

Regulating Market Risks in Banks: a Comparison of Alternate Regulatory Regimes

Chapter V

Introduction

The introduction of the Basle Accord marks an important watershed in establishing capital standards among banks across the globe. Prior to 1992, uniform minimum capital standards were applied to all banks, regardless of any differences in the levels of their investment risk. The task of limiting banks' portfolio risks and ensuring capital adequacy, was left to regulatory monitoring and supervision, and to some degree, to market pressures.

The Basle Accord represented the first step in linking bank capital standards to credit risk exposures, and to that extent, a movement away from a subjective judgement of capital requirements and towards a more objective rule-based approach. However, the growing disenchantment with the Capital Adequacy Ratios (CAR), have led regulators to search for feasible alternate possibilities to regulate market risk in banks. Three alternative approaches have been discussed in the literature.

The first of the approach to the market risk capital standards is the Building Blocs Approach (BBA). The BBA consists of a single model to be applied to all banks. This approach is characterized by a 'building bloc' framework, a framework it shares with the 1988 Basle Accord credit risk capital standards. Two regulatory frameworks, those of the Capital Adequacy Directive (CAD) of the European Union and of the Basle Standardised Measures (BSM), incorporate this approach. Under this approach, capital charges are determined for each of the four major market risk categories (interest rate, exchange rate, equity and commodities) and are then aggregated. Different procedures are used for each category to determine the category's respective capital charge. It is a set of rules that assigns risk charges to specific instruments and crudely accounts for selected portfolio effects on banks' risk exposures. Interest rate and exchange rate risks dominate the market risks for most banks trading departments. Under the building bloc approach, debt

securities incur a specific and a market risk capital charge. The specific risk-charge is intended to cover changes in the market value of securities owing to changes in credit quality. It is a weighted average of gross debt security positions where the weights vary between zero and eight, according to the quality measures of the security (issuer, maturity, rating). These specific risk capital charges for interest rate products would substitute for the credit risk capital requirement these positions currently require under the Basle Capital Accord. The market risk charge covers changes in the value of the debt positions that owe to changes in the general level of (risk free) interest rates. Equity positions are subject to both a specific risk and a market risk capital charge. Equity capital charges are determined on a notional market basis and are then aggregated across markets at current exchange rates with no offsets permitted for hedging or diversification among markets. Finally, commodity capital charges are essentially 15 per cent of the net position in each commodity (Kupiec and O'Brien, 1997). Some additional capital charges are also assessed for basis risk and interest rate risk.

The second approach is the Internal Models Approach (IMA), whereby capital charges would be based on market risk estimates from banks' internal risk measurement models. The bank would use its proprietary risk measurement model to estimate its trading risk exposure which, when multiplied by a certain scaling factor as a measure of regulator's conservatism, would become the basis for the regulatory capital charge for market risk. Regulators would also impose a number of standardizing restrictions on banks' internal models, in order to ensure rough comparability across banks that use this approach. The IMA approach has been adopted recently by the Basle Committee as an alternative measure to the BSM.

The third and latest proposal is the Pre-commitment Approach (PA), based on work done by Kupiec and O'Brien (1997). Under this approach, each bank pre-commits to a maximum loss exposure over a designated horizon. The maximum loss commitment becomes the bank's market risk capital charge. If the bank incurs trading losses in excess of its capital commitment, it is subject to penalties, which may include fines, a capital surcharge in future periods, or other regulatory disciplinary measures.

Pertinent from the point of view of the Indian scenario are the Internal Models Approach and to a lesser extent, the Pre-commitment Approach, which are taken up for discussion. What follows is a brief description of the two approaches followed by an examination of the likelihood of the use of these models in the Indian context (Appendix A4).

V.2 Internal Models Approach

In the past, banks have usually measured the risks in individual parts of their trading books separately. Nowadays however, they are increasingly moving towards a whole trading book approach, using a Value-at-Risk (VaR) model, which is a statistical approach to the evaluation of market risks. The aim of the VaR model is to calculate consistently the loss, with a specified probability, over a specified holding period of time, which a bank might experience on its portfolio from an adverse market movement. For example, with a confidence interval of 97.5 per cent, corresponding to about two standard deviations from the mean, any change in portfolio value over one day resulting from an adverse market movement will not exceed a specified amount, given the relationships between assets holding over the observation period. VaR should therefore encompass changes in all major market risk components.

The VaR model retains the basic CAR philosophy of a 'hard link' between risk exposure and capital requirements, set exogenously by the regulator. However, there is an important difference. In the traditional CAR approach, the risk-weights are also set by the regulator, whereas, in the VaR approach, the risk weights are based on the banks internal model. This amendment is addressed to overcome two weaknesses of the CAR approach— one, that it ignores diversification benefits accruing from holding assets of varying risk in the same portfolio and two, that it fails to efficiently exploit internal information specific to the bank. However, the VaR model comes with its own price tag. The regulator has to ensure that the bank's internal model does not misrepresent its risk exposure and hence, a checking mechanism has to be in place.

Although the internal models approach represents an important advance over standardised risk measure, it still has important disadvantages that might impair its efficiency and effectiveness. The advantages of the internal models approach will be realized only if (a) the bank's internal risk measurement model is capable of providing an accurate measure of a bank's risk exposure over a holding period of concern to the regulators, and (b) that the regulatory authority can verify that each bank's model is indeed providing such an accurate measure of the bank's risk exposure. In practice, it might well turn out that neither of these two conditions are completely satisfied.

