

COMMERCIAL BANKS' CAPITAL ADEQUACY AND SUPERVISION REVIEW OF INTERNATIONAL REGULATIONS AND PRACTICES

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Abstract

The aim of this paper was to review the international regulations and practices with respect to capital adequacy and supervision, with special focus on moral hazard hypothesis and commercial banks' excessive risk taking behaviour. The result of the review highlights the evolution of theoretical debates with respect to the adequacy of capital to be maintained by commercial banks operating in a given country. The debate is due to the fact that banks having high amount of capital may dare to take excessive risks, which leads to the concept of moral hazard hypothesis as a source of banking or financial crisis. On the other hand, banks having less amount of capital, below the minimum capital adequacy ratio set by either of the Basel accords of I, II and III, cannot sustain negative shocks of unforced financial crisis in an economy. As a result, the current banking literature suggests the revision of the Basel accords I & II towards the Basel accord III that incorporates a capital conservation buffer and a countercyclical buffer apart from the minimum capital requirements. Further, constraints towards this end have been raised in the literature as regulators' capacity constraints related to lack of skills such as the ability to evaluate the quality of bank management and forensic accounting, are found severe in developing countries. Eventually, this paper suggests the remedial actions towards alleviating such constraints in the future.

Keywords: Capital adequacy; Basel accords; Debates; bank supervision; moral hazards

Introduction

Recent experience in emerging markets has demonstrated that economies, government budgets and living standards can be highly damaged by financial crises. This recognition has reinforced interest in improving financial sector regulation and supervision. The objective of prudential regulation is to protect financial system stability and deposits. So its main focus is on the safety and soundness of the banking system and on non bank financial institutions (NBFIs) that take deposits (Martin, Colin & Samuel, 2002). They argued that, in low income countries, effective prudential regulation is impeded by weak accounting standards, shortages of necessary professional skills, the poor quality of financial information, poor public sector pay, the politicisation of regulatory processes and the difficulty in enforcing legal and bureaucratic regulations which also is partially due to political intervention in the regulatory process. Also small financial systems do not offer opportunities for economies of scale in, for example, data collection and information technology systems.

The prudential reforms in developing countries are usually based on upgrading banking laws in accord with international best practice such as setting minimum capital requirements in conformity with the Basel Capital Accord and strengthening the supervisory capacities of regulatory agencies. Though, several developing countries are also setting up deposit insurance schemes, some research suggested that best practice regulatory reforms may not

significantly reduce the probability of a banking crisis (Barth, Caprio and Levine, 2004). Moreover, others argue that deposit insurance has been found to significantly increase the probability of such a crisis.

Objective

The main objective of this paper was to review the related literatures on capital adequacy regulations and supervision of banks as international practices Vis-à-vis moral hazard hypothesis and banks risk taking behaviour.

Methodology

The paper was entirely based on the assessment of prior studies concerning banking regulations and supervisions referring to the Basel accords as Basel accord I, II & III. These accords have been assessed in line with moral hazard hypothesis and the banks excessive risk taking behaviour, and finally, conclusions have been derived.

Capital adequacy: Regulations and supervision

Capital adequacy ratio

The sum of own fund available to support the banking business and act as a safeguard in case of adverse situation is Capital (Athanasoglou et al. 2005) and is one of the bank specific factors that influence the level of commercial banks profitability. Banks capital creates liquidity for the bank due to the fact that deposits are most fragile and prone to bank runs and greater bank capital reduces the chance of distress. However, it is not without drawbacks that it induce weak demand for liability, the cheapest sources of fund Capital adequacy is the level of capital required by the banks enabling them survive credit, market and operational risks they are exposed to in order to absorb the potential losses and protect the bank's debtors (Ongore 2013). Moreover, Dang (2011), suggested that the adequacy of capital is judged on the basis of capital adequacy ratio (CAR) that can show the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio (CAR) can be computed through either of the following ratios; CAR, Debt/Equity Ratio, Proprietary Ratio, Interest-Coverage Ratio, Total Advances to Total Assets Ratio, and Government Securities to Total Investment ratio (Trivedi, 2013). The Capital adequacy ratio (CAR) can be obtained by dividing the sum of Tier-I, Tier-II and Tier-III capital by summative of the risk weighted assets (RWA). Mathematically, $CAR = (TierI + TierII + TierIII)/RWA$. Tier-I capital includes equity capital and free reserves. Tier-II capital consists of subordinate debt of 5-7 years term, revaluation reserves, hybrid debt capital instruments and undisclosed reserves, and perpetual cumulative preference shares. Tier-III capital comprises of short-term subordinate debt. The capital adequacy ratio is developed to ensure that banks can absorb losses occurred due to operations and determine banks capacity in meeting the losses.

