



Alexis Hamar

Senior Director, Banking,
Moody's Analytics

Basel IV and the Butterfly Effect: A Lesson in Unintended Consequences

Introduction

Finalized Basel III (also known as Basel IV) increases banks' regulatory capital and reduces free capital. At the same time, the banking industry faces a decrease in profitability. Technology can ease the regulatory burden and enables the discovery of paths to increased profitability. In this white paper we interpret Basel IV through its historical context, suggest best practices and analyze consequences on stability of the financial system. We demonstrate the necessity for banks to design a capital portfolio management framework to meet these new requirements.

How did we get here?

One of the most important and biggest risks faced by traditional banks is the risk that loans, the bank's assets, will not be repaid: credit risk or the risk of unexpected losses. To cover these risks, the regulator imposes a capital buffer. When things go bad, the invested capital absorbs the losses. When the capital is gone, the bank collapses, which is not just bad for the individual bank but for the financial system. This is what happened in 2008. The crisis began with cheap credit and lax lending standards that fueled a housing bubble. When the bubble burst, the banks were left holding trillions of dollars of worthless investments in subprime mortgages.

Basel I defines the capital requirements for the larger banks. They needed a capital buffer of 8%, i.e., \$8 dollars for every \$100 loaned. However, each loan could be risk weighted according to the so-called "standardized approach" (SA). For example, a business loan could be risk weighted at 90%, giving a capital buffer of 7.2 (\$8 out of \$100, risk weighted at 90%). Bank assets were classified and grouped into five categories for risk weighting.

In Europe, this standardized approach was adopted for all banks, but it attracted criticism that it disincentivized certain types of lending and lacked the sophistication required to assess diverse types of risk and asset classes. In 2004, Basel II allowed an Internal Ratings Based (IRB) approach to calculate credit risk, alongside the standardized approach. In addition, it introduced measures to quantify and provide for operational and market risks.

Basel II refined Basel I's way of calculating the minimum ratio of capital to risk weighted assets (RWAs), dividing bank assets into tiers based on liquidity and risk levels, with Tier 1 capital being the highest quality. Under Basel II, banks still had to maintain a reserve of 8%, but at least half of that (4%) now had to be Tier 1 capital.

When the global financial crisis hit, two opposing schools of thought emerged. One said that the crisis demonstrated that Basel II was too lenient; the other claimed that Basel II itself worsened the crisis by incentivizing bad business practices.

The Basel III Accords were designed as the 2008 crisis unfolded and introduced a more stringent set of regulatory standards, primarily focused on credit risk and appropriate risk-weighting of assets, to prevent a similar crisis occurring again. Among other changes, Basel III increased the Tier 1 capital requirement from 4% to 6%, while also requiring that banks maintain additional buffers, raising the total capital requirement to as much as 13%.

Basel III/IV undoes progress made in Basel II

With Basel IV, the regulators reacted to the global financial crisis by constraining the "excessively variable" risk sensitivity of capital requirements via a flat floor (despite, ironically, introducing self-modeled forward-looking credit risk provisions in the new International Financial Reporting Standard (IFRS 9) and the Current Expected Credit Losses (CECL) credit loss accounting standard). The principal stated goal of final Basel III, unofficially named Basel IV, is to "restore credibility in the calculation of RWAs and improve the comparability of banks' capital ratios".

It aims to achieve this by constraining the use of internal models via the application of an output floor, which ensures that banks' capital does not fall below 72.5% of the amount required by the standardized approach (and in some cases removing the option to use internal models entirely) and improving the risk-sensitivity and robustness of standardized approaches. This represents a fundamental change in how banks will need to calculate regulatory capital.

These are the key points to Basel IV:

1. Reinforcing the standardized approaches for credit risk, credit valuation adjustment (CVA) risk (the pricing of derivative instruments, for which a standardized or basic approach is now required) and operational risk, laying out new risk ratings for diverse types of assets, including corporate bonds and real estate. The Basel proposals provide for various changes that make standardized approaches more risk sensitive by adding more tiers, categories and requirements, thereby making standardized approaches more complex.
2. Restricting the use of IRB approaches to calculate capital requirements. Banks will have to follow the standardized approach unless they obtain the supervisor's approval to use an alternative. Basel IV removes the Advanced-IRB (A-IRB) approach option for exposures to large corporate and financial institutions and removes all IRB approach options for equity.
3. Introducing a leverage ratio buffer to further limit the leverage of global systemic institutions (G-Sibs) by requiring them to keep additional capital in reserve.

