internal models and thus for risk-oriented governance in banking business. Here, it should be borne in mind that the leverage ratio, similarly to the output floor, also limits the leeway for modelling. The leverage ratio is a non-risk-based instrument that captures all exposures without any prior risk weighting. The impact of an output floor cannot be viewed in isolation, but must be considered in conjunction with the leverage ratio. It is conceivable, for example, that the output floor increases RWAs but does not lead

¹³ The SSM is currently carrying out the large-scale TRIM project with a view to establishing a single standard for internal models.

to any additional capital requirements because the leverage ratio imposes higher capital requirements which already cover the requirements set by the output floor.

Revision of the Basel I floor

The output floor is not a completely new concept. Already under the Basel II framework, which for the first time enabled the use of internal models to calculate risk, a minimum for regulatory capital was defined on the basis of the capital requirement under Basel I or the standardised approach under Basel II (excluding market risk). This arrangement has now been revised on the basis of the new standardised approaches.

■ Leverage ratio

Leverage ratio already included as a new non-risk-based instrument in the regulatory framework in 2010

The leverage ratio was incorporated into the regulatory framework in the first part of Basel III in 2010. The leverage ratio is a non-risk based measure which is intended to limit the build-up of bank leverage. Especially in crisis situations, excessive leverage at banks can lead to destabilising deleveraging processes. This, in turn, can initially harm individual institutions, but ultimately also the financial system as a whole and the real economy.

Binding minimum leverage ratio of 3% intended to complement risk-based capital requirements as of 2018

So far, the leverage ratio has not been a binding minimum requirement. Institutions only needed to report it to supervisors and to publicly disclose it. According to the Basel framework, the leverage ratio will be introduced as binding from 2018 onwards. All banks will then be expected to have a leverage ratio of at least 3%. The leverage ratio will complement the risk-based capital requirements and ensure a minimum level of capital at banks, regardless of risk levels. In the Basel III framework, the leverage ratio is therefore termed a non-risk-based “backstop” measure that is intended to reinforce risk-based capital requirements, which remain the primary instrument of the solvency rules governing banks.

The leverage ratio is defined as the ratio of a bank’s Tier 1 capital to its total leverage exposure (exposure measure). This measure encompasses all on- and off-balance sheet exposures.

Calculating the leverage ratio: Tier 1 capital as a percentage of the exposure measure

In the context of finalising Basel III, a possible exception for central bank reserves was included in the leverage ratio framework. From 2022 onwards, the competent authorities can decide in the case of exceptional macroeconomic circumstances to exempt central bank reserves from the leverage ratio exposure measure on a temporary basis. This is intended to ensure the proper functioning of central banks’ monetary policy in these exceptional circumstances. However, the competent supervisory authority must then, in turn, raise the general leverage ratio requirement in order to maintain banks’ resilience to crises at the same level as before the exemption.

Competent supervisory authorities may allow a temporary exemption for central bank reserves

As part of finalising Basel III, an additional leverage ratio buffer for G-SIBs was introduced. In addition to maintaining a minimum leverage ratio, as of 2022 they must, pursuant to the new rules agreed in December 2017, also maintain a leverage ratio buffer whose size depends on the degree of the systemic importance of these institutions. The methodology applied in the risk-based capital requirements is used for determining systemic importance.¹⁴ The leverage ratio buffer for G-SIBs is then set at 50% of their risk-based capital buffer. For example, a bank that is required to hold a 2% risk-based G-SIB capital buffer would also need to hold a leverage ratio buffer of 1% in addition to the 3% minimum leverage ratio requirement (ie a total of 4%). G-SIBs must meet the leverage ratio buffer with Tier 1 capital. As in the case of the risk-based capital requirements, capital distribution constraints will be activated in the leverage ratio framework if a G-SIB does not fully meet its additional leverage ratio buffer requirement.

From 2022 onwards, G-SIBs must hold an additional leverage ratio buffer depending on their systemic importance

¹⁴ See Basel Committee on Banking Supervision (2014), The G-SIB assessment methodology – score calculation, <http://www.bis.org/bcbs/publ/d296.pdf>

■ Implementation deadlines

A partly staggered phase-in period over several years is planned for the implementation of Basel III. The rules on the CRSA, the IRB approach, operational risk and the leverage ratio buffer for G-SIBs are to be applied in full from 1 January 2022. This also applies to the market risk rules already agreed at the beginning of 2016, whose implementation was postponed by three years until 1 January 2022. The output floor is to be introduced gradually over a period of five years and will apply at the full level of 72.5% as of 1 January 2027. During this phase-in period, the increase in RWAs resulting from the floor can, at national discretion, be capped at 25% of a bank's RWAs before the application of the floor. Furthermore, institutions must disclose the amount of their RWAs for credit and market risk on the basis of the standardised approaches. This is intended to allow market participants to compare capital requirements determined using internal models with those determined using standardised approaches.

In addition, the Basel Committee will, after the implementation of the floor, carry out further quantitative and qualitative assessments of the effectiveness of the reform package in terms of

reducing RWA variability. Furthermore, the variability of the RWAs estimated by the banks will be monitored in the context of a peer review and benchmarking process, as will the countermeasures taken by the supervisory authorities to tackle unwarranted variability in the RWA calculation results.

The Basel III package of reforms is to be regarded as positive on the whole. While internal models are constrained by the new rules, Basel III remains a risk-sensitive approach overall. The long phase-in period up to and including 2026 gives institutions sufficient time to adapt to the new rules. Implementing the stricter rules will pose a challenge for German institutions, but their sound capital base and the extended phase-in period should make it a manageable task.¹⁵ It is important that all member countries in the Basel Committee implement the agreed standards consistently. The GHOS members have explicitly endorsed this expectation.¹⁶ Basel III should therefore be implemented in full in European law, and as quickly as possible.

¹⁵ See the speech by Andreas Dombret, Shared challenges, different perspectives, shared solutions?, 14 December 2017, <https://www.bis.org/review/r180104c.htm>

¹⁶ See <https://www.bis.org/press/p171207.htm>