



# The market risk framework: 25 years in the making

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## Introduction

Good morning, and many thanks for inviting me to speak at this Annual General Meeting.

I was pleased to accept this invitation as there is no shortage of pressing supervisory and regulatory topics to discuss. Closest to home for me is the full, timely and consistent implementation of the recently finalised post-crisis regulatory reforms, most notably the Basel III framework. But I would like to focus today on the issue of market risk.

First, some perspective. Ten years have passed since the start of the global financial crisis. During this period, the Basel Committee has finalised its wide-ranging and comprehensive set of post-crisis reforms. These greatly improve the quality of regulatory capital, increase capital requirements, enhance risk capture, while specifying a minimum leverage ratio requirement, adding a macroprudential overlay, and introducing international liquidity standards (BCBS (2010), (2015a), (2017)).

But, one element of the Committee's post-crisis reform agenda has yet to be fully finalised: the market risk framework. Consider the following excerpt from a Basel Committee document on the market risk framework:

*"A common response...has been that the frameworks developed by the Committee for measuring market risk are at the same time complex and inaccurate...the frameworks are further criticised for incorporating a methodology which banks [do not] use..."*

This may sound familiar. But it may surprise you to learn that this excerpt is from a 1994 Basel Committee document summarising the comments received on a 1993 consultation paper on "the prudential supervision of netting, market risk and interest rate risk" (Goodhart (2011)).

So, a full quarter-century later, must we lament the finalisation of the market risk framework as one of those never-ending stories? My speech today will try to answer three questions:

- (i) why has the Committee revised the market risk framework?
- (ii) why has it taken so long to complete? and
- (iii) how do we get the framework finished in a timely manner?



## Why revise the market risk framework?

Trading book instruments have existed since the beginning of history. Some say that the 48th law in Hammurabi's Code makes the first reference to them (Kummer and Pauletto (2012)). Under this Babylonian legislation, dating from around 1754 BC, farmers could renege on their debt if their crops failed. This is much akin to a put option: in the event of a poor harvest, the farmer could exercise a right to stop making debt repayments (Whaley (2006)). Similarly but somewhat later, Aristotle recounts the story of the Greek philosopher Thales, who expected an unusually large olive harvest and secured the right, but not the obligation, to use all the olive presses in the ancient Greek city of Miletus for the following year (Aristotle (2000)). So, in a sense, market risk has been with us for millennia.

Moving to the present day, the global financial crisis exposed fault lines in the Basel II market risk framework. The framework's low capital requirement for market risk was far eclipsed by the market risk losses of many banks. As a stop-gap response, the Committee introduced a set of revisions (the so-called "Basel 2.5" framework). These sought to reduce the framework's cyclicality and increase the overall level of capital. There was a particular focus on instruments exposed to credit risk (including securitisations), where the previous regime had been found especially lacking.

However, the Committee recognised at the time that Basel 2.5 did not fully address the framework's shortcomings. As a result, the Committee undertook a fundamental review of the trading book regime (BCBS (2012)). The review sought to address shortcomings in the regime's design as well as weaknesses in risk measurement under both the internal models-based and standardised approaches, including the following:

- **The trading book/banking book boundary:** One source of weakness in the pre-crisis regime was how the regulatory boundary was defined. A key determinant was whether banks intended to trade. But this was an inherently subjective criterion that proved difficult to police and insufficiently restrictive, prudentially speaking. Coupled with large differences in capital requirements against similar types of risk on either side of the boundary, the overall capital framework proved susceptible to arbitrage.
- **Incorporating the risk of market illiquidity:** Before the Basel 2.5 changes were introduced, the market risk framework rested on the assumption that trading book risk positions were liquid, ie that banks could exit or hedge these positions over a 10-day horizon. This assumption did not survive the global financial crisis. As liquidity drained away, banks were left holding risk positions for much longer than originally expected, taking large hits when liquidity premia and market prices fluctuated.
- **Enhancing the robustness and risk sensitivity of the standardised approach:** By peak crisis, most stakeholders had lost faith in the risk-weighted capital ratios that banks were reporting. For its part, the Committee became increasingly worried about the excessive variability in banks' calculations of risk-weighted assets, including for market risk (BCBS (2013a)). For example, based on the Committee's assessment, the capital requirement modelled by banks for a set of hypothetical diversified portfolios varied by a factor of more than three (Graph 1). The analysis showed that differences in modelling choices are a significant driver of variation in market risk-weighted assets across banks. Accordingly, the Basel III revisions require banks to calculate and disclose their market risk capital requirements based on a revised standardised approach to enhance comparability across banks and jurisdictions. This approach will also be used in the calculation of the aggregate output floor requirement.
- **Capitalising against tail risk:** The crisis also highlighted a number of weaknesses with the use of value-at-risk (VaR) to determine regulatory capital requirements, including its inability to capture "tail risk". Recall the remark by the CFO of a global systemically important bank in August 2007 that "we were seeing things that were 25 standard deviation moves, several days in a row"