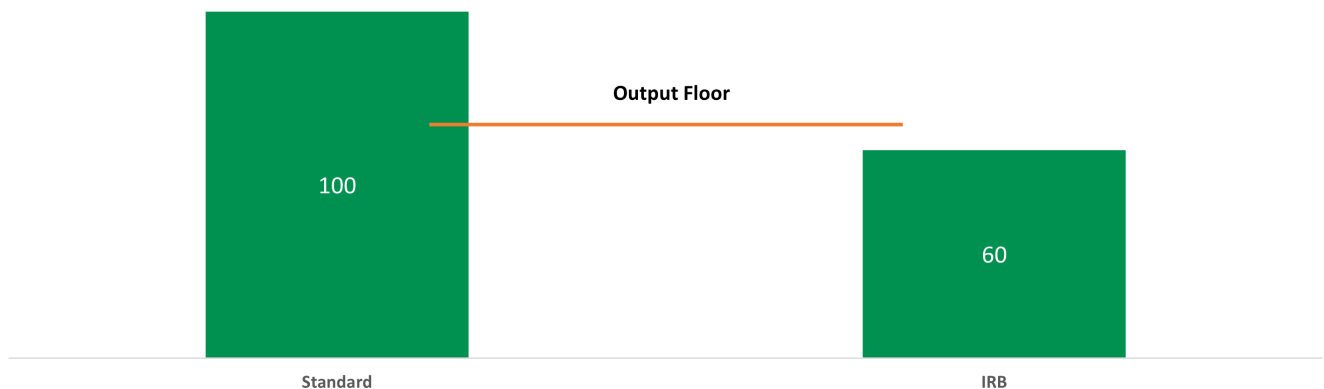
4. Removing the advanced measurement approach (AMA) for calculating operational risk and replacing it with a non-modeled standardized approach.
5. Replacing the existing Basel II output floor with a more risk-sensitive floor, reducing the low levels of internally modeled RWAs and allowing for a better comparability between standardized and IRB banks, reflecting the difference between the amount of capital that a bank would require to keep based on its internal model as opposed to the standardized model.
6. The new rules require banks to hold capital equal to at least 72.5% of the amount indicated by the standardized model, regardless of what their internal model suggests.

Under the IRB approach, some asset classes, like retail mortgages, are currently assigned very low risk weights by many banks (about 10% on average). As a result, IRB banks that are most heavily exposed to retail mortgages will be particularly hit by the output floor, which will be based on standard risk weights ranking from 20% to 70%. On the other hand, since the output floor is calculated on a consolidated basis, banks that are more diversified might be able to offset RWA shortfalls on some asset classes by RWAs above the output floor on some other classes (see Exhibits 4, 5 and 6 below). Furthermore, the impact of Basel IV on large groups will also depend on the scope of application: if the output floor is applied not only to the consolidated entity but also at sub-group level, the offsetting factors mentioned above will be less relevant.

Figure 1

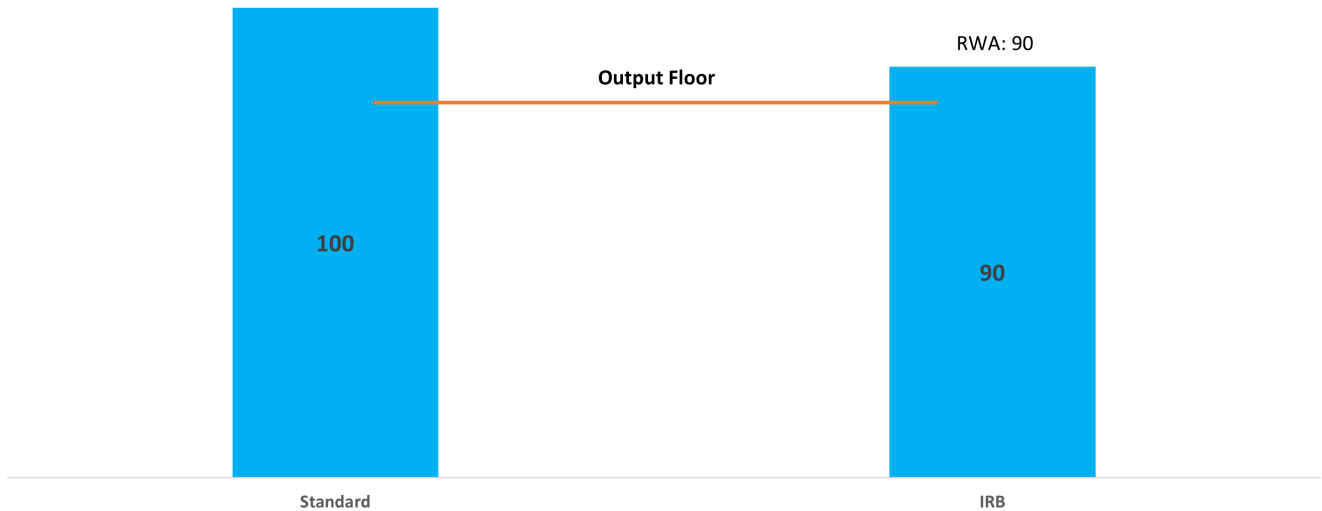
Banks that are more diversified might be able to offset RWA shortfalls on some asset classes by RWAs above the output floor on some other classes

