‘Basel IV’: Big bang – or the endgame of Basel III?

BCBS finalises reforms on Risk Weighted Assets (RWA)

The Basel Committee on Banking Supervision’s announcement – December 2017

pwc

For more information, please visit https://www.pwc.com/gx/en/services/advisory/basel-iv.html

‘Basel IV’: finalising the next generation of risk weighted assets

On Thursday 7th December 2017, the Basel Committee for Banking Supervision (‘BCBS’) published the final instalments of its reforms for the calculation of risk weighted assets (‘RWA’) and capital floors.

These papers complete the work that BCBS has been undertaking since 2012 to recalibrate the Basel III framework. Basel III was introduced to address the most pressing deficiencies that emerged from the 2007-08 crisis and make banks more resilient.

The finalised reforms, together with earlier publications that revise the calculation of RWAs – including the updated market risk framework published in January 2016 – are collectively referred to as ‘Basel IV’ by the industry, in recognition of the scale of the changes they introduce. These include revisions to the RWA calculation for all Pillar 1 risk types, meaning that both standardised and internal risk types will be impacted.

Further changes were published regarding the leverage ratio buffer for G-SIBs, together with a discussion paper on the treatment of sovereign debt.

The Basel IV timeline

Almost 30 years after the publication of the first consultation paper on Basel I, the BCBS has now finalised its reforms to banking supervision following the financial crisis. ‘Basel IV’ is a major step forward – but the BCBS will continue its work on improving the banking supervision framework.

1988 – Basel Capital Accord

Pre-Basel

No standardised rules on capital adequacy for banks. Rules depend on bank regulators of individual countries. No rules in some countries.

1988 Basel sets rules for credit risk only.

Credit risk

1996 – Market risk amendment

BCBS adds standardised approach and internal model approach for market risk.

2004 – Finalisation of the revised Basel II Framework

Credit + Market risk

Basel II rules for credit, market and operational risk.

Credit + Market + Operational risk

2009 – Basel 2.5 changes to market risk and securitisations

2010 – Introduction of the new Basel III Framework

Capital + Liquidity + Leverage

Basel III adds revised definition of capital, risk-based capital requirements, a leverage ratio requirement and new liquidity standards.

Overview Pillar I ratios

Capital ratio: $\frac{\text{CET1}}{\text{RWA}}$

LCR: $\frac{\text{Liquidybuffer}}{\text{Net cash outflows}}$

NSFR: $\frac{\text{Available stable funding}}{\text{Required stable funding}}$

Leverage ratio: $\frac{\text{Tier 1 Capital}}{\text{Total exposure}}$

Large exposures

‘Basel IV’ will present one of the biggest challenges for the financial industry going forward.

Basel IV in a nutshell

Whilst Basel III focused on the reform of regulatory capital, Basel IV changes the approaches for the calculation of RWA, regardless of risk type and irrespective of whether standardised approaches or internal models are used.

Common equity tier 1 capital (1)

Additional tier 1 capital

Tier 2 capital

Credit and counterparty risk (2)	Market risk (3)	Operational risk (4)

> **8% + capital buffers**

Other risks (5)

Capital floors — 1

- RWA (using internal model approaches) floored by a percentage of RWA as determined through the standardised approaches.
- The capital floors will eventually be 72.5% based on the new standardised approach.
- Introduction in 2022 via a phase-in over five years:
  - 2022: 50.0%
  - 2023: 55.0%
  - 2024: 60.0%
  - 2025: 65.0%
  - 2026: 70.0%
  - 2027: 72.5%

Credit risk — 2

- Revised standardised approach including broadly revised risk weights and additional due diligence requirements.
- Constraints on the use of internal models (for some credit portfolios) and introduction of parameter input floors for the IRB approach.
- Ban on use of internal models-based approach and introduction of a standardised approach for CVA.
- New rules for securitisation RWA and simple, transparent and comparable (STC) securitisations (already finalised in 2016).
- New standardised approach for the calculation of EAD for derivative exposures (already finalised in 2016).

Market risk (finalised in 2016) — 3

- Revised boundary of the trading book and stricter approval of internal models.
- Sensitivity-based analysis as new standardised approach, which also serves as a floor for the internal model approach.
- Internal model approach with expected shortfall based on stressed calibration as key metric, and considering product-specific liquidity horizon.