(Financial Times (2007)). Put differently, VaR models were suggesting that the crisis was a one in a 100,000 year event. And, even eight years later, his successor referred to the de-pegging of the Swiss franc in January 2015 as a “20-plus standard deviation move” (Economist (2015)). The Committee’s move to using Expected Shortfall as the measure for determining regulatory market risk capital requirements is motivated by the importance of better capturing tail risk.

In short, the pre-crisis market risk framework was in need of major repair. The weaknesses exposed by the crisis were also a stark reminder of the shortcomings in banks’ own risk management practices and the limitations of models in general.

## Why has it taken so long to complete the market risk framework?

After several years of work that included multiple consultations and quantitative impact studies (QIS), the Committee published a revised standard for the market risk framework in January 2016 (BCBS (2016)). As part of finalising the Basel III framework last year (BCBS (2017)), ongoing challenges in implementing certain bank capital reforms were acknowledged by the Group of Governors and Heads of Supervision (GHOS), the Committee’s oversight body. Accordingly, the GHOS endorsed the Committee’s proposal to extend the implementation date of the revised market risk framework from 2019 to 1 January 2022 (for both the implementation and first regulatory reporting date for the revised framework).

Deferring its implementation will also align the framework’s starting date with those of the Basel III revisions for credit risk and operational risk. It will give banks more time to develop the systems needed to apply it.

More recently, the Committee issued a consultation paper in March proposing changes to the revised market risk framework. These include revisions to the calibration of certain elements of the standardised approach, and to the assessment process that determines whether a bank’s internal risk management models appropriately reflect the risks of individual trading desks (BCBS (2018b)).

So there have been many developments related to the market risk framework even after the publication of the revised standard in early 2016. I think a fair question to ask is: where are we exactly in revising the market risk framework, and why is it taking so long to finalise? Let me offer three reflections.

First, as I mentioned earlier, market risk is important. It was a major source of losses for banks during the global financial crisis. And episodes of market risk-related stress can often catalyse credit risk and liquidity risk concerns, and vice versa. Many of the activities captured in the trading book, such as market-making and capital-raising, help support the real economy. So it is important that the prudential regulatory framework for market risk is calibrated to ensure the safety and soundness of the banking system, and, subject to achieving this objective, that it mitigates any unintended impacts on socially useful market activities. This is why the Committee has repeatedly consulted on its revisions to the market risk framework over the past several years, and why it has been engaging closely with ISDA and other external stakeholders on its finalisation.

Second, although market risk is significant for banks with large and complex trading portfolios, the revisions to the market risk framework may at times have suffered from an illusory quest for “perfect” risk sensitivity (Ingves (2015)), resulting in a disproportionate use of both the Committee’s time and that of external stakeholders. Consider the following facts:

- In aggregate, market risk accounts for the smallest share of total capital requirements across the main risk categories. This is the case both for relatively large internationally active banks and for small banks. As at end-June 2017, it comprised less than 5% and 2.5% of total minimum required capital for such banks, respectively (Graphs 2 and 3).



- This share has only become smaller over time. Since end-2011, the share of market risk as a proportion of total minimum required capital has almost halved for larger banks, including global systemically important banks (Graph 4).<sup>1</sup>
- The overall capital impact of the revised market risk framework is relatively small for almost all banks. Based on an earlier analysis by the Committee prior to the finalisation of the revised market risk framework, the average change in market risk capital requirements resulting from the revised framework is about 5% of total capital requirements (Graph 6).<sup>2</sup> But there are a handful of “outlier” banks that would see a more significant increase or reduction of their market risk capital requirements.

Faced with these facts, an open question is whether the revised market risk framework has adequately balanced simplicity, comparability and risk sensitivity. In the run-up last year to our completion of the Basel framework revisions in December, a common refrain was the need to maintain risk sensitivity. There was a concern – misguided in my view – that the imposition of an output floor and the other measures under consideration by the Committee would impair the framework’s risk sensitivity. The Committee has previously reaffirmed its support of a risk-weighted capital regime and its belief that it should remain at the core of the framework for banks, complemented by the leverage ratio and liquidity metrics. The Committee has also noted, however, that the pursuit of increased risk sensitivity has considerably increased the complexity of the capital adequacy framework in some areas – particularly the calculation methodology for risk-weighted assets. (BCBS (2013b)).