Exhibit 4
Portfolio 1: €100 billion exposures to residential mortgages
Floor is a constraint



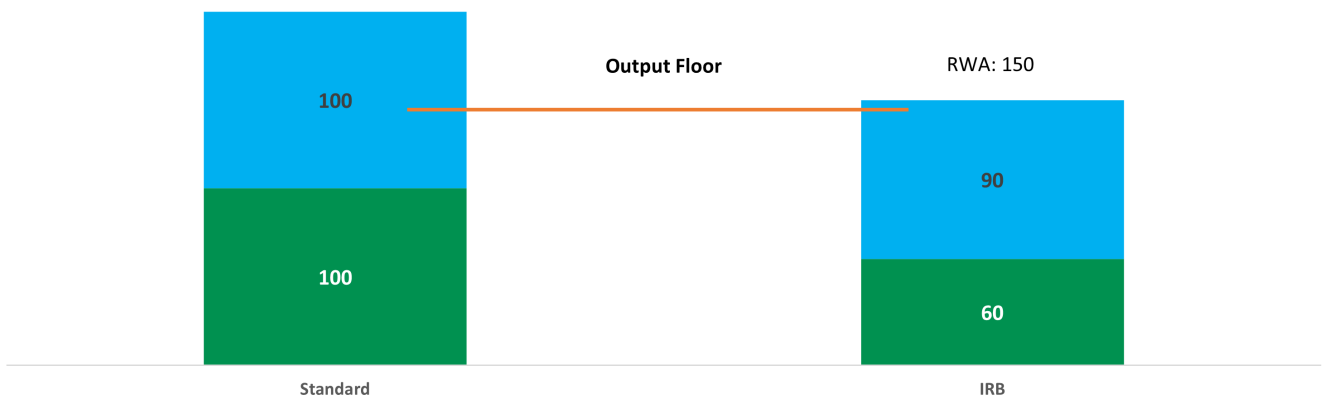
Source: Moody's Investors Service

Exhibit 5
Portfolio 2: €100 billion exposures to small and mid-sized enterprises
Floor is not a constraint



Source: Moody's Investors Service

Exhibit 6
Portfolio 3: €200 billion of exposures diversified across retail mortgages and SMEs
Floor is not a constraint



Source: Moody's Investors Service

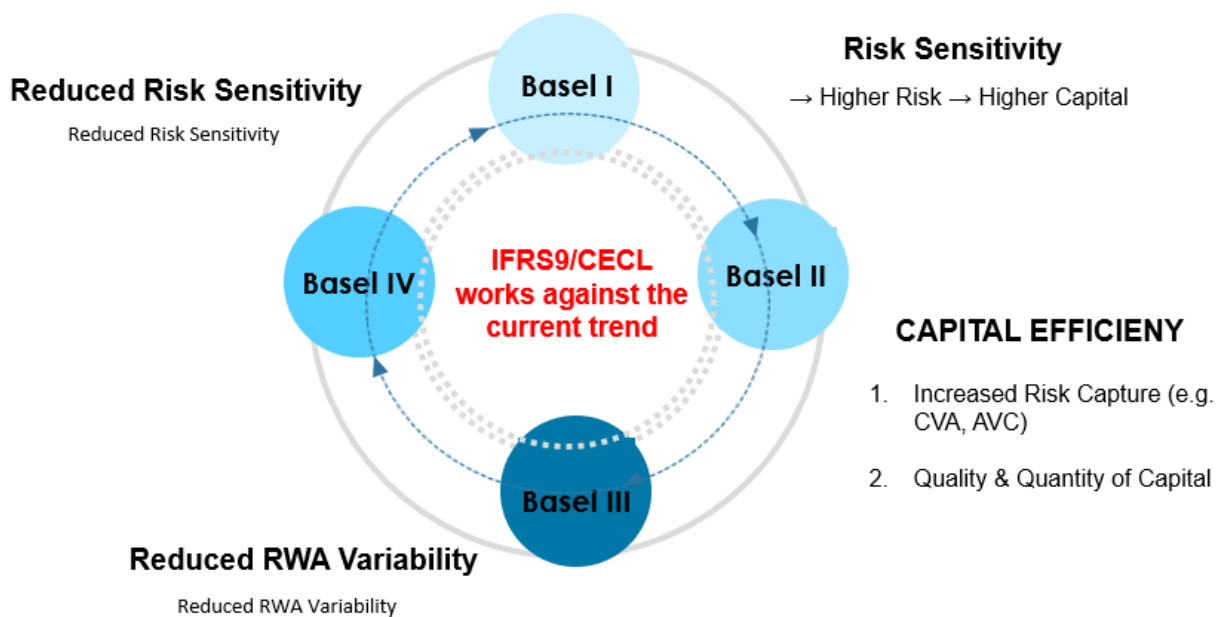
In the same vein, banks with a high proportion of low default portfolios (such as exposures to other banks and to large corporates) will be affected by both the output floor and the requirement to use the “foundation”, rather than the “advanced” IRB. This automatically raises their IRB-based RWAs, effective from January 1, 2022. Our estimate based on EBA data and the Basel Committee’s own Basel III monitoring report is that the overall RWA increase for EU banks will be driven by higher risk weights for credit risk on corporate and retail mortgage exposures (55% of the increase), while higher risk weights on other retail (e.g. consumer credit) and specialized lending (e.g. project finance, commodity finance, shipping etc.) will contribute another 26%.

