

The Market Risk Capital Framework

A Contribution to the Fundamental Review of the Trading Book

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Executive Summary

This paper sets out some important principles that we feel should be established before a more detailed consideration of how to measure and capitalize trading book risk is undertaken. The topic of capital adequacy is a complicated one as it depends not only on measurement issues but also on the intended purpose of capital and the required safety standards. Opinions on these latter two components may vary across parties depending on their objectives and preferences. For instance, regulators will focus on macro prudential concerns while shareholders will focus more on risk/return tradeoffs, and their views might not be fully aligned. Furthermore, there is a need to distinguish between minimum capital to cover wind-up, ongoing capital buffers to ensure minimum capital is never breached, and target capital levels preferred by shareholders. Pillar 1 and Pillar 2 capital as currently defined do not acknowledge these distinctions.

This paper discusses these conceptual issues but does not attempt to provide one single answer, as there is no right or wrong answers when preferences and intentions are involved. Instead, this paper focuses on establishing key properties that are important for a safe and sound capital framework and that we believe are relatively uncontroversial. Such basic principles are extremely useful for guiding us towards a reasonable design. The main conclusions of the paper are as follows:

- Internal statistical models that provide the entire P&L distribution are indispensable components of a sound capital framework for the trading book. Standardized charges or prescribed approaches do not have the desirable properties established by our principles. This conclusion applies to capital for different purposes (e.g. minimum capital or minimum plus buffer, except that the latter would correspond to a higher safety standard (confidence level)).
- To be fit for capital use, internal models need to be adequately risk sensitive and be able to capture relevant tail risk. Sufficient governance, including continuous independent validation, testing and benchmarking, needs to be in place to ensure model performance. The confidence level should be estimable given data availability and permit meaningful testing. The use of standardized charges as backstops should be avoided to prevent distortions. Stress tests are useful for sense checking loss absorbing capital buffers but are less likely to be relevant for minimum capital.

- Added prudence should be done in a way that does not distort relative risk sensitivity. Scaling of capital estimates such as loss absorbing buffers is a possible way to introduce conservatism. Ultimately, the desired level of conservatism should strike a balance between the resilience of banks and their effectiveness in performing their functions in the economy.
- Capital rules, model approval standards and supervision should be harmonized across jurisdictions. The purpose of minimum capital requirements relative to other capital buffers and safety measures should be made clear to avoid overlaps and distortions. Capital requirements should be designed in conjunction with other safety and soundness initiatives and the combined effects should be considered.

Introduction

The Basel 2.5 rules for market risk, put together in a relatively short period of time after the 2007-2008 crisis, contain enhancements to the capitalization of market risk in the Trading Book, particularly related to tail risks that led to significant losses during the period. However, these rules constitute one of the most complex areas of the Basel framework with many overlapping model-based and standardized charge components. The industry therefore welcomes the fundamental review of the trading book being carried out by the Basel Trading Book Group (“TBG”). This review provides an exceptional opportunity to design a prudent and coherent framework of capital rules for market risk.

This note contributes to the fundamental review by presenting a set of key features of a market risk capital framework for the trading book that is important for a safe and sound financial system. Companion documents on CVA and Banking Book/Trading Book boundary issues have already been submitted to the TBG.

Key features of a sound market risk capital framework

- 1. A coherent framework that is risk sensitive at both the individual trade and portfolio levels is vital. Conservatism should only be introduced in a way that does not compromise the proper reflection of the relative magnitude of risks in the capital charges.**

Capital requirements provide powerful incentives within the financial system. A regulatory capital framework that is not risk sensitive or coherent from a portfolio analytics perspective can lead to inconsistencies between risk and capital management. This can result in distorted behavior such as the accumulation and concentration of systemic risk in areas where regulatory capital charges are low relative to economic risk.

Banks take a portfolio approach to risk management. By pooling together the risk of many positions acquired through client transactions, banks can enjoy the benefits of netting, hedging and diversification while managing the corresponding basis risk and occasional breakdown of hedge relationships. Without the ability to recognize such benefits in capital calculations, banks cannot efficiently perform their functions as financial intermediaries.

Furthermore, by recognizing risk reduction, the rules will also provide the necessary discipline for risk management. The lack of such discipline will surely create problems from both a micro and macro prudential perspective.

