PRUDENTIAL REGULATION AND CAPITAL ADEQUACY OF BANKS

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Introduction

The issue of how much capital a bank needs to maintain has been extensively debated. The seminal work of Vojta (1973) highlighted the importance of adequate capital for banks. On the one hand, holding too little capital relative to the size of business may be an imprudent move. On the other hand, however, holding too much capital would result in a shortage of capital funds elsewhere (other industries), especially so when there is an acute scarcity of capital resources. Also, holding more capital than is warranted would not be cost effective. The answer must, therefore, lie in drawing a line of compromise between the conflicting demand for and cost of capital. Since the publication of Vojta's work (1973) much has been written on the topic of capital adequacy for banks (see for example, Gardener (1978); Vokey and Kearns (1985); Maisel (1981); Sharpe (1987)). With changes in the operation of banks, however, revisions have to be made to capital adequacy requirements. This article briefly surveys the issues related to bank capital requirements in the light of variations in the operations of banks that have occurred in the recent years.

Prudential Regulation

In view of their potential ability to chart the destiny of the economy, banks tend to attract a disproportionate share of government regulation (Clarke, 1976). In fact in many developing countries banks are totally controlled (nationalised) by the government. Without going into the merits and demerits of nationalisation, we will commence the discussion by investigating why there is so much regulation governing the activities of banks. Three specific reasons commonly attributed for the numerous regulations are:

(1) banks depend largely on public confidence and adequate supervision by public authorities ensures such confidence;

(2) since governments normally tend to be the ultimate guarantors (referring to lender of last resort facilities) of banks they try (by way of regulation) to keep banks away from crisis situations; and

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(3) banks suffer from contagious spill-over risk such that failure of one bank could spell disaster for the entire banking system and hence the economy. Thus, stringent supervision is introduced to avert bank failures.

Johnston (November, 1985) sums up the objective of prudential policy as '... to maintain the integrity of the payment system, the stability of the financial system as a whole and to protect the interests of bank depositors.' He also argues that, '... the special status of banks, as institutions which provide the community with important payment services and are safe havens for small investors is warranted and must be supported — but not underwritten — by a system of prudential supervision' (Johnston, February, 1986). Of course, there are others who have questioned the need for such supervision (see, for instance, Goodhart (1987), Hogan and Sharpe (1987)).

While prudential regulation imposed by governments (normally via the central bank) cover most aspects of bank operations, such as, level of liquidity, allocation of assets, reserve holding, branch expansion, ownership, etc. this paper only highlights the regulation that apply to capital adequacy. Before discussing as to how much capital is considered to be adequate by the regulatory authorities we first need to clarify as to what constitutes capital.

Definition of Capital

To measure the adequacy of capital one must be sure what capital should encompass. An excellent exposition of this issue is given in Bank of England (1980). Traditionally, regulators chose to define capital in a narrow sense, that is, limiting it to paid-up capital (ordinary and preferred shares). Gradually capital was defined to include undivided profits, retained earnings, surplus and general reserves. Eventually regulatory authorities in many countries agreed to include subordinated long-term debt, reserves for loan losses, and other contingencies funds to the definition of capital. Concern was, however, expressed by some regulators regarding the inclusion of debt capital for measurement of capital adequacy, since debt capital warranted definite amortization (Hogan and Sharpe, 1988). The argument in favour of including debt capital was that, if a bank fails depositors would have to be repaid well in advance of holders of subordinated debt capital and as such debt capital did afford protection, not unlike paid-up capital or general reserves. The advantage of including debt capital from the shareholders point of view is that debt capital does not dilute ownership. Thus, the owners can retain control of the bank while at the same time satisfy the regulatory authorities. The main disadvantage of including debt capital is that it encourages share-

holders to issue debt capital, but since debt capital imposes a fixed charge, the overall earnings of the bank is reduced which in turn limits the banks capacity to absorb losses.

The Reserve Bank of Australia (RBA, February 1985) has discussed, at length, the advantages and disadvantages of including subordinated debt in the definition of capital. In 1986 the regulatory authorities in Australia permitted banks to include subordinated perpetual debt to be counted as capital for capital adequacy purposes. Although the debate on what should constitute bank capital has been going on for many years a world-wide agreement has yet to be reached. It is highly unlikely that such an agreement would ever be reached, in view of the fact that bank operations vary from country to country and as such banks in different countries are exposed to varying forms and levels of risk. There has, however, been a recent breakthrough, not on what generally constitutes bank capital, but on how to assess its adequacy (Bank of England, 1987). This will be discussed elsewhere in the paper. Having briefly discussed what generally constitutes capital and before discussing how much capital is considered to be sufficient, one must also know the functions of capital or rather why capital is necessary for a bank.