Basel III/IV: A retreat from IRB – Are we back to where we started?

Basel III/IV satisfies few in the financial services industry. By retreating from IRB, it puts Basel II “into reverse”. A US report in 2007 summarized the progress made with Basel II, stating, “By more closely aligning regulatory capital methodologies with banks’ internal economic methodologies, Basel II aims to encourage large banks to develop and maintain a more disciplined approach to risk management.”¹

Figure 2

Evolution of the Basel framework: Are we back to where we started?



The result of this retreat from IRB is that bank risk management and capital allocation has the potential to be ambiguous once again. Internal models have been criticized for allowing banks to underestimate the riskiness of their portfolios and how much capital they must keep in reserve. However, the standardized approach means that it is not possible to make a meaningful risk assessment of certain assets. For example, Basel IV encourages a risk rating of 100% of unrated corporates, irrespective of a company’s true risk quality. This makes it harder to get a proper overview of the bank’s actual overall risk or to provide a reasonable basis for constraining the internal models.

¹ United States Government Accountability Office report 07-253 to Congress, 15 February 2007.

The economics of low-risk lending are especially distorted, such as the risk weighting of mortgages, which is increased by a factor of five under the Capital Requirements Regulation (CRR3, the EU's guidelines for implementing the Basel IV rules) compared to Basel III. The combined effect of the output floor and risk-insensitive standardized approaches will tend to have its greatest impact on low-risk portfolios, particularly low-risk mortgages and creditworthy unrated corporates.

Although this will have an impact on most credit institutions' real estate financing in the EU, those most impacted are institutions in the Nordic countries, the Netherlands and Germany, i.e., countries that enjoy high rates of employment, good incomes, strong social safety nets, solid government finances and robust legal systems affording a high degree of protection to creditors. In these northern European countries, if you lose your job you receive far-reaching social support that will enable you to avoid default. In the USA, by contrast, a homeowner who loses their job and defaults soon loses the property. But under Basel IV both are treated the same way.

The impact on corporates, too, is most acute in Europe, where there is a greater tendency for companies to seek finance through banks, for which a rating is often not required, rather than in capital markets, where it is. The aim of the BCBS policymakers appears to have been to diversify the corporate lending market. But this is more problematic for SMEs, which will be less able or willing to approach the bond market like the large corporates. SMEs tend to rely on banks, which are easier to deal with should they run into temporary financial difficulties than is the case with bond investors.

That said, the most affected category of borrowers is likely to be large corporates that lack an external credit rating. Under Basel III they typically receive favorable treatment from A-IRB models but will face a 100% risk weighting under Basel IV, which is worse than both rated large corporates and non-rated SMEs in IRB models.

How to respond: Measure, Monitor, Manage

The impact of Basel IV on a bank varies depending on its portfolio, its location, its current internal risk methodologies etc. Basel IV has not succeeded in levelling the playing field, and in many respects has made it more lop-sided. The impact of Basel IV on credit portfolio management will be much greater than initially anticipated. If banks do nothing to mitigate the impact of the new rules, they will need to hold billions in additional capital. Taken overall, the hit on the banking sector's return on equity was initially estimated at 0.6% (dropping from 8% to 7.4%) with specialized and universal banks hit hardest of all.

Measuring risks according to the new models is complex. Medium-sized institutions that have already invested in IRB are burdened by the need to start afresh with new rules. However, if they feel that it makes sense to differentiate between risk weighted assets at a greater level of granularity than is required by the regulator, they should do so. In fact, institutions that have developed their own models regardless of the requirements to hold regulatory capital to give a truly internal view may be less impacted by the Basel IV changes: the internal models provide the measurement tools needed to take decisions on portfolio management and lending that align business and regulatory needs.