Alternatively, Debt-Equity ratio indicates the degree of leverage of a bank. It indicates how much of the bank business is financed through debt and how much through equity. Debt-Equity ratio is obtained by dividing total deposits and borrowings by net worth of shareholders, which includes reserves and surpluses, and equity capital. Higher ratio indicates less protection for the creditors and depositors in the banking system. Regarding the standards for this ratio, Basel 2 Accord sets capital requirements in terms of credit risk (the principal risk for banks), although the 8 % minimum ratio was intended to cover other risks as well, Basel 2 introduced capital charge for operational risk. So major banks now allocate 20% or more of their internal capital to operational risk (Hasan 2003).

On top of that, the relationship between equity and profitability is controversial, in a sense that the traditional a higher capital asset ratio (CAR) is linked with a lower return on equity (ROE) this is because a higher CAR decreases the risk on equity and the tax subsidy provided by interest deductibility. On the other hand, more recent views based on relaxation of symmetric information assumption claims that an increase in CAR raises ROE by reducing the expected cost for financial distress (Naceur and Omran, 2011). Sufian (2012), suggested the strong capital structure necessity in developing economies, as it provides further strength in order to survive financial crisis and improved safety for depositors during unstable macroeconomic conditions. Besides, in banking lower capital ratio imply higher leverage and risk, and therefore greater borrowing costs. In addition, with a collapse of the profits and additional share issue difficulties, banks are obliged to limit lending and continue to credit rationing in order to meet the regulations, and final y influence the economic growth (Van den Heuvel, 2002).

Furthermore, Goddard et al. (2004) argued that, in theory, an excessively high CAR could indicate that banks are operating over-cautiously and forgiving potentially profitable investment opportunities. For example, expected bankruptcy costs may be relatively high for a bank maintaining CAR below its equilibrium value. A subsequent raise in

(CAR) should lead to an increase in (ROE) via minimizing insurance expenses on uninsured debt. On the other hand, according to a signalling hypothesis, bank managers may have both private information as to the banking profitability to the future and the stake in the banks' value via personal share ownership or options. By maintaining a high CAR than for managers of high risk banks, it may be less costly for managers of low risk banks to signal quality. This may create a signalling equilibrium involving a positive association between CAR and ROE.

Regulations

Traditional approaches to bank regulation emphasize the positive features of capital adequacy requirements. Capital serves as a buffer against losses and hence failure. Besides, with limited liability, the appetite for banks to engage in higher risk activities is curtailed with greater amounts of capital at risk. Capital adequacy requirements, especially with deposit insurance, play a crucial role in aligning the incentives of bank owners with depositors and other creditors. However, theory provides conflicting predictions as to whether the imposition of capital requirements will have positive effects. Some argue that capital requirements may increase risk-taking behaviour. Furthermore, if equity capital is more expensive to rise than deposits, then an increase in risk-based capital requirements tends reduce banks' willingness to screen and lend, and in a general equilibrium context, it has been shown that raising capital requirements forces banks to supply fewer deposits, which reduces the liquidity-providing role of banks.

Banking Supervision, the Basel Committee was created in (1974) by the initiative of the Group of Ten (10), following the collapse of the German bank Herstatt. Its purpose was to lay down prudential rules applicable to all banks that have a significant international presence. In 1988, the committee formulated a set of prudential rules aimed at improving the stability of the international banking system and restraining distortion starting in competition amongst countries. All these are known as the first Basel Accords, and commonly referred to as Basel I ([Dewatripont, Rochet & Tirole, 2010](#)).