Operational risk (OpRisk) — 4

- Replacement of existing approaches by a new standardised approach.
- Fundamental assumption that operational risk is related to size.
- Use of the ‘unadjusted business indicator’ as a measure of operational risk exposure combined with collection and analysis of historical loss data.

Other topics — 5

- Global standard for large exposures with harmonised definition on exposures and groups of connected clients.
- Standardised disclosure templates and new disclosure requirement for all new RWA approaches.
- Pillar II and indirect Pillar I requirements on step-in risk.
- Phase-in of ‘old’ Basel III rules.
- Leverage ratio buffer for global systemically important banks.
- Discussion paper on sovereign risk.

Standardised approaches – More risk sensitivity and more complexity

Revised standardised approaches are relevant for all banks. In order to allow for a meaningful capital floor, the Basel Committee has put great emphasis on revising all existing standardised approaches under Pillar I. The revised approaches feature increased risk sensitivity at the cost of higher complexity.

Revised standardised approaches

Credit risk	Counter-party risk	Securitisations	Market risk	CVA	OpRisk	Disclosure
BCBS 424	BCBS 279	BCBS 374	BCBS 352	BCBS 424	BCBS 424	BCBS 309, 400

While a number of standardised approaches were already revised in 2016, in December 2017 new rules were published for the standardised approach for credit risk, the standardised measurement approach for operational risk, and two new standardised approaches for the CVA risk capital charge.

Standardised approaches for credit risk

- More granular approach for unrated exposures to banks and corporates
- Recalibration of risk weighting for rated exposures.
- Separate treatment for covered bonds, specialised lending and exposures to SMEs.
- A more risk-sensitive approach for real estate exposures based on the LtV.
- A more granular risk weight treatment for subordinated debt and equity exposures.
- Recalibration of CCFs.

CVA risk capital charge

- Introduction of two new approaches for the calculation of the CVA risk capital charge:
  - Basic approach (full version including CVA hedges, or reduced version).
  - Standardised approach based on FRTB market risk standardised approach with minimum requirements sensitivity calculations.
- €100 billion threshold for a simplified treatment (double counterparty credit risk capital requirement).
- New eligibility requirements for CVA hedges.

Standardised approach for operational risk

- New standardised approach replaces all existing approaches. Internal models can no longer be used.
- Capital requirement will be based on a factor (business indicator) representing the income of a bank and a factor representing historical losses (loss component).
- Business indicator includes interest income, service income and financial income.
- The loss component is based on the bank's internal loss experience.
- The loss component can be set at 1 by the national supervisor.

The new standardised approaches must be considered together with the other new approaches already finalised in 2016. There are multiple challenges that banks will need to take into account:

- The changes to RWA combined under the new standardised approach (SA) are individual and highly dependent on banks' business models. Impact analyses show changes ranging from a reduction in RWA of -10% to increases of up to 30%.
- CR SA can have significant impact on certain portfolios, with real estate exposures and specialised finance especially impacted.
- SA-CCR will be difficult to implement for complex derivatives.
- Securitisation increases RWA and data requirements.
- Market risk sensitivity-based analysis is very complex to implement, with massive new data requirements (e.g. sensitivities).
- CVA charge will have a massive impact on long-running derivatives.