Functions of Bank Capital

Three major functions have been identified with respect to bank capital. First, as in any other business, bank capital serves as cover for costs involved in establishing the venture. The initial cost would include financing of fixed assets to commence operations and also to cover administrative expenses incurred while establishing the bank. Since fixed assets form only a small proportion of total assets for most financial institutions, the amount of capital used for this purpose would consequently be a small portion of the total capital. The second major function of bank capital is to act as a cushion for losses that may occur in the course of bank operation. Capital funds, therefore, absorb the losses without impairing the continued operation of the establishment, that is, depositors funds are not jeopardized. The third function of capital is really an extension of the second, that is, in the event of a bank becoming insolvent, capital funds can be made use of to reduce the losses that tend to affect depositors and other creditors. Thus, in general terms capital can be regarded as a cushion for losses regardless of whether a bank is in the going concern stage or whether it is in a state of insolvency.

Another function of capital which applies to certain countries relates to monetary policy (Carey, 1975). Regulatory authorities often link the capital requirements to level of deposits. A larger deposit base would, therefore, warrant a larger holding of capital funds. By controlling the

level of capital, regulatory authorities have effective control over the growth of deposits. Hence, capital adequacy requirements work as instruments of monetary policy for they can be used to restrict deposit growth and consequently loan making and investment activities.

Bank capital is seen by some as a source of funds to the bank. Although this is not considered to be a major function, capital can nevertheless serve as a form of liquidity especially during periods of tight money. In other words, capital can be seen as a bridge that finances the difference between the amount of funds demanded from a bank and the amount supplied to it. In an indirect sense, the capital base can also serve as a form of confidence booster. Since the business of banking relies greatly on public confidence this would be a useful function. Capital funds demonstrate to potential depositors the willingness of the shareholders to place their own funds at risk on a permanent basis (Revell, 1975).

Assessing Capital Adequacy

Over the years, different countries have developed their own techniques for assessing capital adequacy. The criteria for adequacy has largely been assessed via capital ratios. Examples of some of the capital ratios in common use are:

(1) Capital to total liabilities;
(2) Capital to deposits;
(3) Capital to various categories of liabilities;
(4) Capital to total assets;
(5) Capital to total assets less liquid assets; and
(6) Capital to specific categories of assets.

Some of the less common capital requirements are based on criteria such as:

(1) size of population in the city at which the bank's head office is situated (Republic of China);
(2) number of branch offices in different cities (Turkey);
(3) size of city in which branch offices are situated (Turkey); and
(4) form of incorporation of the bank (France and Cameroon).

(Short, 1978)

As mentioned earlier, the major role of capital is to absorb losses. It therefore follows that the level of capital required must be directly correlated to the "degree of probable losses". Degree of probable losses merely refers to the level of risk associated with the bank. Thus, some nations have linked capital adequacy with the level of risk associated with the bank (Bank of England, 1987). In some countries the level of risk is computed from the asset side of the balance sheet of the bank while in

others it is assessed from the liabilities side of the balance sheet and in some other countries both sides of the balance sheet are scrutinized before deciding on the level of risk and consequently on the amount of capital that would be adequate.

In 1987, the United States Federal Banking Supervisory Authorities and the Bank of England jointly published a proposal, outlining capital adequacy requirements based on a risk asset approach (Table 1). Following this joint proposal another major financial giant, Japan, commenced plans to introduce capital adequacy requirements based on the risk asset approach. Ries (1987), however, argued that this move by Japan was only to pacify the U.S. Federal Reserve Bank and the Bank of England authorities who had complained that ". . . . because of their low equity requirements, Japanese banks have been cutting a swath through European and U.S. capital markets."

In Australia, the capital to total assets ratio was in force until recently. Presently, a risk weighted approach to capital adequacy is being introduced (RBA, March 1988). Under this approach, cash and all claims on the Reserve Bank of Australia require no capital backing (since they are considered to be risk free), that is, these items attract a zero risk weight. Similarly, claims fully secured against cash is also given a zero risk weighting. Claims on all banks, domestic and foreign, with a maturity of less than a year is assigned a 20 per cent risk weighting. Claims on foreign banks with a maturity structure in excess of one year is weighted at 100 per cent. This is in view of the greater transfer and/or credit risk. Normal loans to private sector customers also require capital backing to the full 100 per cent.