Basel I Accord is an accord proposed by the Basel committee from the bank for international settlements for minimum capital levels. This aimed at implementing regulatory requirements, through the Cooke Ratio, in terms of bank capital. The main aim of Basel I was to promote and achieve international convergence of standard minimum capital requirements. This was done via creating playing field amongst banks by increasing capital ratios and enhancing financial stability by adopting simple approach to credit risk. The principal purpose of the risk-based standards was to make bank capital needs more responsive and sensitive to the bank's portfolio risk.

The First Basel Accords

The first accords officially had two objectives: to assure the stability ("safety and soundness") of the international banking system and to eliminate distortions to competition arising from the fact that some countries (the most obvious example, Japan being) fixed an implicit guarantee of unrestricted support to their banks in the occasion of failure. This permitted these banks to run up massive debt at rates below those that the market would normally require, and in this way to capture significant market share in credit markets. The principle of Basel one is remarkably simple: Each bank is required to hold a minimum of total capital equal to 8 percent of its total assets, the latter being weighted by coefficients designed to reflect the credit risk of these assets. The weighted sum of risk-weighted assets was supposed to give a measure of the total credit risk taken by the bank. The weights were themselves extremely simple: 0 percent, 25 percent, 50 percent, or 100 percent, according to the issuer of the security or the character of the borrower; sovereign states, members and non members of the Organization for Economic Cooperation and Development (OECD), commercial banks, nonbanking firms, mortgage credit, and so forth).

The problem here was that weights employed by Basel I did not correspond to the risk measures used by investors, reflected in the risk margins (or rate spreads) observed in markets (equivalent to risk premiums). Faced with these criticisms, the committee immediately proceeded to amend the first Basel Accords by taking account of market and interest rate risk, and then determined on a deep revision, a process that in 2004 culminated in the second Basel Accords, Basel II.

The Second Basel Accords: The Internal Ratings-Based Approach

In fact, Basel II is much more complex than Basel I, notably in regard to the introduction of the three pillars. The minimum capital ratio (the first pillar) is complemented by giving a much more essential role for the supervisor (the

second pillar), and the requirement for transparency is much more rigorous (third pillar), as a complement to regulatory discipline, the third pillar is facilitating the exercise of a degree of market discipline. However it is the first pillar that embodies the essentials of the changes introduced by Basel II. Capital requirements calculation henceforth is obtained from the sum of the three terms linked to credit risk, market risk, and operational risk, respectively. The general methodology used is that of value at risk (VaR) -VaR represents the potential loss of an investor in respect of a portfolio of assets that can be exceeded only with some given probability (typically 0.1 or 0.5 percent) over some given time interval (ranging from one week to one year), generally estimated on the basis of historical data. In other words, the regulator seeks to estimate, for every risk, the quantity/amount of capital that will enable the bank to cover up its losses over a determinate period (one year for credit risk), with a particular probability (99.9 percent for credit risk), assuming that future situations turn out to be alike to past conditions, the assumption that the environment is stationary. The regulator calculated the weights on the basis of a very complex mathematical formula as here below:

$$K = LGD \times N \left[\frac{G(PD)}{\sqrt{1-R}} + \sqrt{\frac{R}{1-R}} \times G(0.999) \right] - PD \times LGD$$

$$N(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x \exp - \frac{t^2}{2} dt$$

Where, K designates the weights that enable the capital requirement to be calculated, is the cumulative function of the standard normal distribution, LGD is the loss in the event of default, $G(U) = N^{-1}(U)$ is the quintile function of the normal distribution, R is the correlation between the portfolio of loans and the macroeconomic risk factor, and PD is the probability of default.