Monitoring systemic risks in the current economic environment

Measure, monitor and manage is critical in times of economic downturn. In September 2022 the European Systemic Risk Board (ESRB) identified three severe systemic risks²

- First, the deterioration in the macroeconomic outlook combined with the tightening of financing conditions implies a renewed rise in balance sheet stress for non-financial corporations (NFCs) and households, especially in sectors and Member States that are most affected by rapidly increasing energy prices. These developments weigh on the debt-servicing capacity of NFCs and households.
- Second, risks to financial stability stemming from a sharp fall in asset prices remain severe. This has the potential to trigger large mark-to-market losses, which, in turn, may amplify market volatility and cause liquidity strains. In addition, the increase in the level and volatility of energy and commodity prices has generated large margin calls for participants in these markets. This has created liquidity strains for some participants.
- Third, the deterioration in macroeconomic prospects weighs on asset quality and the profitability outlook of credit institutions. While the European banking sector is well capitalized, a pronounced deterioration in the macroeconomic outlook would imply a renewed increase in credit risk at a time when some credit institutions are still in the process of working out COVID-19 pandemic-related asset quality problems. Credit institutions' resilience is also affected by structural factors, including overcapacity, competition from new financial service providers, and exposure to cyber and climate risks.

To these we can add other systemic risk vulnerabilities including large defaults by non-banking financial institutions (these rose significantly in 2021, notably with the collapse of Archegos Capital Management), the commercial real estate (CRE) bubble and leveraged finance classes.

Questions as to usability of Basel buffers

The CRR3 framework makes measuring and monitoring risks far more complicated. Institutions are trying to simplify the process. Full disclosure of the cost of capital implies optimizing the number and size of capital buffers. One of the main conclusions of the BIS Buffer Usability report of October 2022 was that banks close to or below their regulatory capital thresholds have lower growth than their better capitalized peers. Moreover, there is a positive relationship between capital surplus and lending. Banks lent prudently during the pandemic. The requirement for an increase is questioned by the industry. Many institutions (especially UK banks) believe that this is not the time to bring in a higher countercyclical capital buffer (CCyB) buffer, to support lending growth.

There is an overall market trend calling for the abolition of additional Tier 1 capital instruments (AT1s) to improve buffer usability. The ESRB pointed out as early as December 2021 that the AT1 component of Tier 1 was not able to absorb losses due to a threshold for conversion or write-off of the nominal "probably too low" at 5.125% of assets weighted under the CRR Regulation.

² Official Journal of the European Union, September 22, 2022.

In July 2022, Victoria Saporta, Director of Prudential Policy at the Bank of England, said that contingent convertible bond (CoCo) debt had hampered banks' use of capital buffers during the COVID-19 crisis. Like the ESRB, she considers that banks were forced to restrict their overall distribution of dividends, AT1 coupons and variable remuneration up to the maximum distributable amount (MDA) because of non-compliance with the combined buffer requirement. AT1 coupons represent only a limited proportion of the MDA that a profitable bank remains authorized to distribute. The solvency thresholds for triggering loss absorption by AT1 (5.125% and/or 7%) are excessively low. In practice, the relevant threshold should be the "point of non-viability" (now determined by supervisors outside any quantitative threshold) below which they trigger the absorption of losses.

Basel IV will entail a capital allocation distortion and more difficulty in reconciling Pillar 1 and Pillar 2 capital. There is a greater role for Pillar 2 capital to play in this transition towards driving the business while maintaining risk appetite (which is not the case today – we rely on the prudence of regulatory stress tests to ensure banks are well capitalized).

On October 7, 2022, the EBA issued a detailed report about MREL (minimal requirement for own funds and eligible liabilities) and TLAC (total loss absorbing capacity) instruments. It acknowledges that overall, the recommendations have been well implemented. However, it identified the need for a few new notable provisions to be recommended and for some others to be avoided: "Make-whole" clauses are prohibited; clean up calls are allowed, along with substitution and variation clauses (for which prior approval is needed in certain circumstances); MREL calculation should converge with TLAC; there are measures to prevent CET1 instruments from contributing to both capital buffers and MREL and mandatory subordination for liabilities eligible for MREL.

Managing buffers through the downturn

Although capital buffers are designed for economic downturns, there are several internal and external reasons why a bank might be reluctant to accept a decline in capital ratios.

Market factors undermining the usability of capital buffers include higher funding costs and rating downgrades.

- Banks' funding costs could increase, or the availability of funding could become restricted once capital ratios start to decline (owing to the increase in perceived default risk). This effect may be exacerbated by the potential stigma when a breach of the combined buffer requirements (CBR) becomes public knowledge. It could also be further aggravated if the decline in capital ratios is associated with an expansion in lending, as in times of crisis, the latter may be associated with excessive risk-taking.
- Banks' capital positions are a principal factor in their credit rating, which affects banks' access to and cost of funding and their broader reputation. As for the funding cost factor, rating downgrades may occur either because of the negative signal associated with a breach of the CBR or because of the decline in capital ratios (and the increase in default risk) more generally.