Fixed ratio schemes are, however, still in force in most developing countries. In Malaysia, for instance, the capital adequacy requirement (effective from January 1, 1982) for domestic (locally incorporated) banks is that the ratio of 'free capital' (defined as shareholders' funds less investments in long-term assets) to total assets be maintained at no less than 4 per cent (Bank Negara Malaysia, 1981).

The question of adequate capital is not a major issue in banking systems which are nationalised. Taking Indian banks for example, definite amounts of their annual profits are required to be set aside to act as the capital base. Capital adequacy requirements in India rest largely with Section 11 of the Banking Regulation Act (1949) which stipulated the minimum level of capital (Rs. 50,000) that must be held by banking institutions. The Banking Companies (Amendment) Act of 1962 raised the minimum amount to Rs. 500,000. If a bank, however, had branch

Table 1: *The U.S./U.K. Risk Asset Agreed Proposal Category of Risk*

Weight on Balance Sheet		
1.	Vault cash — domestic and foreign	.00
2.	Balances with and claims on domestic central bank	.00
3.	Government guaranteed export and ship-building loans	.00
4.	Short-term (<1 yr to maturity) government securities	.10
5.	Short-term (<1 yr) claims on discount houses and money brokers	.10
6.	Cash items in process of collection — foreign and domestic	.25
7.	Short-term (<yr) claims on domestic depository institutions and foreign banks	.25
8.	Claims on domestic local authorities	.25
9.	Long-term (>1 yr) government securities	.25
10.	Claims fully collateralised by government securities or cash	.24
11.	Federal Reserve Bank stock	.25
12.	Loans guaranteed by government	.25
13.	Local currency claims on foreign central governments	.25
14.	Claims on domestic government-sponsored agencies	.50
15.	Claims fully collateralised by domestic government-sponsored agency debt	.50
16.	General obligation claims on domestic state and local governments	.50
17.	Claims on multinational development institutions	.50
18.	Long-term (>1 yr) claims on domestic depository institutions and foreign banks	1.00
19.	Claims on foreign governments other than those under 13 above	1.00
20.	Customer liability on acceptances outstanding	1.00
21.	Domestic state and local government revenue and industrial development bonds	1.00
22.	All other assets	1.00
23.	Net open position in foreign exchange	1.00
	OFF-BALANCE SHEET ITEMS	
24.	Direct credit substitutes (financial guarantees, standby letters of credit, acceptances outstanding)	1.00
25.	Trading contingencies (commercial letters of credit, bid and performance bond and performance standby letters of credit)	.50
26.	Sale and repurchase agreements and asset sales with recourse	1.00
27.	Other commitments (overdrafts, RUFs, NIFs, underwriting commitments, commercial and consumer credit lines)	
	If <1 yr to original maturity	.10
	If 1 yr < original maturity <5 yr	.25
	If 5 yr to original maturity	.50
28.	Interest rate swaps and contracts	TBD*
29.	Foreign exchange rate contracts	TBD*

*To be determined.

Source: Hogan and Sharpe (1988)

offices in more than one State, then the capital requirement was set at one million rupees. Section 17 of the Act deals with progressive increases in the capital base with expansion in business. Under this Section, banks incorporated in India are required to transfer a sum not less than 20 per cent of their reported profits to a reserve fund (which is regarded as capital for capital adequacy purposes). By annually increasing the capital base by at least 20 per cent of the profit, regulatory authorities hope to maintain a proper balance between the size of the capital base relative to the volume of business (Gogtay, 1986).

Off-Balance Sheet Business

Off-balance sheet items refer to business undertaken by banks but which are not explicitly incorporated in the balance sheet of the banks; the issue of guarantees being one such feature. And, no doubt, there is definitely some risk associated in issuing guarantees. Other off-balance sheet items which do carry risk are options, warranties, standby letters of credit and irrevocable commitments such as sales and repurchase agreements. A sale and repurchase agreement, for instance, is assigned a 100 per cent weight by the joint US-UK proposal.

Banks have good reason for participating in off-balance sheet business. As argued by Hawtrey (1988), "Banks subject to costly prudential ratios in regard to their conventional balance sheet obviously had an incentive to look for ways to generate income without utilising the balance sheet — and so the off-balance sheet transaction was born." Hawtrey (1988) also mentions three other reasons for banks to favour off-balance sheet business:

(1) The credit rating of the bank is maintained or enhanced by retaining low quality transactions off the books. This tends to improve the bank's pricing capability in fund-raising markets.
(2) It is considered to be strategically beneficial to build market share by making loans and subsequently selling them to a third party in some off-balance sheet manner.
(3) The deregulation of interest rates and exchange rates with the attendant volatility has created a greater need by corporations for risk management products. This need has encouraged the growth of off-balance sheet fee type business.

