Chapter III

THEORETICAL FRAMEWORK

In this chapter an effort is made to discuss the underlying theory behind the problem set for the research, the methodology used for analysis of the problem, the econometric models used to establish the significance of the relationships between the variables and their economic rationale, model used to quantify the financial performance and stability of banks (viz. CAMEL).

3.1. Measuring the Financial Position of Banks: The ‘CAMELS’ Model

The ‘CAMELS’ approach was developed by bank regulators in the US as a means of measurement of the financial condition of a financial institution. Accordingly, the ‘Uniform Financial Institutions Rating System’ was established by the Federal Financial Institutions Examination Council in the US. Here, the acronym ‘CAMELS’ stands for, Capital Adequacy (C), Asset Quality (A), Management (M), Earnings (E), Liquidity (L) and Sensitivity to Market Risk (losses arising from changes in market prices) (S).

In India too initiatives in the direction of assessment of financial stability of banks have been in place since the early nineteen nineties. Accordingly, in 1994, the Reserve Bank of India (RBI) has established the Board of Financial Supervision (BFS) which operates as a unit of the RBI. The entire supervisory mechanism was realigned to suit the changing needs of a strong and stable financial system in India. The BFS is mandated to strengthen supervision of the financial system by integrating oversight of the activities of financial services firms. In addition to the normal on-site inspections, the RBI also conducts off-site surveillance which particularly focuses on the risk profile of the supervised entity. The Off-site Monitoring and Surveillance System (OSMOS) was introduced in 1995 as an additional tool for supervision of commercial banks. It was introduced with the aim to supplement the on-site inspections.
In 1995, RBI had set up a working group under the chairmanship of Shri S. Padmanabhan to review the banking supervision system. The Committee made certain recommendations and based on such suggestions a rating system for domestic and foreign banks based on the international CAMELS model combining financial management and systems and control elements was introduced for the inspection cycle commencing from July 1998. It recommended that the banks should be rated on the lines of international CAMELS model. The following six parameters are recommended:

(i) **Capital Adequacy:**
Capital adequacy is measured by the ratio of capital to risk-weighted assets (CRAR). A sound capital base strengthens confidence of depositors.

(ii) **Asset Quality:**
One of the indicators for asset quality is the ratio of non-performing loans to total loans (GNPA). The gross non-performing loans to gross advances ratio is more indicative of the quality of credit decisions made by bankers. Higher GNPA is indicative of poor credit decision-making.

(iii) **Management:**
The ratio of non-interest expenditures to total assets (MGNT) can be one of the measures to assess the working of the management. This variable, which includes a variety of expenses, such as payroll, workers compensation and training investment, reflects the management policy stance.

(iv) **Earnings:**
It can be measured as the return on asset ratio.

(v) **Liquidity:**
Cash maintained by the banks and balances with central bank, to total asset ratio (LQD) is an indicator of bank's liquidity. In general, banks with a larger volume of liquid assets are perceived safe, since these assets would allow banks to meet unexpected withdrawals.

(f) **Systems and Control:**
The internal controls, other systems and procedures of banks are considered.
3.2. Performance of Old Private Sector Banks: Using ‘CAMEL’ Model

Comparing the international ‘CAMELS’ model with the one prescribed by the RBI, it may be noted that the parameter ‘S’ as per the international model stands for sensitivity to market risk (and it seeks to capture the losses incurred by banks as a result of the changes in market prices) whereas the ‘CAMELS’ prescribed by the RBI uses ‘S’ to mean ‘Systems and Control’ which in turn is used in the broader sense to account for the internal controls as well as systems and procedures. Thus, the RBI’s approach is to consider the ‘Operational Risk’ under its ‘S’ whereas the US model seeks to consider the ‘Market Risk’. In respect of all the other parameters (C,A,M,E, and L) there is uniformity between the two definitions in hand, that of RBI and the US agency.

Now what should be the most appropriate model while assessing the performance of Old Private Sector Banks in India, with special reference to those based in the state of Kerala?. A little consideration would suggest that the ‘S’ parameter as such is not very relevant in the present study because of the following reasons:

(i) None of the OPBs in India has got substantial international exposures that attracts high level of market risk, their operations being primarily in India. Moreover, market risk as such is being given only very less priority in India, the consideration of the same in the risk management system being initiated only since 31.03.2006. Only the credit risk, the most important type of risk for any bank, is accorded priority in India. For this research also credit risk is focused. Thus, the ‘Sensitivity to market risk’ definition of ‘S’ may not be considered.

(ii) The ‘Systems and Control’ definition for ‘S’ by the RBI is also not relevant because ‘Operational Risk’ is the latest entrant in the arena of risk management the world over. It was not included at all in the first Basel Accord (Basel-I). As mechanisms for capturing this risk is still in process in India, and also that this risk as such is not very relevant for OPBs (and so also most PSBs) as they operate on relatively low-end technology platforms.
Accordingly, for this research ‘CAMEL’ model is used, not ‘CAMELS’. The following are the various ratios chosen for capturing the various parameters of the ‘CAMEL’ model so chosen.