I worry that it is often assumed that increased risk sensitivity is a priority of the banking industry and the pursuit of simplicity and comparability are goals of supervisors. But, the financial crisis demonstrated quite clearly that if the risk-weighted regime is too opaque, market participants will simply stop using risk-weighted ratios to assess the health of banks. Put another way, the more complex the risk-weighted regime becomes, other measures such as the leverage ratio will grow in importance as an indicator of bank strength.

It seems, therefore, that it is in the interest of the banking industry itself to ensure that the regulatory regime is robust throughout the cycle. Further, that it can be clearly understood by supervisors, banks and market participants. The consequences of undue complexity can directly affect banks’ own internal risk management:

- A bank’s board and senior management may find it challenging to fully understand the bank’s underlying risk profile and, as a result, the key drivers of the capital framework, even though the public has a legitimate expectation that they have that ability, and they are under a legal obligation to do so. Undue regulatory complexity can therefore impair the ability of the board and senior management of a bank to ensure that the bank has adequate capital to support its risks.
- The use of highly complex approaches can jeopardise sound internal risk management to the extent that bank management places undue reliance on them. Risk management decisions based entirely on the output of complex quantitative analysis may not result in effective and prudent decision-making. More complex frameworks increase “quant risk”, whereby risk managers and

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<sup>1</sup> The small contribution of market risk to capital requirements stands in stark contrast to the amount of resources devoted to the market risk framework. A simple, if crude, way of measuring the time and resources devoted to market risk is to calculate the ratio of the share of publications by the Committee since 1980 on different risk categories vis-à-vis the share of each risk category to total capital requirements. Suffice it to say, we have issued about six times as many publications as you would expect from just looking at the share of market risk as a percentage of total capital requirements. And this ratio increases to 10 times if the ratio is based on the number of references in Committee publications (Graph 5).

<sup>2</sup> This does not reflect subsequent modifications included in the revised framework upon its finalisation, which led to a reduction in the average number.



supervisors effectively delegate key aspects of risk management and supervisory oversight to a limited number of highly quantitative experts.

- Compliance with an unduly complex capital framework absorbs a large amount of banks' resources. While this may be manageable for larger institutions, it places a greater burden on other banks.

In short, we know that the pre-crisis framework resulted in imprudently low capital requirements for market risk. We know that market risk represents a very small share of total capital requirements for most banks. We know that the estimated impact of the revised framework appears to be relatively manageable for most banks. So have we placed too much emphasis on attaining "perfect" risk sensitivity, at the expense of simplicity and comparability (not to mention the significant costs associated with development and implementation)?

This brings me to my third point, which is the importance of having a framework that can be realistically implemented by banks and jurisdictions. In postponing its implementation date, GHOS members reaffirmed that they expect the framework's full, timely and consistent implementation. To meet this expectation, the framework needs to be designed in a way that can be implemented by internationally active banks and adequately overseen by supervisors. So while there may be sound conceptual reasons for pursuing a specific approach or making a particular revision to the market risk framework, it is in no one's interest to end up with a framework that cannot be adequately implemented.

The Committee's experience with its market risk QIS is telling. The Committee has conducted many quantitative exercises on market risk, both before and after the publication of the market risk framework, with a QIS exercise currently under way.<sup>3</sup> While the quality of data submitted by banks has improved over time, data quality concerns remain. Thus, a significant proportion of banks' data has been excluded from the Committee's analysis. These deficiencies may simply reflect the gradual adjustment of banks' systems to the revised framework. But as a result, the Committee has in some areas been left with a small sample of observations to finalise certain outstanding revisions. This points to the importance of banks providing complete and robust trading book data submissions for the current QIS exercise as well as providing concrete evidence to the questions posed in the consultation to facilitate the standard's finalisation.<sup>4</sup>

## Where do we go from here?

So where does this leave us, 25 years since the Committee's initial consultation on market risk? I'll make three concluding remarks:

- The revised market risk framework will represent a major improvement to the pre-crisis regulatory framework. The framework will address many of the fault lines exposed by the global financial crisis. The main elements of the revised framework finalised in 2016 are in a stable shape, and the Committee is focused on finalising the few remaining outstanding issues in a timely manner this year.
- In doing so, an important consideration for the Committee is whether the framework adequately balances simplicity, comparability and risk sensitivity. Will the Committee need to consider

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<sup>3</sup> This includes two risk-weighted asset variability studies and twice-yearly capital monitoring data collections.