The growth of off-balance business has been so phenomenal that Brady (1987) recently noted that "the gross value of off-balance sheet business of Australian banks is now approaching three times the size of their balance sheet totals." However, as Brady (1987) himself admits, after adjusting for risk, the size of the off-balance sheet business is estimated to be approximately 80 per cent of the on-balance sheet business. It is,

therefore, of little wonder that the regulatory authorities have begun to include off-balance sheet items in their assessment of capital adequacy requirements.

Market Discipline

Some writers argue that market discipline may perhaps be more appropriate than stringent regulatory control in imposing prudential behaviour among banks (Hogan and Sharpe, 1988; Benston *et al.*, 1986; Merrick and Saunders, 1985). The writers raise doubts about the ability of prudential supervision to actually achieve capital enhancement. Dale (1984), and later Jain and Gupta (1987) argue that the very existence of regulation may obstruct the free action of the market, by reducing a market tendency to increase capital levels, that is, via the price control syndrome whereby the "minimum" level is taken to be the "maximum". The writers call for the creation of suitable mechanisms whereby market forces cause a bank to modify excessively risky behaviour either through the imposition of interest penalties on its liabilities or through higher capital ratios (Bourke, 1988). The problem with the market discipline approach is that the flow of information is inadequate (currently) for the market to make a reasonable judgment (Guttentag and Herring, 1986). However, as demonstrated by Gross, Hogan and Sharpe (1985) and Peary and Hempel (1987) with respect to equity markets predicting bank difficulties, when adequate information is available, the market can play an effective role in monitoring prudential standards.

Effects of Capital Requirements on Bank Operation

Stringent capital requirements may not affect the larger banks, for as and when they find themselves to be in a capital deficient position they can always arrange for new issues. In other words tapping the equity market would not be a major problem for a well established institution. Small banks, however, may not be as fortunate in this respect. Thus, they would have to rely more on internally generated funds. This could in turn restrict the growth of the bank.

Banks which face problems in meeting capital adequacy requirements will seek to re-organise their activities such that they deal in items which require a smaller capital backing. This is often the intention of the government. By announcing, for instance, that capital requirement would be nil or very low on government securities, the authorities encourage banks to purchase such securities. Thus, indirectly banks are often pushed into a situation where they end-up financing government deficits.

Another way of keeping capital requirements low is to change the capital mix of the bank. That type of capital which is wholly included in the

capital count (measurement of capital base) is employed in preference to the type of capital which is not fully included (debt capital, for example), when measuring total capital. As mentioned earlier banks are also involved in non-balance sheet business and this has repurcussion on their capital requirement. Some banks deliberately move assets out of the balance sheet to circumvent capital adequacy requirements. While standby letters of credit and unused loan commitments generate income for the banks, these seldom warranted definite capital backing.

Other Implications of the New Policy

The risk-weighted approach to the assessment of capital adequacy which includes off-balance sheet items have far reaching implications for the banks as well as for the public. For a start, in view of the inclusion of off-balance sheet items, banks would most probably be required to enlarge their capital bases. This would no doubt tend to ensure a more stable financial system. Stability would, however, have a cost and the impact is expected to be felt by the public, as users of financial products (Budge, 1988). This would especially be so for products which until recently did not require capital backing (off-balance sheet business). Hence fee-based transactions may become more expensive. Since all loans to private sector customers require uniform capital support, that is, irrespective of risk, quality borrowers who may result in paying relatively higher margins would move towards the security markets for finance. Also with the extra costs associated with additional capital, banks may become less competitive thus encouraging the growth of the non-bank financial sector.

Concluding Remarks

For reasons mentioned earlier it is essential for banks to be supported by a firm capital base. Too large a base would mean an inefficient allocation of scare resources and too small a base would be undue exposure to risk. The recent technique, that is, risk-weighted assessment of capital adequacy which includes off-balance sheet business was discussed together with an alternate market-discipline approach. The optimal approach to be adopted by the regulatory authorities would be to evaluate each bank separately rather than stipulate "across the board" risk weighting. This would be a fairer method is assessing capital adequacy since this method allows the authorities to consider the subjective factors in the evaluation process. Thus, a bank which tends to accept a larger interest rate risk or foreign exchange risk would need to broaden its capital base relative to a more conservative bank. The final word in assessing capital adequacy must surely be flexibility for the risk associated with bank operations will vary from time to time, largely in accordance to the general economic conditions and therefore, the required level of capital must consequently change with time (RBA, February 1985, Chu, 1986).

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