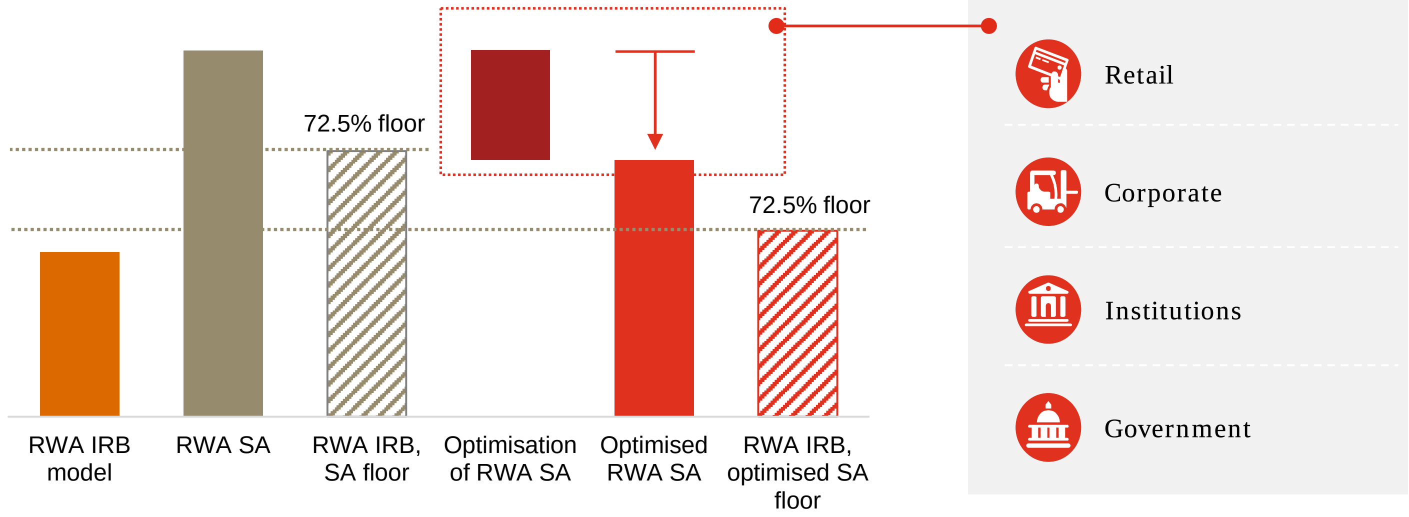
Collectively, the changes will require banks to re-examine capital consumption across their business lines and potentially adjust their pricing and product offerings. The revised framework will therefore have an impact on firms' strategy and business models. The BCBS expects that it will also result in some redistribution of capital in the system. The capital floors are likely to be the main focus area for the larger banks, while smaller institutions will have to consider particularly carefully what infrastructure and technology enhancements will be needed to handle the increased volume and granularity of data required under the more complex standardised approaches.

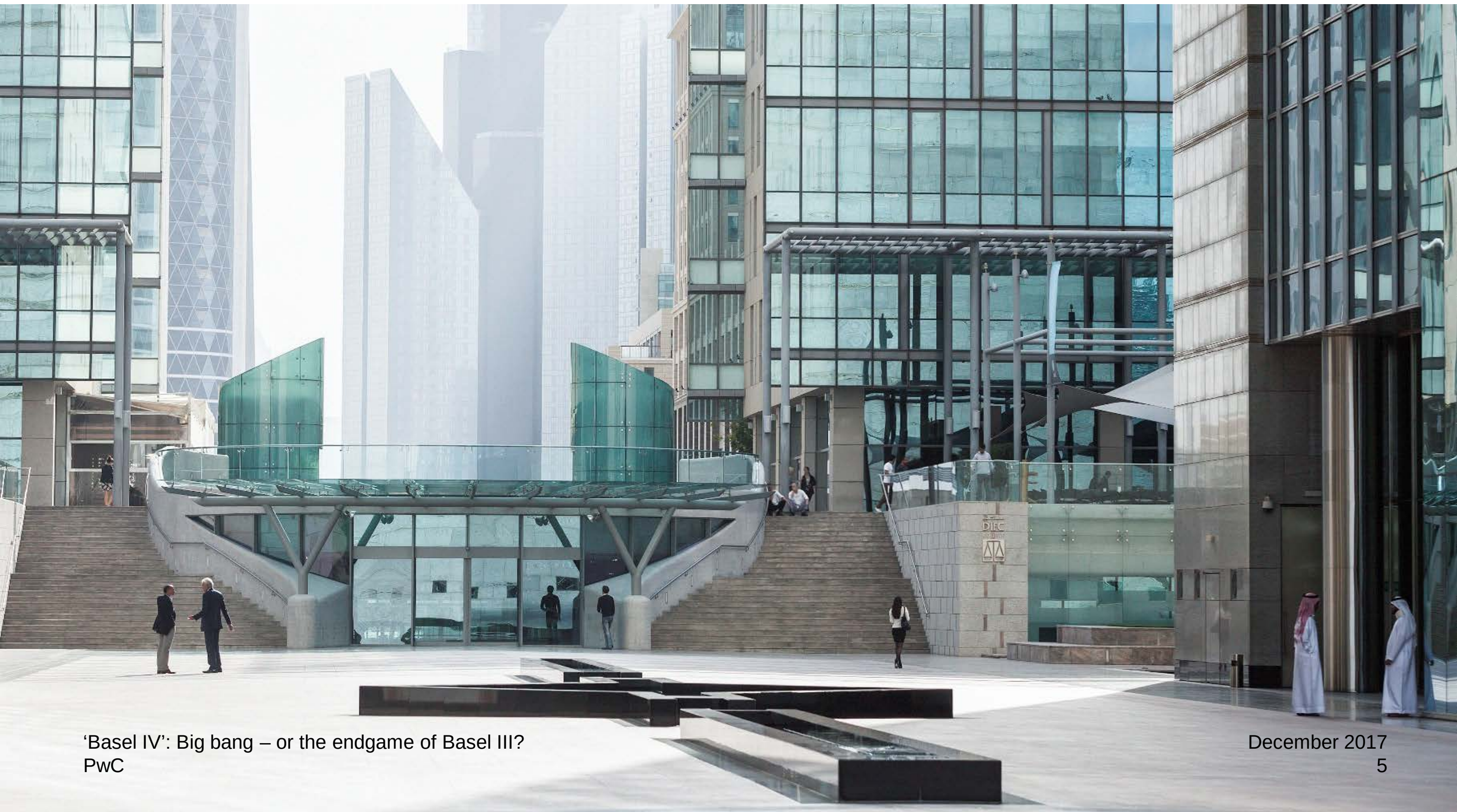
Standardised approaches: The future key to RWA optimisation