Regulatory and prudential factors that inhibit banks from dipping into their capital buffers include distribution restrictions, the existence of other requirements and uncertainty about the authorities' follow-up actions.

- Banks would face automatic restrictions on distributions when operating below the CBR. These restrictions on dividend, bonus and AT1 coupon payments would have negative effects on investors and bank executives. To maintain a strong relationship with investors and avoid triggering the market factors outlined above, banks may prefer to deleverage rather than face automatic restrictions. Concerns about distribution restrictions may be particularly relevant for certain instruments, such as AT1 bonds, since market intelligence suggests that a cancellation of a coupon payment could be seen as a particularly adverse signal - even if coupon payments are contractually set to be discretionary.
- Other regulatory and prudential requirements - such as the leverage ratio or the minimum requirement for own funds and eligible liabilities - may reduce the usability of the CBR if they become more binding than the risk-based requirement. The use of buffers may also be curtailed if banks wish to maintain a sufficient margin above the regulatory minimum requirement within the risk-based framework (i.e., the sum of Pillar 1 and Pillar 2 minimum requirements).
- Banks might want to avoid the increased supervisory scrutiny associated with a breach of the CBR. The closer the bank comes to the minimum requirement the more concerns regarding its viability rise. In addition, banks may face uncertainty with respect to the time they would have to restore their capital buffers after the initial breach of the CBR, unless this is clearly communicated by the supervisor. Finally, banks may be concerned about the speed of capital buffer increases once the crisis is over, and conditions return to normal. Such concerns may be more relevant at times when profitability is low or access to capital markets is constrained.

There may also be internal reasons behind the reluctance to breach CBR. The European capital framework has been embedded within capital management processes and policies for years, increasing board's approval for bank's risk appetite. This may not easily lead to the use of a buffer in a stress scenario given that capital ratios are a primary indicator of a bank's strength from the board's perspective. There needs to be sufficient incentive for a board to get comfortable with their use against the potential costs of such usage.

The current framework makes the use of capital buffers in case of stress difficult. Will a bank be able to recapitalize in time without putting its viability at risk? How are operations impacted and how long can a bank operate below minimum capital requirements?

Improvements in stress testing and capital planning are one way in which banks can cope with the stigma of breaching CBR. Having a better and more centralized stress testing and planning framework helps to anticipate future capital requirements and the projected behaviors of the buffers. By performing simpler stress tests more frequently they can better assess capital and CBR levels in a range of economic outcomes including severe (but plausible) economic downturns. Stress testing should measure the distribution of shocks to various segments, rather than looking at just one point of the distribution, allowing for cross-checking on the top-down prudential.

Credit portfolio management as guardian of the balance sheet

Banks with significant RWA impacts and concentrated business models will need to optimize their business and balance sheets. Where low risk, low return business is hit by risk weighting floors, they will need to identify where it is possible to increase profitability by adjusting prices. Where this is not possible, and the cost of meeting regulatory risks makes the business unprofitable, banks will look to move low-grade assets and risks off the balance sheet, thereby reducing the amount of regulatory capital they need to hold to cover the risks.

This makes it difficult for banks to meet their regulatory obligations while servicing the needs of the economy, such as the provision of mortgages to first-time buyers.

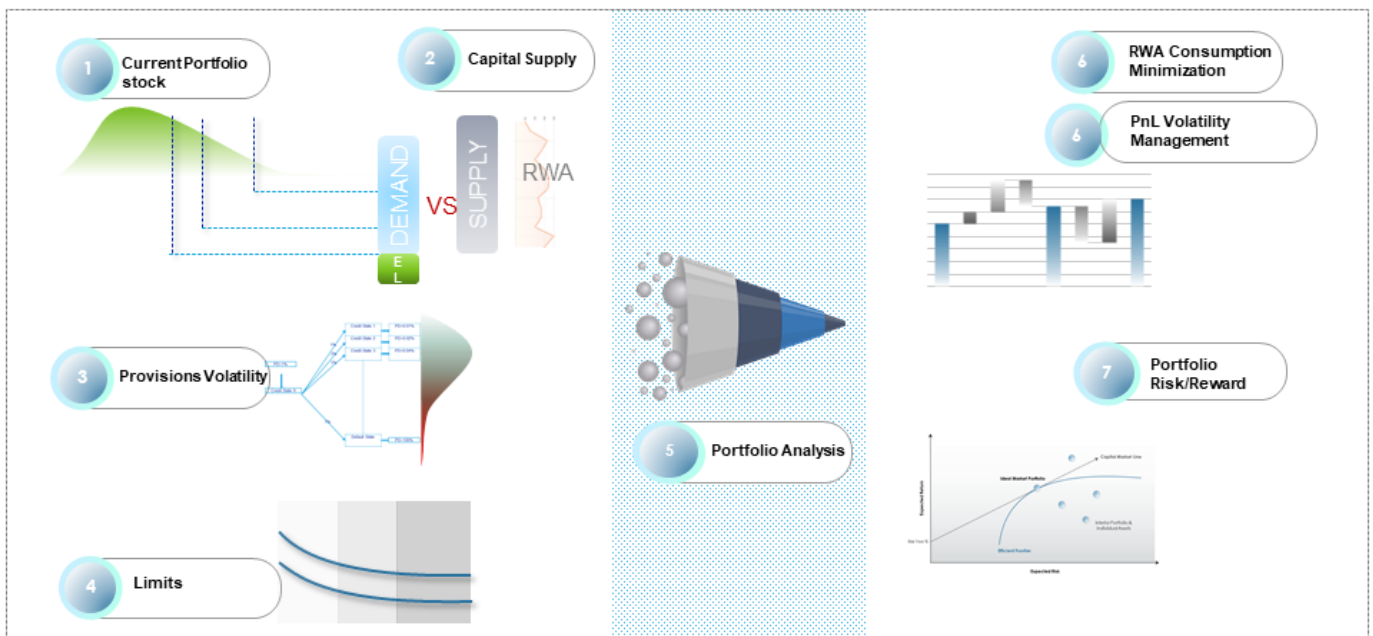
Credit portfolio management (CPM) must have an efficient use and deployment of capital (asset allocation/rebalancing). As it stands now, the new Basel CRR3 rules will trigger concerns around strategies such as increasing risky behaviors to generate EVA, promoting shadow banking and imposing constraints in credit availability.