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<th>Parameters in ‘CAMEL’</th>
<th>Ratios chosen</th>
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| Capital Adequacy (C) | (i) Capital Adequacy Ratio  
                        | (ii) Capital Adequacy Tier I |
| Asset Quality (A)    | (i) Priority Sector Advances to Total Advances  
                        | (ii) Secured Advances to Total Assets  
                        | (iii) Net NPA to Net Advances |
| Management (M)       | (i) Business per Employee  
                        | (ii) Profit per Employee  
                        | (iii) Return on Equity  
                        | (iv) Return on Advances |
| Earnings (E)         | (i) Interest Income to Total Assets  
                        | (ii) Net Interest Margin to Total Assets  
                        | (iii) Non-Interest Income to Assets  
                        | (iv) Intermediation Cost to Total Assets  
                        | (v) Burden to Total Assets  
                        | (vi) Operating Profit to Total Assets  
                        | (vii) Return on Assets |
| Liquidity (L)        | (i) Cash Deposit Ratio  
                        | (ii) Credit Deposit Ratio |

Table 3.1: ‘CAMEL’ Model for OPBs – The Ratios Used.
(Source: Compiled by the researcher).

[Note: The Methodology for carrying out the analysis using the above ‘CAMEL’ framework, including the definition of the various ratios are given in Chapter IV: Research Design].
3.3. Profitability and Efficiency of OPBs: An Econometric Model

One of the major objectives of this research is to analyse the profitability and efficiency of OPBs in India, with focus on the Kerala-based OPBs (or, KPOBs in short). For assessing the profitability of OPBs, the most popularly used profitability measure viz. Operating Profit Ratio (OPR) is used. Here, OPR is given by the operating profit of the bank divided by the total assets. Likewise, for assessing the efficiency of OPBs, the most commonly used efficiency parameter for banks viz. Net Interest Margin (NIM) is used. Here, NIM is defined as the net interest income divided by the total assets. Thus, OPR and NIM respectively become the dependent variables in the econometric model.

While assessing the profitability (using OPR) or efficiency (using NIM) of a bank what might be their major determinants in the Indian scenario?, what might be the econometric model to be used, and what is the economic rationale for using such a model?. These aspects are discussed below.

It is well recognised in finance and banking research that the quantum of assets is a significant determinant of a bank’s profitability and efficiency. The higher the value of assets, the greater is the capability of a bank to earn more (profitability) as size factor is often critical in availing economies of scale. Similarly, larger value of assets may also help to become more efficient by earnings more from a given quantity of assets. Thus, Assets (ASST) is taken as one of the explanatory variables.

In the Indian scenario, the share of priority sector advances in the total advances of a bank is a significant determinant of profitability and efficiency of a bank. This is because of the fact that priority sector advances are extended as part of the directive credit policy of the Government with a view to provide banking services to the hitherto excluded sections of the society, as part of the social obligations of the Government. These advances carry differential (lower) rate of interest. The incidence of defaults is higher. Obviously, a higher share of such advances in the total advances portfolio may have a negative impact on profitability and efficiency. Thus, PRIOR (share of priority sector advances in the total advances) is taken as another explanatory variable.
Investments in government securities expressed as a ratio of total assets (GSEC) is selected as another explanatory variable influencing OPR and NIM. Because, banks have a tendency to earn relatively risk-free income from investments in government securities once they have surplus funds availability. Such investments ensure guaranteed, but lower rates of return compared to quality assets created out of lending (providing credit). Thus, GSEC is an important determinant of OPR and NIM of banks.

Non-interest income is another important factor that influences the profitability and efficiency of banks. Non-interest income augments the interest income of banks. Various fee-based activities that banks undertake bring in such income. In the ongoing era of globalization, non-interest income is increasingly becoming the driver of profitability and efficiency of banks. As such NOM (ratio of non-interest income to total assets) is taken as another explanatory variable influencing OPR and NIM.

In the peculiar scenario of India, rural branches of banks signify the commitment of the bank to the rural populace. These branches are intended to support the rural population with credit facilities and hence promote development of the rural economy. Just like priority sector advances, rural branches have been encouraged by the Government as part of its social obligations, especially during the ‘social banking thrust’ days of nationalization of banks in India. The loans provided are often of lower amounts and are of larger in number. Thus, the administrative costs are higher. Because of the above reasons, it is quite rational to consider RURAL (ratio of rural and semi-urban branches urban and metropolitan branches) as another explanatory variable.

