

## CHAPTER II

### REVIEW OF LITERATURE

This chapter deals with a brief review of literature related to various performance indicators of the banks. The literature is divided into five major area of research. These are the literature on economies of scale in banking, mergers and acquisitions as a strategy of bank reconstruction and consolidation, competition among the firms, profitability and growth of the banks. The literature survey for each aspect relates to the studies at national and international level. Studies on the economies of scale in the Indian case are very little and most of the literature reviews are based on the studies of the other countries. Regarding the mergers and acquisitions, vast literature is found both at national and international levels but the perspectives of mergers are different as analyzed by different researchers for different time periods. Regarding competition literature, there is difference in approach, objectives, outcome relating to the perspective, structure of the market. For profitability, the studies are more or less similar in approach except variation in time and methodology used, as most of the studies utilized one or more common parameters for the profitability analysis. In case of the firm growth analysis, the studies are widely different according to the view of researchers on the selection of the variables chosen for growth model. A brief review of literature regarding each area of research is discussed herein.

#### **2.1 Literature on Economies of Scale:**

A comprehensive survey of studies on scale economies in U.S. banking is done by **Benston et al. (1982)**. A translog cost function based on Functional Cost Analysis data over the period 1975-78 was used. Operating costs other than the interest payments is taken as the dependent variable. The variables used to explain the cost structure and scale economies of the firms are total bank output (measure by dollars of deposits, loans or total assets), number of bank offices and prices of factor inputs (labor and capital). The translog cost function was estimated for four different years and for branch and unit state banks separately. The average operating costs for both branch and unit state banks were found U-shaped and upward sloping for the

bank output. Economies of scale were experienced by the  
economies of scale by the unit state banks.

In a similar study in the Indian context, **Rangarajan and Mampilly (1972)** demonstrated with empirical evidence of the familiar U-shaped average cost curve for Indian banks. The study was based on the year 1968 and 1969. Their study showed that as the size of banks increases the average costs go on decreasing initially until the size of a bank reaches a level of around Rs. 300 crores of deposits, increase slowly thereafter till the bank size reaches Rs. 600 crores of deposits, and after that level increase steeply.

In a different perspective, **Todhanakasem et al. (1986)** estimated the issues related to economies of scale in banking, using a risk-adjusted profit function approach with the assumption of several advantages over the cost-function approach. The study period covered from 1978 to 1980 for all insured commercial banks. Total profit was expressed as a function of wages, interest for loans, deposits, branches, bank premises and various financial ratios. OLS regression results indicated larger economies of scale for branch banks than for unit banks. Empirical results indicated larger economies of scale for branch banks (2.08) than unit banks (1.05) over the study period.

Studies on size-performance relationship was also carried out by **Bishnoi (1988)**, based on 28 public sector banks in India for the period 1961 to 1982. Total deposit is taken as a measure of total output variable based on a linear cost function. Total expenditure as well as individual cost items like depreciation, wages and salaries to employees, general expenses and interest cost is taken as different measures of total cost variable. Regression results of different cost items showed that the marginal cost and mean average cost of the large banks were found to be lower than that of subsidiary and small bank size groups. Regarding the cost efficiency, large banks were found to enjoy economies of scale in most of the cost items taken and avoided diseconomies of scale in other cost items for all the specified periods. However, the small and subsidiary group suffered from diseconomies of scale in most of the cost variables taken.

**Clark and Speaker (1994)** provided evidence on the extent of economies of scale and scope of banking industry in Chicago. Using a generalized translog cost

402 banks, the scale and scope economies of the banks at plus interest costs was taken as a measure of total cost, which depended on eight products, classified according to three variables- deposits, loans and investments. Empirical results indicated that large and statistically significant economies of scale existed for all size classifications. For the smallest size, the estimated overall economies of scale were 0.85 and continued for the largest firms to the value of 0.93. No evidence was found for statistically significant scope economies.