Banks and regulators share a common goal of prudence in the financial system, and accordingly some degree of conservatism might be desired. However, to avoid distortions, any added conservatism should be done in a way that minimizes discrepancies between relative risk and capital and does not inhibit a portfolio approach to risk. Specifically, standardized charges and haircut based backstops are not risk sensitive. They are inconsistent with a portfolio approach to risk management and their use should be minimized. Unbalanced levels of conservatism across risk/products should also be avoided as it can result in the concentration of risk in areas where the treatment is less punitive.

2. The framework should promote continuous improvements in risk and capital measurement methodology.

There is no such thing as a universally best approach that works well all the time. In fact, recognizing the strengths and weaknesses of models and continuously improving them is a very important part of the risk management process.

The next crisis may not necessarily be similar to the last one. Banks are at the front line of managing risk. Good risk measurement and management practice at each bank across the industry is a prerequisite for a safe and sound banking system. It is very important that the capital rules do not reduce incentives for banks to improve risk measurement and management.

A static, prescribed approach cannot help promote the needed continuous evaluation and improvement in risk and capital measurement as the market and technology evolve and better methods are discovered. In contrast, an internal models approach, together with a sound validation process, provides a framework for evaluation, discussion and enhancements which are aligned with where the impact to the business is the greatest.

3. The capital framework should be principle-based. A one-size-fits-all approach should be avoided.

There are differences in business models, complexity and controls across banks. This allows for a broad range of products and services to be provided to different clientele, appealing to the comparative advantages of different institutions. A one-size-fits-all approach to capital can affect the functioning of the banking system. It can also lead to industry-wide risk concentrations that can compromise the safety and soundness of the financial system.

For instance, a primitive, non-risk sensitive approach to capital would not generate the right amount of capital for a complex bank. Such an approach can also interfere with the bank's efforts to improve risk measurement and management. By contrast, a very complex framework would not be appropriate for a bank with a relatively simple business.

Furthermore, under an internal models approach, banks would focus their efforts on better models and systems where it matters the most to them from a business/risk point of view. This makes sense from both a bank perspective as well as from a macro prudential perspective, as long as there is sufficient governance around the process. Governance and other control measures, such as independent model validation, on-going model testing and hypothetical portfolio benchmarking, are needed to ensure the quality of internal models and that tail risk, including those observed during the crisis, are adequately captured.

4. The capital framework should be flexible enough to reflect the changes in the market environment, including the emergence of new products and risks in a timely fashion.

The trading book is very dynamic in nature. The portfolio composition is constantly changing due to client facilitation and hedging needs. There are many products and risk factors, some with complicated nonlinear price relationships. Furthermore, the market is constantly evolving with new products and risks. To maintain proper risk sensitivity at all times, the framework needs to work for a variety of risks and product types. It must be sufficiently granular and flexible to allow adjustments to accommodate new products and risk brought about by financial innovation and client demand.

Standardized charges do not have sufficient granularity and flexibility. They are simply very crude models that are not sufficiently risk sensitive and dynamic. While they might be reasonable for simple long-only portfolios, they would have difficulties capturing the relationships across a wide range of assets and risk factors in a long-short portfolio of complex products. Furthermore, there are no natural testing and updating procedures to the standardized rules as the market evolves. Any changes would need to go through a legislative/administrative process with discrete outcomes. It is therefore very difficult for standardized charges (or other prescribed approaches) to keep up and remain risk sensitive at all times in a dynamic market environment.

In contrast, an internal models based approach to capital would not have these deficiencies. Internal models are used on an ongoing basis for risk management and trading decisions. They are better understood and are constantly being updated to reflect current economic realities. From a control perspective, an internal models approach is better aligned with risk management than a separate calculation used solely for regulatory capital purposes.

5. The framework should be practical for day-to-day use for capital allocation/management, relative performance measurement, trading/investing decisions, and resource allocation.

In addition to minimizing the risk of insolvency (for the benefit of the debt holders) and protecting the franchise (future earnings potential) for the shareholders, capital also plays a very important role in performance measurement (return on capital) and the allocation of bank resources to different businesses.