CPM is fundamental in supporting the way the business is run and its importance as a “guardian” is only going to increase.

Credit portfolio managers will be the “first line of defense” and will have to seek the right levels of transactions approval – all in line with the risk appetite and policy of the bank, all the while optimizing their portfolio.

Figure 3

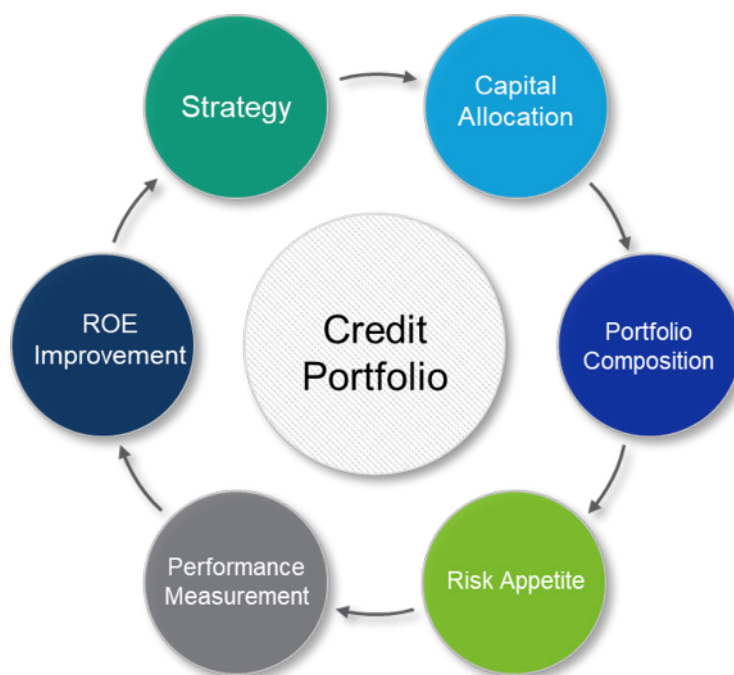
Credit Portfolio Management eco-system



The credit manager’s key objective is going to be to support the business in allocating capital efficiently in a transparent framework, accounting for the output floor, leverage ratio and the risk-based capital.

Figure 4

Active Credit Portfolio Management




Active CPM, as illustrated in Figure 4, covers the following aims and objectives:

1. Pro-actively driving portfolio optimization at the point of origination
2. Supporting the business to allocate capital efficiently in a transparent framework
3. Improving returns by aligning deal, client and risk data return metrics with strategy
4. Improving capital velocity and managing concentration risk
5. Launching a “pro-business” initiative that supports sustainable growth

In the context of secondary distribution execution around single name hedging, insurance, loan sales and other structured sales, the role of CPM will grow under the new Basel IV rules.

CPM provides the key to optimizing balance sheets to align available capital with the Basel IV requirements. In a recovering economy, diligent capital management can be used to increase the velocity of recovering an acceptable return on equity levels. An optimization of capital is necessary to offset the rising cost of risk in case of a recession. Without CPM, negative earnings could bring capital levels below minimum requirements.