Based on the translog cost function, **Apergis et al. (2004)** investigated the cost structure of the Greek banking industry for the period 1982-97. Data for the analysis were obtained from the annual reports of six individual banks, four are state owned banks and rest private banks. Both the approaches to input and output specification were used to specify cost functions. The study was based on three types of outputs- loans, investment assets and time and demand deposits. Further the study specifies three input prices- wage rate, the price of capital, and the prices of deposits. The maximum likelihood method of estimation was used to estimate the two models of simultaneous equations. Empirical results showed that both models supported the fact that the Greek banking industry exhibited significant economies of scale. In particular, the value of scale economies in each year and in the whole time period was significantly greater than zero and indicated the presence of economies of scale.

Using translog cost functions, **Allen & Liu (2005)** measured the economies of scale of Canada's six largest banks and their cost efficiency for the period from 1983 to 2003. The intermediation approach was used in defining inputs and outputs of the cost function. A hypothesis of constant returns to scale was tested. The hypothesis of constant returns to scale was rejected and found scale economies with values greater than 1 for each model which were statistically significant. Further, the results showed that banks have experienced technological progress as explained by the trend variable and that regulatory changes have helped to reduce the production cost of banks.

In a very recent study, **Stimpert and Laux (2011)** examined the relationships among size, costs and profitability in the U.S. banking industry. A total of 1214 banking institutions for the year 2007 were chosen for the analysis. Size variables were taken by total assets and total deposits, costs by operating costs and net income

Studies found complex relationship between size and firm. As the size measure employed, the increasing size was associated with higher costs that increase in an increasing rate, inevitably resulting in diseconomies of scale of the firms.

In relation to the consolidation of the U.S. banking industry, **Wheelock & Wilson (2011)** analyzed whether the large banks have lower costs. The sample data covered all U.S. banks over the period 1984-2006. The output variables taken were three types of loans, securities and off-balance sheet items and input variables namely, deposits, labour services, fixed capital assets and equity capital. Based on the non-parametric local linear estimation model of the bank costs, estimates indicated that most U.S. banks operated under increasing returns to scale. And the tendency toward increasing returns to scale is likely to continue unless checked by government intervention.

## **2.2 Literature on Mergers and Acquisitions:**

Various studies on the effect of bank mergers on performance have been conducted in many countries with various findings. Mixed evidences were found out on the costs and benefits analysis of bank mergers and acquisitions. Different tools and banking parameters were used by below mentioned analysts for measuring the bank performance. Some studies (**Shaffer 1993; Akhavein, Berger, and Humphrey 1997**) found that mergers can potentially lower costs and increase profit efficiency, while other papers (**Berger and Humphrey 1992; Rhoades 1993**) concluded that mergers have not resulted in any significant post merger improvements in efficiency. A study by **Rhoades (1993)** found that horizontal (in market) mergers during 1980-86 did not improve total cost.

In an earlier study, **Alhadeff and Alhadeff (1955)** examined bank mergers in U.S. based on 208 banks which occurred between January 1953 and mid 1954. They analyzed the causes of mergers and attempted to determine their relative importance in the ongoing merger movement. The data was compiled from the publicly available statistical information about these banks on a bank-by-bank basis. Among the initiating causes mentioned were management problems, cost and profit ratios, branch banking, growth rates, legislation, antitrust laws and market structures. Except growth rates and branch banking, other factors were cited as initiating factors for bank

and banks were small banks with about 56% of them had and they were acquired by large banks. It showed that the acquisition by large and middle size banks were of considerably small banks during the period. On the average, the capital-deposit ratios of the acquiring banks were clearly higher than the averages for the banks in their size group. Large or middle size banks acquired small banks one-tenth or less of their own size in 48.5 per cent of all mergers. In three-fifths of the mergers, large or middle-size banks acquired banks one-fifth or less of their size. Only about 20 per cent of the mergers occurred between and among small banks.

**Rhoades and Yeats (1974)** analyzed U.S. commercial banks with a stratified random sample of 600 commercial banks over the period 1960-1971. Their main study was an attempt to update the Alhadeff's findings to see if their major conclusion still holds. And also to determine the impact of mergers on growth with the issue of consolidation movement in the banking sector. Their findings supported the Alhadeff's findings that large banks grow less than the system as a whole. The regressions fitted for bank consolidation yielded unambiguous results and concluded that deconsolidation occurred in the banking industry over the period 1960-71. However, acquisitions in the banking industry support consolidation even though the pro-consolidation effects of acquisitions are more than offset by the relatively vigorous internal growth of medium size banks.