Banks perform a very central function to society by providing credit and liquidity and helping in allocating capital efficiently within the economy. To perform these functions well, a bank would need to evaluate a large number of transactions in a timely manner, transform risk and liquidity, and channel funding from providers to those who can best use those resources. A complex capital framework that is difficult to analyze, inconsistent with risk and susceptible to unintended consequences does not lend itself to easy day-to-day use. This can have a negative impact on the core functions that banks perform for the economy.

6. Level playing field is very important. Not only should capital rules be consistent across jurisdictions, but implementation, model approval standards and supervision should also be harmonized.

The trading book capital framework must be applied equally to banks in different jurisdictions. This does not mean just having consistent rules. To ensure consistency across jurisdictions, consistency in implementation, model approval standards and supervision is also required. Having an uneven playing field is not just a concern regarding relative competitiveness; rather, it can also lead to distortions in the system in which risk will accumulate in the jurisdiction which attracts the least amount of capital or where approval/supervision is least stringent. Attention should also be paid to the level playing field between banks and non-banks. Punitive charges on banks could result in risk moving from banks to unregulated entities. This can cause severe systemic risk issues.

In addition, inconsistent rules and implementation/supervision require duplicative systems and processes and decisions become more complex and inefficient.

7. Regulation needs to differentiate between the confidence level at which risk can be meaningfully measured and the confidence level at which minimum capital standards should be set.

Risk measurements based on simulations need to be back-tested, but back-testing can only meaningfully be done at confidence levels corresponding to the availability of historic data. Similarly, risk measurements that are based on the joint cumulative changes in market factors during historical systemic economic crises will look back on less than 100 years of history.

The assignment of minimum or target capital levels requires some form of scaling to transform that which can be measured to the higher confidence level required by prudence (e.g. 99.9%). Extrapolations of this sort are fraught with potential errors and should be done in a thoughtful manner. In setting minimum capital levels it must always be understood that there is a trade-off between long-term economic growth and regulatory minimum capital levels. Setting minimum capital levels too high will have unintended consequences, including inhibiting banks role in providing credit and liquidity.

The use of multiple components of capital (e.g. VaR, IRC) evaluated at different confidence levels further adds to the confusion as to what is the true soundness standard and should be avoided. Portfolio analytics become a bit meaningless when there are multiple components corresponding to different confidence levels. The inconsistency can lead to distortions and systemic risk as there will be a natural accumulation of risk in components that are subject to a lower standard.

8. The purpose of minimum capital requirements relative to other capital measures/buffers should be made clear and their combined effects considered.

The capital framework should make clear what the minimum capital requirements, various buffers (e.g. through Pillar 2, G-SIB and counter-cyclical) and other safety measures are designed to accomplish and how they interact. In our view, these capital levels and buffers should be rationalized and aligned with the various roles that capital has in a bank, bullet 5 above speaks to some of these roles. We see three levels of capital requirement that shift progressively from the requirements of a regulator to the requirements of the shareholder:

Level 1: A minimum capital requirement imposed by the regulator

The regulator will clearly set a minimum capital requirement for a bank to operate in its jurisdiction. The question is: What is the purpose of this capital – other than as an entry ticket? It cannot be used to absorb losses in an ongoing concern because if it did absorb losses the entity would no longer meet the minimum regulatory requirements. We see a role for this capital only in a gone concern situation where it would be available to absorb further losses during a wind-up period. This is an important observation because it means the requirement for this capital should be based on the time period it may take to resolve the firm.

Level 2: An ongoing capital buffer above the minimum requirement

Clearly neither regulators nor shareholders will be content to see a firm operate with just the required minimum capital. A buffer is required to ensure the minimum requirement is not

breached. This capital may be thought of as something similar to Pillar 2. However, in reality, Pillar 2 is also a minimum capital requirement that is simply floored at the Pillar 1 level. In fact, firms have always had to maintain a capital buffer over and above the minimum requirements and it is this capital that absorbs losses for a going concern. It is clear that regulators will take some view on the size of this buffer but we feel that it should be acknowledged that the capital buffer is there to absorb losses. Therefore it should be viewed as a desired target, not a minimum. When financial resources fall below the target, clearly discussions should take place between the firm and the regulator to agree on a plan for either raising more capital or for reducing risk. And the closer the buffer falls to zero, the more urgent will be the need for action. The concern of the regulator should, however, be on the extent to which the minimum capital requirement may be breached before wind-up begins. For this reason, we will avoid discussion at this stage of the capital standard for Level 2 because it may well be the subject of discussion between individual firms and the regulator depending on their individual risk appetites. Clearly, a lower buffer leads to higher risk of a remedial discussion at some future point.