Importantly, these models are not designed to measure the longer-horizon exposure that is the intended basis of regulatory capital requirements. Simply stated, longer horizon risk exposure depends not simply on a bank's initial risk exposure, but also on its risk management strategy and the risk control systems that a bank has in place. Risks need to be measured and managed on a daily basis. However, the longer the horizon, the less important will be the initial risk exposure and the more important will be management's risk objectives and the bank's risk management system. The internal models proposal sets the capital requirement at some multiple of the model risk-risk estimate for an initial portfolio composition. This risk measure places undue emphasis on the initial portfolio at the expense of ignoring the importance of the bank's risk management objectives and the efficacy of its risk control systems.

V.3 The Pre-commitment Approach

An alternative to model-based regulation, another approach which has gained currency in recent times has been the Pre-commitment Approach (PA). Unlike the VaR, which retains the basic CAR philosophy of a 'hard link' between risk exposure and capital requirements, the PA emphasizes the use of a 'soft link', i.e., a link arising endogenously rather than being externally imposed.

Under this approach, each bank pre-commits an amount of capital to cover what is believed to be its maximum trading loss exposure over a given regulatory horizon, which can be one quarter or even a shorter period. The capital becomes the focus of regulation.

A bank would be in breach of this pre-commitment if cumulative losses from the beginning of the capital period exceeded its capital commitment on any close of business. The appeal of the PA lies in the fact that it does not require the regulator to estimate the level of trading book risk of any specific bank or to assess its internal model. Banks which have good risk management systems, conservative portfolios, or more risk averse preferences, could pre-commit to lower maximum loss levels and hold less capital because of their confidence that they will not breach their pre-committed maximum trading loss.

In this situation, breaches would be penalised in two ways. Firstly, there would be explicit regulatory penalties. Second, the commitment could be publicly disclosed, providing a double incentive for the bank to contain losses within its committed capital and to not greatly over-commit capital. The latter may send signal of an effective risk measurement system, as well as of possible excessive risk exposure in the upcoming period. It also encourages the regulatory authorities to act promptly over breaches, imposing the necessary penalties and determining management shortcomings. Disclosure therefore both complements and strengthens the incentives created by the penalties.

V.4 Pros and Cons of Market Risk Models

Regulators traditionally have utilized simple, generic models to measure bank capital adequacy. This is no longer possible: the increased presence of market risk in banks, and the opaqueness of such risk in a portfolio have rendered such an approach less than satisfactory. Three main alternative approaches have emerged in the literature to replace it. Out of them, VaR and PA have the potential for greater applicability in the Indian scenario. Each approach needs to be judged on the basis of the trade-off between the prevention of the costs of bank failure and the costs of implementation of such regulations.

The VaR concept can potentially be applied to both credit and market risk, thus allowing for the possibility that, in time, banks may be able to have a single firm-wide measure of these risks across all business areas, and so measure return on (credit and market) risk

consistently across the whole firm. The concept, however, has no substitute for the wider risk management process of analyzing stress scenarios and keeping tabs on operational and legal risks. For example, neither the VaR nor the other approach offers a direct solution to the problem of operating risk-the existence of sloppy internal controls-which has been responsible for many of the recent problems involving derivatives (Stephanou, 1996).

The internal model approach based on VaR is an improvement to the BBA, since it is aligned to bank industry best practice. However, the attempt by regulators to create consistent estimates of VaR across different institutions' models, as well as their conservative parameters, have reduced the approach's appeal. In addition, at least in the near future, its application will be limited to a relatively small number of institutions that have both material trading activities and sophisticated, comprehensive VaR models.

Presently in India, the banks are free to set gap limits with RBI's approval, but are required to adopt Value at Risk (VaR) approach to measure the risk associated with forward exposures. Thus, the open position limits together with the gap limits form the risk management approach to forex operations.

In contrast to the aforesaid model which supports model-based regulation, the pre-commitment approach by-passes the micro-management of banks; models, focusing instead on outputs. If appropriate incentive-compatible penalties can be devised, the incentives for gaming by banks, present in different ways and extent in both the BBA and the IMA are significantly reduced. It is necessary though for the PA to be further examined and refined, given the severe doubts that still exist over the implications of its adoption in practiceⁱ.

V.5 Concluding Observations

The views of the regulators and the industry on the appropriate method of setting bank capital standards for market risks have evolved away from the use of regulatory standard model approaches and towards the use of banks' internal risk estimates. This evolution

represents a promising development as internal-model based approaches have clear advantages, both in terms of the efficacy as well as effectiveness of risk-based capital standards. While the internal models approach focuses solely on risk measurement of a static portfolio and ignores the fundamentally important determinants of bank's trading risk-its-risk-taking strategy and its risk management ability, the pre-commitment approach, on the other hand, is yet to gain international recognition.

ⁱ A Pilot Project of the Pre-commitment Approach was organised by the New York Clearing House Association and ten participating institutions (Considine, 1998). The exercise demonstrated that (a) the PA is a viable alternative to the internal models approach for establishing the capital adequacy of a trading business for regulatory purposes, (b) while there were differences in each institution's perception of determining an appropriate amount of capital (free of any regulatory pre-conceptions), the institutions believed that such differences arose from differences among the institutions in the nature of their trading books, the varying risk appetites and risk management techniques, differing ratios of proprietary trading revenues to customer flow revenues among firms and different views as to the relationship between economic and regulatory capital.