Capital floors limit the RWA reduction that can be achieved using internal models (IRB, IMA, IMM) to a specified percentage of RWA calculated using standardised approaches. This forces banks using internal model to implement the standardised approaches in the most optimised way.

Effect of optimised implementation of standardised approach

Effect of standardised approach optimisation on RWA may vary for different portfolios:





Internal ratings-based approaches for credit risk

The final Basel IV publications soften the earlier proposals for internal ratings-based (IRB) approaches. However, the changes compared to Basel III are still significant. Banks are facing challenges both from an increase in RWA and from implementation issues resulting from the scope limitations, limiting estimation practices and new and/or increased input floors.

Initiatives

Scope reduction of internal models

Limiting estimation practices and setting input floors

Challenges

RWA impact

Overall, the revisions to the internal ratings-based approach framework are likely to lead to increases in capital requirements for the affected exposures. These adverse effects are expected to be mainly the result of:

- Basel IV's reduction of the scope of application of the Advanced IRB approach for banks, other financial institutions and larger corporates. The RWA for these exposures should be determined using the Foundation IRB (F-IRB) approach or using the standardised approach.
- Equity exposures are placed out of the IRB scope and hence only the standardised approach can be used.
- New and/or increased input floors for PDs and LGDs, both for corporate exposures as well as for retail exposures.

Implementation

The changes resulting from the input floors and limiting estimation practices requires an increased number of resources for recalibrating affected IRB models. Recalibrated models will need to be re-validated, and significant changes may well require supervisory approval.

- The changes in the models will requires adjustments to all relevant model policies, improving governance and internal controls to ensure adherence to the new requirements.
- From a business perspective, changes to current product structures and potentially the development of new products may be warranted. In addition, an increased RWA may be accounted for through pricing model changes.
- Changes in banks' business models may have an influence on non-banking financial institutions.

In addition to Basel IV, banks are dealing with a number of other risk modelling initiatives (e.g. the EBA's future of IRBA plan, the ECB's TRIM exercise and the implementation of IFRS 9), resulting in significant challenges.

Balancing the challenges, there are a number of positive elements in the final Basel IV text compared to previous proposals. These elements include:

1. IRB approaches remain available for specialised lending exposures.
2. The F-IRB approach remains available for larger corporates, banks and other financial institutions.
3. Removal of the conservative IRB scaling factor of 1.06.