<sup>4</sup> These relate to the treatment of FX risk; trading seasonality as part of the non-modellable risk factor framework; and idiosyncratic equity risk.



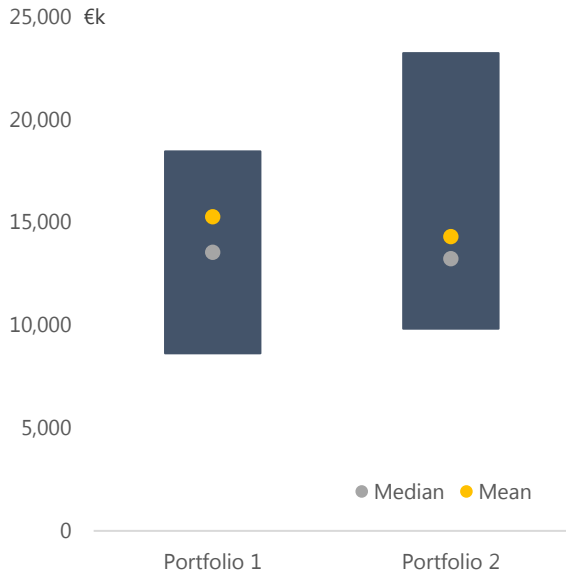
whether simpler and more robust approaches should be included in the revised market risk framework?

- There is a clear expectation for full, timely and consistent implementation of the Basel III standards. This includes the 1 January 2022 implementation date of the market risk framework, as reaffirmed last month by the G20 Finance Ministers and Central Bank Governors (G20 (2018)). So the Committee will increasingly be focused on meeting this expectation.

Thank you.

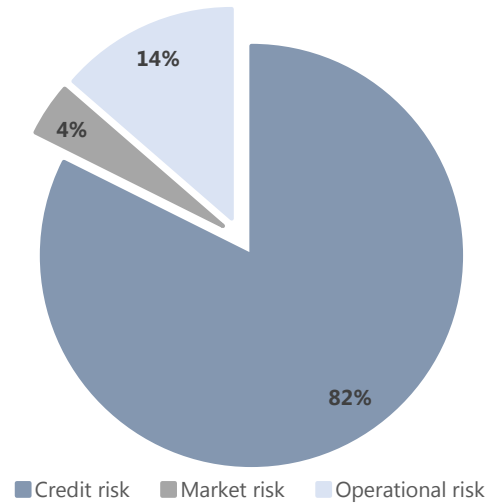


**Graph 1:** Market risk capital requirements estimated by banks for hypothetical portfolios<sup>(a)</sup>



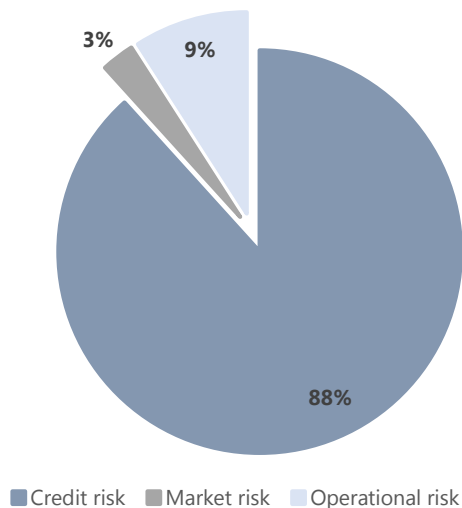
Source: BCBS (2013a) and Secretariat calculations.  
(a) Range of capital requirements estimated by 17 internationally active banks spanning nine jurisdictions, for two hypothetical diversified portfolios.