The third Basel accord: Basel III

More recently, new revisions to the current Basel II accord were initiated that will impose new restrictions on liquidity and funding requirements, and substantially tighten the minimum capital requirements, (Basel Committee on Banking Supervision, 2010; cited in [Ommeren, 2011](#)). This latest revision of the prior framework is known as Basel III. This will have profound effect on business decisions and balance sheet structure of banks. The new Basel III consists of a capital conservation buffer and a countercyclical buffer apart from the minimum capital requirements. Committee of the Basel designed the capital conservation buffer which requires banks to build up extra buffers outside periods of stress of up to 2.5% above Tier 1 ratio. This buffer only affects capital distributions and dividend payments by restricting dividend payouts while banks do have less than 2.5% of a capital conservation buffer, but does not constrain bank operations. The purpose of designing the countercyclical buffer is to avoid system-wide bank failure that can arise by excessive aggregate credit growth.

This buffer is set within countrywide jurisdictions, and it varies between zero and 2.5%. Furthermore, Basel III will also impose funding and liquidity restrictions ([Ommeren, 2011](#)). According to the Basel Committee on Banking Supervision, (2010), the Liquidity Coverage Ratio (LCR) identifies the amount of liquid assets which are high in quality that a bank must hold so as to meet its liquidity requirements over a thirty day horizon under a severe period of stress. The (NSFR), Net Stable Funding Ratio, focuses on a longer time horizon by examining a one-year period to complement LCR. The purpose of (NSFR) is to limit overreliance on short-term wholesale funding and to promote more stable long term and medium funding of the assets (Basel Committee on Banking Supervision, 2010). Both the (LCR) and (NSFR) will possibly impact business decisions and influence the funding and liquidity structure.

[Barth et al. \(2004\)](#) empirically investigate the association ships between bank regulations and supervisory practices with bank development, performance and stability. The estimation result showed that while the strictness of capital regulations is positively correlated with bank development, but when controlling for other features of the bank regulation and supervision, strict capital regulations are not strongly related with bank development, performance and stability. [Brown bridge, Colin and Samuel \(2002\)](#) argue that prudential regulations need to be easy for developing countries to understand and enforce in situations where supervisory capacities are weak and accurate financial information is at a premium. Higher minimum capital needs for banks would mean that bank owners having more of their own capital at risk, would have stronger incentives to make sure that their bank is managed carefully. Also, higher capital requirements

would enhance the franchise value of banks, by increasing entry barriers into the banking industry. Because developing countries' economies are less diversified and more volatile, banks face more risks than do those in OECD countries. For that reason minimum capital adequacy levels should be set higher than the 8% minimum set by the Basle Capital Accord. A number of developing countries have already complete this, for example in Uganda the minimum total capital to risk adjusted assets ratio raised to 12 % and the minimum core capital to risk adjusted assets ratio to 8%. In addition, appropriate loan classification and provisioning rules, and the rules governing recognition of unpaid-interest income are also very essential due to the reason that without these higher capital adequacy regulations will not be effective.

Table Error! No text of specified style in document.-1: summary of differences between minimum capital requirements

Regulation	Requirements	Tier 1 (core equity)	Tier	Total capita
Basel I	Minimum	-	4.00%	8.00%
Basel II	Minimum	2.00%	4.00%	8.00%
Basel III	Minimum	4.50%	6.00%	8.00%
	Capital conservation buffer	-	2.50%	--
	Minimum + Capital conservation buffer	7.00%	8.50%	10.50%
	Countercyclical buffer	-	0%-2.50%	-

Source: Ommeren, 2011

Supervision

Assessing and strengthening banking supervision is important given the essential role of supervision in encouraging financial stability and mitigating the costs of banking crises, including economic activity disruptions and the financial burden of failure resolution on tax payers. In addition, strong banking supervision increases the importance of banking intermediation to the economy, that is only robust and a stable banking system will be capable of contributing maximally to country's economic growth and poverty alleviation (Alawode, 2003). Banking supervisors are responsible for keeping banks' risk taking in check as protectors of the soundness and safety of the banking system. Off-site surveillance, On-site examinations, and capital requirements are some of the tools that supervisors use to achieve this goal (Demsetz, Saidenberg & Strahan, 1996).