Prime mortgages are especially challenging for European institutions under the new regime. Regulatory capital consumption is high relative to economic risk due to the Basel IV output floors, destroying about 40 basis points of economic profit. On top of this, they are funding-intensive, requiring banks to build up and maintain a deposit base. Prime mortgages present broader ALM challenges due to long tenures and mismatches, and the market is prone to competition and commoditization. On the other hand, mortgages are an effective gateway to profitable customer relationships. Thus, banks and insurers seek to offload prime mortgages from their balance sheets, for example through securitization, while continuing to present them in the shop window. As an asset class, prime mortgages are attractive to other categories of lenders such as annuity funds, being long-term and with very low credit risk (prepayment, the most significant risk, can be hedged).

Off-balance sheet strategies are already emerging in Europe. In June 2020 UBS launched key4, “the new open online platform for financing and maintaining owner-occupied homes and housing”. Borrowers are connected to lenders via the UBS platform, with UBS remaining the sole point of contact, but the asset is securitized with other investors, even if the investor must comply with UBS credit and risk policies. Likewise, in November 2021, Rothesey Insurance announced that it was entering a partnership with a British lender, Kensington Mortgages, to offer long-term, fixed rate mortgages up to 40 years.

SRT market set to change

The Basel IV output floor pushes up capital consumption, incentivizing banks to transfer risk, growing the significant risk transfer (SRT) market. However, under Basel IV the output floor also applies to the senior retained pieces of securitization, which is currently not the case. This will drive some significant changes in the SRT market, focusing transfers where the floors grossly overstate the underlying risk: a shift from higher risk to lower risk exposures and from highly capital consumptive assets to the largest and most heavily impacted assets. There will be a need for thicker risk transfer tranches to achieve efficient capital reduction on any given portfolio.

There may not be enough investors to buy the mezzanine risk, which may in turn drive the creation of a “senior mezzanine” tranche for SRT to remain effective. Accurate pricing of such tranches will be key to finding investors, who are most likely to be those with new funding and long-term, low-risk objectives, such as annuity providers/pension funds, sovereign wealth funds and specialized asset managers, plus credit insurers (so long as they are STS-compliant or using new low-cost structures to fund credit insurance).

If, however, the market is not there, senior mezzanine tranches may be retained under the securitization external-ratings-based approach (SEC-ERBA), but some questions remain open such as whether it will be permitted to use SEC-ERBA risk weighting on a senior mezzanine tranche if applying SEC-SA on an adjacent senior tranche.

Conclusion

The Basel regulatory framework has become progressively more complex with the abandonment of Basel II and the elimination of the IRB approach to risk management. If the authorities were starting to draft a regulatory capital policy with a blank sheet of paper things would be a whole lot simpler.

But we are where we are, and the current framework is well embedded and universally understood by market participants. A fundamental redesign of the capital framework would be difficult, even from the perspective of a single country. The difficulties increase exponentially if you then attempt to apply them in a consistent way internationally. We can already see that difficulties exist in Basel IV itself; the rules and the way they are applied differ from one region to another. Even within the EU, for example, the risk weighting of certain assets such as mortgages varies between regions such as the Benelux, Nordics and southern Europe. It is expected that Basel IV application in the UK will also consider certain specificities in the capital stack and the design and calibration of risk-specific methodology for that country.

The BSBC has set out to create a global level playing field, a praiseworthy objective but rather impractical. It has attempted to allow for some degree of regional, national and product variations but the problem is fundamental and cannot be fixed with tweaks at the edges or extensions to the final deadline.

The net effect of raising the output floor remains to be seen but one likely effect is that banks will try to charge more for their lending, exit less profitable lending, or try to work with other tools to mitigate the increase in RWA. It is likely that they will need to adapt their business and capital strategy, using various instruments to move many low-risk assets off the balance sheet. This distorts and diminishes their ability to service the needs of the economy.

Our advice is to carry on using internal measures of risk to ensure that pricing accurately reflects the true risk of any asset. This will be a source of competitive advantage: the creation of a robust and sustainable portfolio depends more than ever on deep insights into the underlying credits, not the blunt instruments of regulatory capital requirements, which do not effectively differentiate between low and high risks. With the right technology in place this can coexist with measurement, monitoring and management of capital reserves aligned to regulatory requirements. Credit portfolio management is the cornerstone of efficient capital deployment. CPM supports growth through transparent and responsible risk management. It contains the right data infrastructure to align measures and inputs from the top down. The cascading and aggregating of data is seamless.

The banking industry requires transparent and reliable CPM, both at the standalone level and at the portfolio level, to steer portfolios in the correct direction.

The latest accounting and prudential regulatory frameworks require financial institutions to look further ahead when elaborating a capital strategy, fortifying their forward-looking strategies. These strategies need to anticipate emerging risks. They should be easy to test and deploy.

Given the reluctance to breach or suspend the output floor, banks must also regularly test their lending capacity under Basel IV in a variety of scenarios, including worsened economic conditions or a new non-economic crisis such as we saw during the COVID pandemic or more recently the Ukraine crisis.

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