Internal market risk models – More complexity and additional requirements

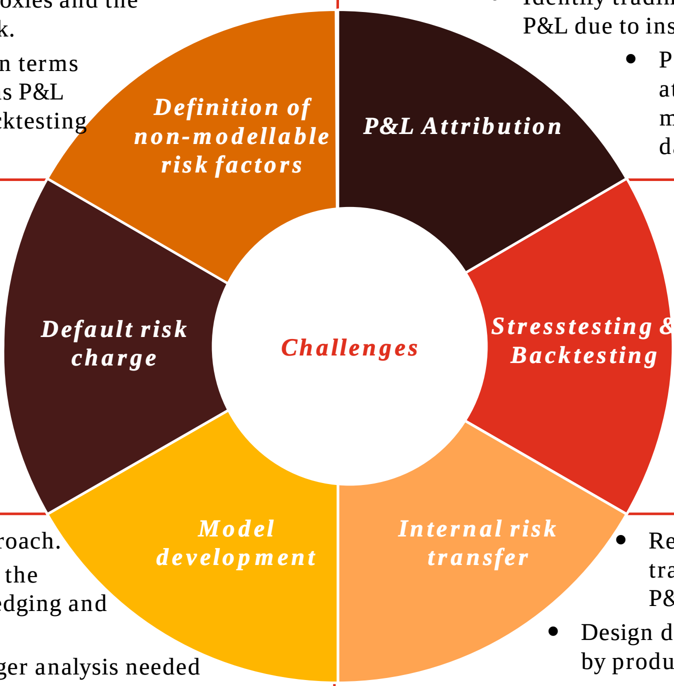
A revised internal model approach of the Basel committee to measure market risks as part of FRTB.

The revised internal models-based approach encompasses methodological adjustments in the measurement and calibration of a more rigorous model approval process, together with more consistent identification and capitalisation of material risk factors. The new model framework also incorporates the risk of market illiquidity.

Banks have to consider the results of the ongoing TRIM assessment (findings and remediations) when detailing the planning of the FRTB implementation. The effect of a longer implementation period will partly be used up by earlier application deadlines to be set by the regulator.

Key implementation challenges include the need for substantial effort around the policy framework driven by desk-specific models and required documentation; optimisation strategies, reflecting – for example – the interaction between desk structure, non-modellable risk factors (NMRF) and P&L attribution (PLA); and significantly increasing data demands (including risk factor inventory, proxies, and changing modellability over time).

Implementation challenges



- Analyse the current valuation and pricing risk factor time-series to identify NMRFs.
- Evaluate the use of modellable proxies and the materiality of remaining basis risk.
- Articulate risk factor definitions in terms of NMRF capital impact, as well as P&L attribution test outcomes and backtesting results.

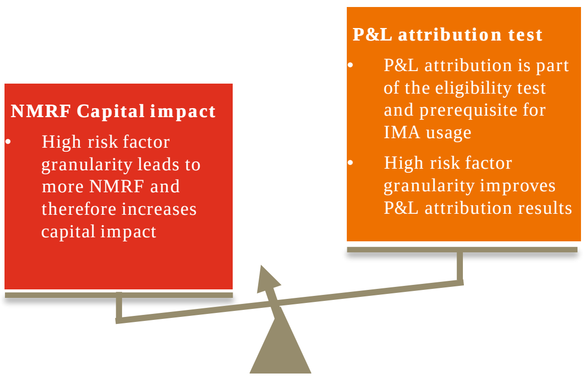
- Perform analysis of risk factor definitions, hierarchy and granularity used for P&L attribution.
- Identify trading desks with high level of unexplained P&L due to insufficient granularity of risk factors.
- Perform current-state analysis of P&L attribution processes, market risk measurement processes/models and data infrastructure.

- Assess gaps between implementation of Basel 2.5 IRC and IMA DRC to determine potential modifications required (e.g. stochastic recovery model).
- Evaluate internal capabilities for calculation of IMA DRC for both credit and equities.

- Propose methodologies to render VaR estimates more reactive to bursts of market volatility so as to potentially reduce the number of exceptions.
- Design procedures to trace exceptions due to data issues, especially for NMRF, and detect possible exception dependencies between desks.

- Model development to an ES approach.
- Manage the increased dynamic of the model due to the acceptance of hedging and diversification effects.
- More high-quality data and stronger analysis needed to meet new risk measurement and reporting requirements.
- New and extended processes in risk control.
- Increased complexity with regard to related topics like the interdependent management of economic vs. regulatory CVA with the IMA optimisation.