Some theoretical paradigms focus the reward of granting broad power to supervisors with the following reasons. First, banks are expensive and hard to monitor, leads to very small monitoring of banks, which implies sub-optimal stability and performance. Second, because of informational asymmetries, banks are prone to socially costly and contagious bank runs. Third, many countries choose to adopt deposit insurance schemes (Barth et al. 2004). This situation (1) creates incentives for excessive risk-taking by banks, and (2) reduces the depositor's incentives to monitor banks. In such a situation Strong official supervision can help prevent banks from engaging in excessive risk-taking behaviour and thus improve bank performance, development, and stability. On the other hand, dominant supervisors may exert a negative influence on bank performance. Powerful supervisors may use their powers to benefit favoured constituents, attract campaign donations, and extract bribes. Under these circumstances, powerful supervision will be directly related to corruption and will not advance bank development, performance and stability. Situations where Agency problem between tax payers and bank supervisors, and self-interested bank supervisor when there is uncertainty about the supervisor's ability to monitor banks show that supervisors may undertake socially sub-optimal actions. Thus, depending on the incentives facing bank supervisors and the ability of taxpayers to monitor supervision, greater supervisory power could hinder bank operations. Barth et al. (2004) examine the relationships between a broad array of bank regulations and supervisory practices and bank development, performance and stability, and found that generous deposit insurance schemes are strongly and negatively associated with bank stability. Strong official supervisory agencies, stringent capital standards, and regulations that support private sector monitoring of banks are not found to compensate these negative associations of generous deposit insurance, however, regulations that facilitate and encourage private monitoring of banks are related with better banking sector outcomes, i.e., greater bank development, lower net interest margins, and small nonperforming loans.

Supervisory capacities have enhanced considerably in many low income developing countries since 1980s due to training and recruitment of bank supervisors, better supervisory methodologies and improved reporting formats for off-site supervision (Martin, Colin & Samuel, 2002); nevertheless regulators still face capacity constraints related to lack of

skills such as the ability to evaluate the quality of bank management and forensic accounting. As banks and non-bank financial institutions (NBFIs) engage in more complicated financial activities such as the use of derivatives, regulators' skills will need to be constantly upgraded. However, supervisory capacity constraints are often not the most critical cause of regulatory failures, sometimes regulators are aware of the problems bothering troubled banks but the lack of regulations, or else problems which are relating to their enforcement, prevent them taking timely action.

Conclusions

Literature suggests that capital plays an immense roll to sustain negative shocks in an economy and or industry where banks operating. Theoretical debates are evolving around the adequacy of capital to be held by commercial banks operating in a country. The debate is due to the fact that banks having high amount of capital may dare to take excessive risks, which leads to the concept of moral hazard hypothesis as a source of banking or financial crisis. On the other hand, banks having less amount of capital, below the minimum capital adequacy ratio set by either of the Basel accords of I, II and III, cannot sustain negative shocks of unforced financial crisis in an economy. All in all, this requires the revision of the former Basel accords of I & II, as a result the latest revision of the prior framework is known as Basel III. The new Basel III consists of a capital conservation buffer and a countercyclical buffer apart from the minimum capital requirements. Committee of the Basel designed the capital conservation buffer which requires banks to build up extra buffers outside periods of stress of up to 2.5% above Tier 1 ratio. This buffer only affects capital distributions and dividend payments by restricting dividend payouts while banks do have less than 2.5% of a capital conservation buffer, but does not constrain bank operations. The purpose of designing the countercyclical buffer is to avoid system-wide bank failure that can arise by excessive aggregate credit growth. This buffer is set within countrywide jurisdictions, and it varies between zero and 2.5%. Furthermore, Basel III will also impose funding and liquidity restrictions on banks.

On top of that, such a situation requires banks to scale up their supervision abilities as off cite surveillance and on site examination of the activities, performances and their capital adequacy ratio or threshold in compliance with the Basel accords or the capital adequacy regulations with their respective jurisdictions. However, regulators still face capacity constraints related to lack of skills such as the ability to evaluate the quality of bank management and forensic accounting, this problem is found sever in developing countries. Thus, the focus towards adopting or adapting well standard accounting systems such as international financial reporting system (IFRS), among others, and developing skilled man power that equipped with such standardized accounting systems will be paramount important, specially for developing countries, so as to a sustainable and strong on site and off site supervision capacity of central banks in a given economy.

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