**Graph 2:** Share of capital requirements for Group 1 banks by risk category<sup>(a)(b)</sup>



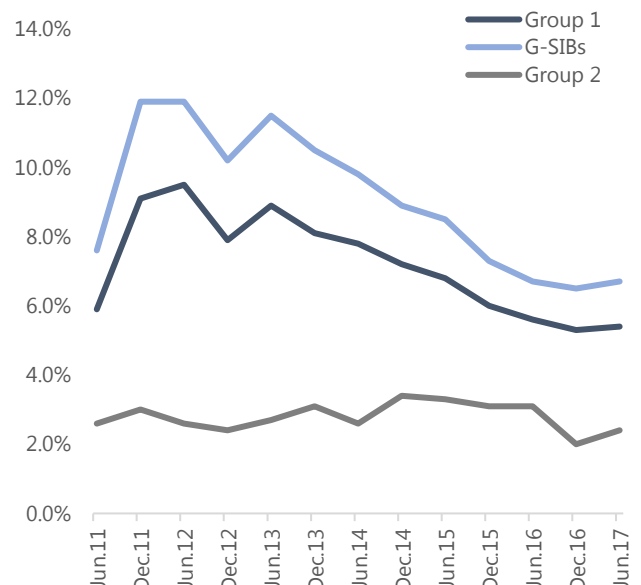
Source: BCBS (2018a), p 31 and Secretariat calculations.  
(a) As at end-June 2017. Sample consists of 106 internationally active banks with Tier 1 capital greater than €3bn.  
(b) Composition of banks' minimum required capital by risk category. Ignores any impact due to IRB provisioning shortfalls or the Basel I floor.

**Graph 3:** Share of capital requirements for Group 2 banks by risk category<sup>(a)(b)</sup>



Source: BCBS (2018a) p 31 and Secretariat calculations  
(a) As at end-June 2017. Sample consists of 87 internationally active banks with Tier 1 capital less than €3bn.  
(b) Composition of banks' minimum required capital by risk category. Ignores any impact due to IRB provisioning shortfalls or the Basel I floor.

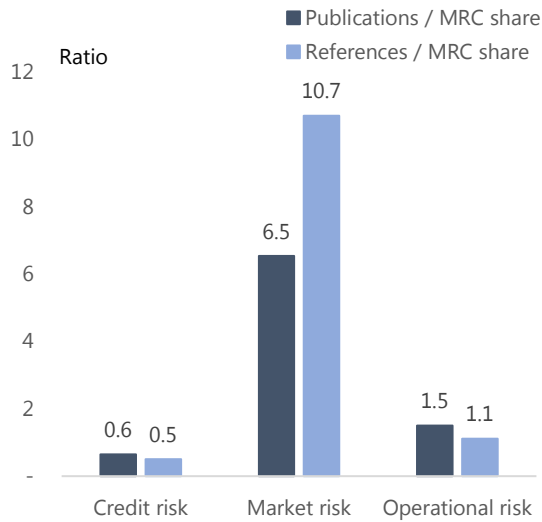
**Graph 4:** Share of market risk to total minimum required capital<sup>(a)</sup>



Source: BCBS (2018a), p 35.  
(a) Sample of 36 Group 1 banks, 14 G-SIBs and 20 Group 2 banks.



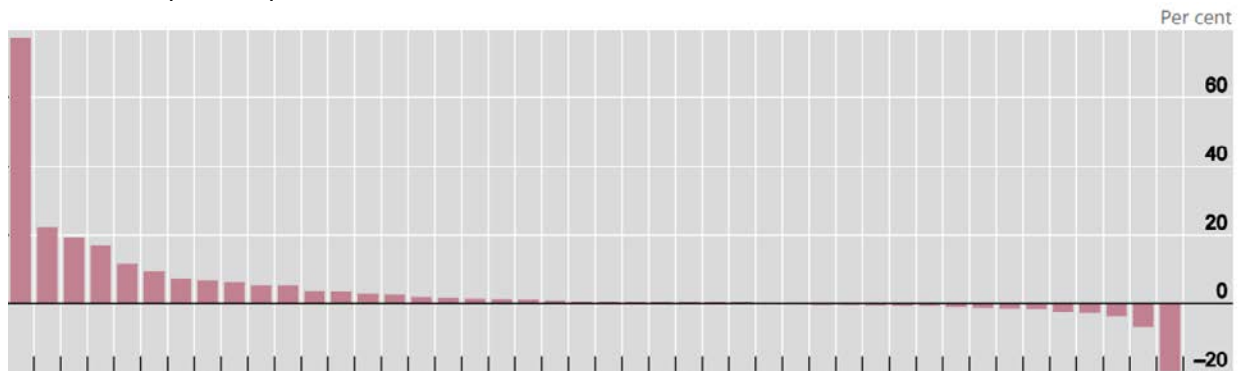
**Graph 5:** BCBS publications by risk category relative to share of capital requirements<sup>(a)</sup>



Source: BCBS and Secretariat calculations.

(a) Graph shows the ratio of total BCBS publications and references since 1980 related to major risk categories over the share of each risk category to minimum required capital.

**Graph 6:** Change in total market risk capital requirements as a percentage of total Basel III minimum capital requirements as a result of revised market risk framework<sup>(a)</sup>



Source: BCBS (2015b) p 3.

(a) As at end-December 2014, for a sample of 44 banks.





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