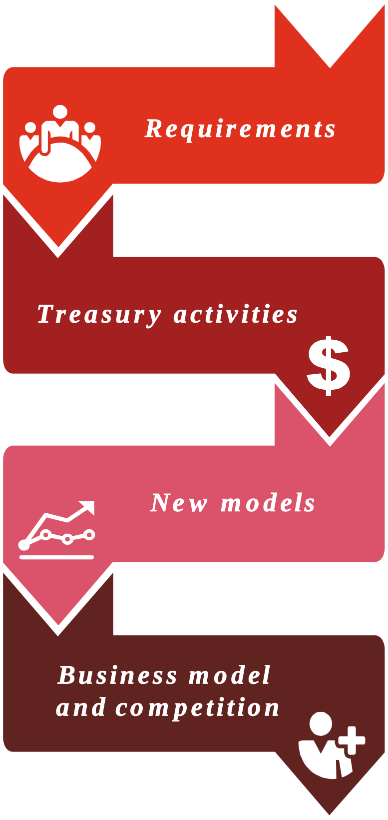
- Review IMA criteria for internal risk transfer desks on a standalone basis (e.g. P&L attribution and backtesting).
- Design dedicated internal risk transfer desks by product and risk factor.
- Align trading desks (books) and banking desks (books) to respective trading and banking hedging desks (books)
- Evaluate the cost benefit effect of 1) shifting from central to individual desk-managed hedging; and 2) establishing hedge recognition and model approach alignment.



- The process for determining the eligibility of trading requires risk factors within IMA desks to **pass the modellability test** in order to be included in the expected shortfall (ES).
- However, the **regulatory text does not explicitly prescribe** the level of risk factors' granularity that should be applied to the modelling test.
- Hence, banks must **optimise the interdependency** between P&L attribution and NMRF granularity.
- Banks are even incentivised to **minimise risk factors** for IMA while passing P&L attribution.

Markets and Treasury – Challenges beyond banks

Basel IV challenges are not limited to RWAs and capital requirements. The effects in the markets and treasury domain are far-reaching for banks, and require improvements in – and even re-shaping of – front- and mid-offices. These changes include improvements to product control processes and rethinking of the business model, particularly compared to non-banking competitors, to ensure the long-term viability of the business in terms of profitability.



- Basel IV will force a reshaping of banks' trading activities and portfolio structures.
- Treasury activities may transfer to become trading activities, with the effect that small banks might unwillingly become trading book-institutions.
- Basel IV effects should be visible in real time as a basis for trading decisions to execute in front-office systems.
- To stay ahead of the game, redesigning processes and systems – particularly in the front- and middle-office – will be key.
- Almost all big European banks with significant markets divisions will be forced to re-examine their business models.
- Not only banks, but also institutional investors such as pension funds, insurance companies and asset managers are affected by Basel IV.
- It is estimated that market shares of more than 20% in both CIB and business banking will change hands within the next two to five years.
- Banks have to consider new pricing models for all their activities and seek to innovate in their pricing models to stay in competition.
- Banks' repositioning will lead to opportunities for institutional investors and hedge funds in the financial markets domain.

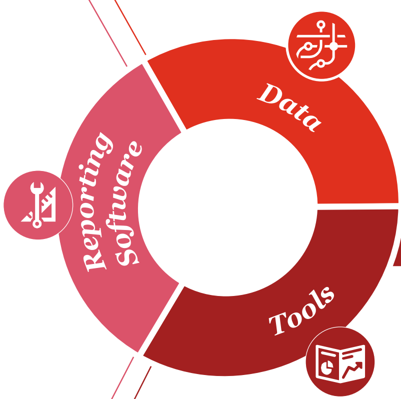
Data, tools and reporting software – Time to change RegReporting IT architecture

The new requirements of Basel IV create new challenges for banks around data and IT architecture. For example, IT architectures will need to be more powerful to support the parallel calculation of standardised and internal approaches – and at the same time more integrated in order to ensure data integrity, especially between the different disciplines of accounting, risk and regulatory reporting.

Challenges – Reporting Software

If we look at reporting software, the functional requirements of Basel IV imply a clear need for modernisation of banks' regulatory reporting systems. These systems must be highly integrated into the banks' finance and risk architecture. Banks should aim to use this integration, and possibly the deployment of standard software, to save costs and accelerate the implementation of regulatory-driven changes.