Thus the econometric models for OPR and NIM can be expressed as follows:

\[ \text{OPR} = \alpha_1 + \alpha_2 (\text{ASST}) + \alpha_3 (\text{PRIOR}) + \alpha_4 (\text{GSEC}) + \alpha_5 (\text{NOM}) + \alpha_6 (\text{RURAL}) + \varepsilon \]

\[ \text{NIM} = \beta_1 + \beta_2 (\text{ASST}) + \beta_3 (\text{PRIOR}) + \beta_4 (\text{GSEC}) + \beta_5 (\text{NOM}) + \beta_6 (\text{RURAL}) + \mu \]

[ Note: Further details regarding the above models and the Methodology for carrying out the econometric analysis, including the definition of the various parameters chosen are given in Chapter IV: Research Design].
3.4. Technology and Its Impact on Operational Efficiency and Risk Management of OPBs: An Econometric Model

Whether technology has got a significant role in deciding the operational efficiency and risk management of banks?. This aspect needs to be studied with special reference to the Old Private Sector Banks (OPBs) in general and the Kerala-based Old Private sector Banks (KOPBs) in particular.

In finance theory, the most important relationship is between risk and return, like earnings and various internal determinants like risk, capital etc. (De Young and Rice, 2004\(^1\); Landi and Venturelli, 2002\(^2\); Lapetit, et.al, 2005\(^3\)). Return in respect of financial intermediaries like banks are quite often expressed in terms of net-interest margin (NIM) and non-interest margin (NOM). NIM, for instance, is the most widely used parameter for profitability and operational efficiency. NIM is also the most popular determinant of the credit risk management capability of a bank. Likewise, NOM is increasingly used as an efficiency parameter of financial intermediaries like banks, particularly in the ongoing days of global integration. Because, non-interest income is growingly becoming the driver of operational efficiency, as the interest income of banks is constantly under pressure as a result of fierce competition in the industry. In view of the above, NIM and NOM may be taken as the dependent variables while assessing their operational efficiency and risk management capability of OPBs.

Risk is an important determinant of NIM and NOM of banks. Risk represents the variability in returns of a bank. The higher the variability, the higher is the risk. In finance theory as higher risk is associated with higher returns, a bank with higher risk is expected to have higher returns. Thus RISK is taken as an explanatory variable.

Cost of production (COP) is the second important factor (explanatory variable) that may affect the operational efficiency and risk management of a bank. If a bank is relatively inefficient, then it needs to charge higher interest and / or fees to recover its production costs. Here, COP is defined as the operating expenses to total assets of a bank. The sign of the co-efficient of this productivity variable (COP) in the regression equation is expected to be positive. This in turn signifies that lower the COP, lower is the expected NIM and NOM.

Regulatory cost (REG_COST) might be another factor that may affect the earnings potential of a bank. Though stipulations regarding the minimum capital requirement and risk provisioning as per Basel guidelines are applicable for all financial intermediaries the world over, there exist significant variations among the individual players as to the exact amount of capital that they maintain and also its composition (like, Tier I or Tier II etc.). In effect there is a differential imposition of the cost of doing business (in terms of regulatory capital) from to firm to firm. Thus, REG-COST (defined as the total bank capital to total bank assets) is taken as another explanatory variable.

Investment in Technology resulting in technological change (TECH_CHG) is growingly becoming a determinant of earnings of a bank. Technology brings with it substantial cost savings because of lower operating costs. Moreover, technological investments have a direct influence on the non-interest income of banks (like, various fee-based incomes) because only banks equipped with higher-end technology can provide such high-tech products that command a higher rate of returns. Thus, TECH_CHG is taken as another explanatory variable. Here, it may be noted that in spite of the positive impact of technological change on non-interest income as noted above, there may be a negative impact on net interest income (NIM)$^4$ because of the substantial interest burden associated with huge investments in technology which may reduce the net interest income. Thus, finance literature talks about a positive association of technology with NOM, but a negative association of technology with NIM.

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$^4$ NIM is the net of interest income and interest expenses. That is, total interest income less interest expenses.
Yet another internal determinant of earnings of banks is the quality of current assets (NPA) which is defined as the ratio of net non-performing assets to net advances. Other things being equal, a bank which follows an aggressive approach towards lending is expected to have higher level of NPA also. This is because of the dilution in due diligence that is resorted to by banks for attracting more customers. Thus, NPA is taken as another explanatory variable.

Thus the econometric models for NIM and NOM can be expressed as follows:

\[
\text{NIM} = \alpha_1 + \alpha_2 \text{(RISK)} + \alpha_3 \text{(COP)} + \alpha_4 \text{(REG\_COST)} + \alpha_5 \text{(TECH\_CHG)} + \alpha_6 \text{(NPA)} + \varepsilon
\]

\[
\text{NOM} = \beta_1 + \beta_2 \text{(RISK)} + \beta_3 \text{(COP)} + \beta_4 \text{(REG\_COST)} + \beta_5 \text{(TECH\_CHG)} + \beta_6 \text{(NPA)} + \mu
\]

[Note: Further details regarding the above models and the Methodology for carrying out the econometric analysis, including the definition of the various parameters chosen are given in Chapter IV: Research Design].

REFERENCES