Level 3: Shareholders Capital Requirement

It is not a given that there will be investor demand for Level 2 capital requirements. In that case, the firm will be unable to reach its capital target and will necessarily fail eventually. However, assuming there is investor demand, the shareholders may well target a higher level of capitalization than Level 2. This could be for several reasons: to act as a buffer on a buffer – so that embarrassing discussions with regulators are avoided, or perhaps also to maintain market confidence and minimize the cost of funding from depositors and from the bond markets. This level of capital should really be of no concern to the regulator and is just a function of shareholders' risk preferences, in particular the value they place on current return on equity versus future returns (i.e. franchise value).

Independent of the questions around what models should be used to generate capital requirements, at any level, there is a separate question related to the degree banks should be capitalized against shocks from systemic risk. Clearly a bank should have reasonable protection in the form of capital buffers against systemic shocks such as the kind of credit spread widening observed in 2008. However, we question the extent to which an individual firm should be expected to capitalize against all types of systemic risk. Banks may have a role to play but systemic risk can arise from the management of the economy, regulatory risk, and the demands of society that the banks do not control. We feel that such risk, beyond a certain level, should not be borne just by banks, but by all of society. To the extent that authorities wish to protect depositors and other creditors of the bank, this may best be done via deposit protection schemes by insurance and other sources of central funds. The European Financial Stability Facility and the FDIC funds are examples of this.

9. Stress tests and scenario analysis are very valuable for checking the appropriateness of Level 2 capital but are incomplete tools to determine capital by themselves

Plausible stress tests and scenario analyses provide comparative numbers that allow us to sense check risk and assess the adequacy of capital measures. They are great analysis tools for risk management.

However, the relevance of particular stress tests depends on the portfolio, which differs from bank to bank. Furthermore, it is virtually impossible to design multi-factor stresses of a very high dimension or to ensure that a set of stresses is comprehensive. Stress tests, by their nature, do not provide the whole P&L distribution. Assessing their likelihood or plausibility is hard. Prescribed stress tests are a form of standardization and therefore are susceptible to arbitrage. This can distort behavior and lead to systemic issues.

As a model validation tool, it makes sense to construct stress scenarios. These may be drawn from historical experience. One objective here would be to ensure that losses purporting to be, for example, 1 in 50 or 1 in 100 year events according to the risk model do in fact align with historical experience.

For capital adequacy, however, the benefit is less clear-cut. Firstly, periods of severe stress involving systemic risk may not be a fair test for an individual firm's capital model. It is not clear to what extent firms should be required to hold capital for all forms of systemic risk since this is risk largely out of their control (see the end of bullet 8). However, to the extent that shareholders place emphasis on the franchise value of the firm over short-term returns, they will want to ensure that firms are adequately capitalized against systemic risk.

Our view is that stress testing should not be applied to Level 1 capital because this is capital for wind-up, when presumably the stress event has already happened. For a Level 2 loss absorbing capital buffer, however, there is a clear need to stress test, if only to validate the size of the buffer and ensure that the risk of a material drawdown on Level 1 capital is sufficiently small. Level 3 capital may also be stress tested, but in our view this is entirely the concern of the firm and shareholders – not the regulator. For Level 2 and Level 3 stress testing, we would be interested not only in historically calibrated stress scenarios and stylized scenarios based on historical evidence, but also in hypothetical scenarios.

10. Capital requirements should take into account the introduction of other safety measures

There are many new regulatory initiatives to enhance the stability of the system (e.g. Dodd-Frank in the US, stress tests/CCAR, tightened supervision and disclosure requirements, resolution planning). It is difficult to understand the interplay between all the initiatives and

capital requirements designed by different groups. In order to avoid unintended consequences, it is very important to have a complete picture of the distinct role of each initiative and capital requirement, the extent to which various initiatives and capital requirements overlap, how they interact with each other, and their combined effects on incentives and behavior.