Additionally, due to the complexity of the new rules and the trend towards more granular and disciplined overarching reporting, banks should expand their analytical competencies in order to ensure better understanding and use of the data that they deliver to the regulatory authorities.



Challenges – Data

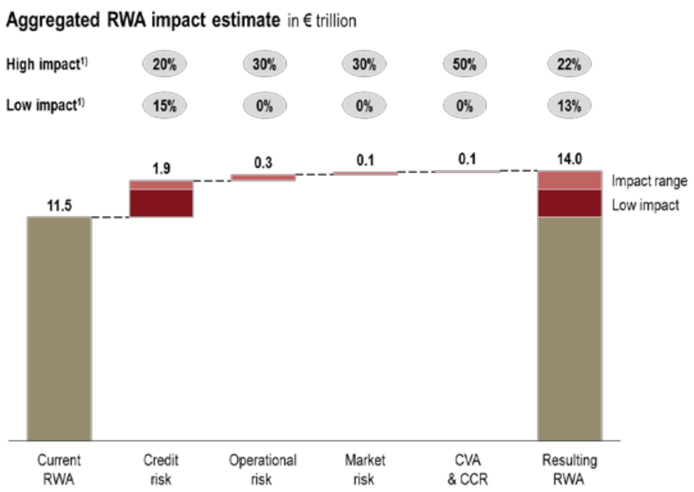
Regarding data, our customers face higher requirements in terms of availability, evaluability, quality and flexibility. Ever since BCBS 239, data management and data governance have been imperative, including in regulatory reporting. This challenge is underlined by the trend towards more granular and higher-frequency reports.

Challenges – Tools

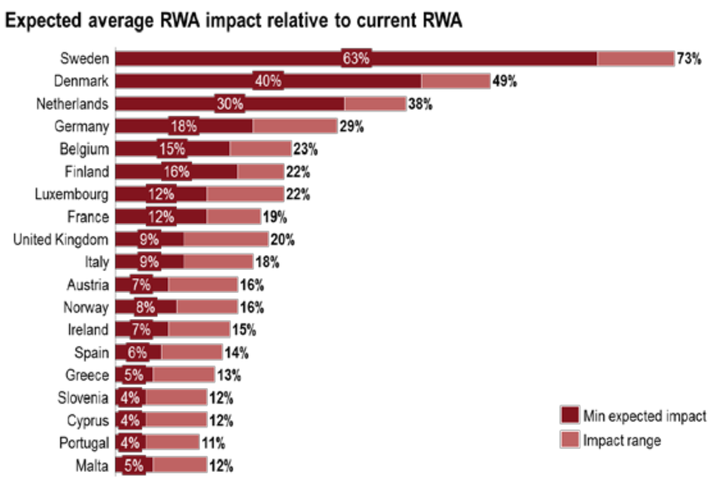
The need to implement new models is an example of the significant challenges facing banks' IT. Reliable Basel IV test calculations need to be carried out quickly. Furthermore, additional tools are needed to handle the regulatory reporting process effectively and enable the organisation to respond to new regulatory requirements in a timely yet consistent manner.

Strategic challenges in dealing with the RWA impact

The Basel IV reforms lead to an aggregate expected increase in RWA of €1.0 trillion to €2.5 trillion, or a rise of 13% to 22% for the largest banks in Europe. The biggest European banks will face a substantial impact, with an expected average RWA impact of up to 73%. As expected, the effects of Basel IV are concentrated in credit risk and are significantly driven by the output floor, with northern European countries most heavily affected, headed by Sweden. On an overall level, other (smaller) banks – including those with little in terms of IRB portfolios – may benefit from Basel IV and see a reduction in RWA. These banks might step in where other banks, experiencing more significant impacts, pull out.



1) Impact relative to starting value for risk type



PwC Strategy&

Regardless of the impact, all banks will need to prepare for Basel IV. Generally, the challenges for banks in terms of strategic responses to the impacts can be grouped around four levers: capital management, portfolio composition, product structure, and legal entity structure.

Capital management

Portfolio composition

Product structure

Legal entity structure

- An increase in required capital of up to 13% to 22% is expected as a result of Basel IV. This will impact banks' capital management practices due to increased capital consumption and re-allocation of capital. During the long phase-in period for a number of elements, it will be key for banks to identify their capital management challenges early on and start phasing in changes in this area.
- There will be disproportionate capital impact for assets with lower underlying risk, due to the input and output floor concepts, and restrictions in the application of internal models. The challenge for banks is to optimise the portfolio composition to reduce the increase in capital requirements, through limitation of certain products affected and repositioning of portfolios with limited impacts.
- Proposed standardised approaches in combination with capital floors are typically geared towards only one specific risk driver. The challenge for banks is finding the right balance between responding to the output floor which is based on the standardised approach requirements, and focusing on reducing risks under the IRB approaches that remain in place.
- Overall, there will be additional capital impacts across institutions relying more heavily on local subsidiaries with individual capitalisation requirements. Optimising the legal entities structure is a challenge banks will face in trying to respond strategically to the impact of Basel IV.

The implementation of the next-generation of RWA creates a remarkable challenge for the banking sector

Basel IV will change almost all approaches to RWA calculations, whether using internal models or standard procedures. Due to the higher risk sensitivity, this will have a direct impact on individual products, portfolios and business areas. Banks may need to rethink their trading activities and redesign the processes. The increasing complexity of the new approaches is also a challenge for data management and IT architecture.

1. **Business models, risk and business strategy have to be adjusted.** Changes are required in almost all approaches to RWA calculation. A general increase in RWA in all risk types is to be expected.

2. The **complexity of the new standardised** approaches increases; **extensive implementation efforts exceeding Basel III** are required.

3. The new approaches involve **extensive data requirements**, e.g. detailed data on real estate collateral in the lending business for the new credit risk standardised approach, and granular market and historical data for the internal market risk models.

4. A **massive expansion of the reporting requirements** to the supervisory authorities is to be expected, e.g. monthly rather than quarterly reporting of market risk.

5. A completely **new generation of data and reporting tools**; software will have an impact on the future IT infrastructure.

One Basel IV, but tailored solutions for individual challenges

While banks now have certainty about the new regulations, it is clear that they will need to devote significant time, effort and resources to understanding not only the technicalities of the regulatory changes, but also their impacts on firms' specific strategies and business models. PwC's Global Basel IV Initiative brings together an interdisciplinary team of experienced experts from the fields of strategy consulting, supervisory law, risk management and IT to support you in coping with the major challenges arising from Basel IV and other risk modelling initiatives such as the EBA's future of IRBA plan, the ECB's TRIM exercise and the implementation of IFRS 9.

PwC's solutions:

- RWA optimisation and capital planning, to develop new/adjust existing models to reflect Basel IV requirements.
- Assistance from an early stage by providing calculation tools for all Basel IV and current approaches as well as analysis of the strategic implications.
- Reassessment and optimisation of business models with the Internal Model Risk Optimisation Approach.
- Providing support to redesign and implement processes, systems and governance, across the front-, middle- and back-office.
- Development of regulatory reporting tools and add-ons for productive use (e.g. PwC ART), implementing individual or standardised calculation engines and integrating these into existing IT architecture.
- Data integration, quality and governance founded on our Data Excellence Framework, with data analytics carried out on the basis of regulatory information.
- Customised regulatory training curriculum to understand the numerous reforms and the interaction of the various requirements with each other.

To help you assess and understand the impacts of the recently-announced reforms, we have established a team of Basel IV experts across our global network. Our experts have a wealth of experience and expertise around the intricate workings of Basel IV and are dedicated to helping banks meet the key Basel IV objectives.

If you would like to discuss any of the content in this publication in greater depth, please speak to your usual PwC contact, or one of the following team members.

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PwC Materials

- Dedicated PwC Basel IV Webpage: *https://www.pwc.com/gx/en/services/advisory/basel-iv.html*
- Dedicated PwC Basel IV channel – The channel is a new medium to give you a periodical overview on current topics around Basel IV. It comprises a series of online lectures supported by slides: *https://www.youtube.com/channel/UCosEew32vLFgApuGR048bBg*
- Register for the Basel IV channel: *https://www.pwc.com/gx/en/services/advisory/basel-iv/register-basel-iv.html*

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