**Peristiani (1997)** investigated the effect of bank mergers on the efficiency and financial performance of merger survivors. Three major categories of consolidation were analyzed, viz., intrastate mergers, Bank Holding (BH) Company mergers and FDIC-assisted mergers. The final sample included 786 multiple merger episodes or about 1650 actual mergers and 395 onetime mergers that occurred between 1980 and 1990 in the US banking sector. This study utilized translog flexible functional form to estimate the cost structure of banks and derive measures of efficiency. Distribution-free approach (DFA) was also used to measure the X-efficiency (managerial efficiency) and scale efficiency of merger participants. The premerger and post merger performance of banks was measured by an algorithm that select the available financial history of the acquirer and targets up to sixteen quarters before and after the merger. Empirical findings indicated that X-efficiency was fairly constant across all other size, except for large banks. In contrast, to X-efficiency, scale efficiency was

different size groups. Therefore, it appeared that, during the 1980s, mergers were not beneficial to banks in terms of X-efficiency. In particular, the decline in X-efficiency was a quite significant for BHC consolidations. Acquiring banks showed moderate improvements in scale efficiency. This moderate rise in scale efficiency may partly be attributed to the fact that the smaller target banks are on average less scale efficient than their acquirers. Regression fitted for profitability and operating cost performance of surviving banks also did not contribute to the X-efficiency and scale efficiency. Another important finding of the regression analysis was that in-market (horizontal) mergers yield no significant improvements in post merger performance. The study concluded that during the 1980s, mergers were not beneficial to banks in terms of X-efficiency.

By using Italian data over the period 1985-1996, **Focarelli et al., (2002)** analyzed all the mergers and acquisitions among Italian banks. Mergers and acquisitions were examined separately. Stochastic frontier methodologies were used to compare the performance of merging banks. Profitability for mergers increased because of the efficient use of capital, although the increase in income from services is offset by the higher staff costs. For acquisitions, the increase in profitability for the acquired banks was linked to the improvement in the quality of their loan portfolio. Their findings are consistent with the hypothesis that expanding revenues from financial services is a strategic objective for the mergers, whereas improving the quality of the loan portfolio of the passive bank is central for acquisitions.

**Kalhofer & Badreldin (2010)** analyzed the performance of Egyptian banks that had undergone M&As during the period 2002-2007. They took a very small sample size of 10 banks and using return on equity as a yardstick for bank performance for the acquirers. The studies came to the conclusion that M&As have not had a clear effect on the profitability of banks in the Egyptian banking sector. They were only found to have minor positive effects on the credit risk position.

**Singh & Mogla (2010)** studied profitability of Indian acquiring firms in the pre- and post-merger periods. The study was based on the investigation of 153 listed merged companies for the period 1993 to 2003. The results revealed that a majority (55%) of the companies reported a decline in performance after the merger. Only 29% of the companies could improve their performance following merger.



on:

measurement of competition can be divided into two major strands: (i) structural models and (ii) non-structural models. The structural approach to the measurement of competition encompasses the Structure-Conduct-Performance paradigm (SCP) and the efficiency hypothesis with roots in the Industrial Organization Theory. The SCP paradigm asserts that firms are able to earn higher profits in concentrated markets because they can resort to oligopolistic behavior and collusive arrangements. Structure and performance are positively related because firms in higher concentrated market are supposed to have collusive behavior and greater market power, resulting in better market performance and increasing profit (Goldberg and Rai, 1996). On the other hand, the efficient structure hypothesis states that the market behavior of firm largely depends on the operational efficiency of the firm. The efficient firm may have some competitive advantages hence it can increase its size, market share and realize better performance.

On the other hand, non-structural models for the measurement of competition, namely the Iwata model (**Iwata, 1974**), Bresnahan model (**Bresnahan, 1982; Lau, 1982**) and Panzar-Rosse model (**Panzar and Rosse, 1987**) stresses the analysis of firms' competitive conduct in the absence of structural measures. They focus on the competitive conduct of firms without employing explicit information about the structure of the market. These models belong to the New Empirical Industrial Organization approaches. The basic premise of non-structural approach is that the firms within an industry behave differently depending on the market structure in which they operate (**Baumol, 1982**).

Many studies were tested a number of different models of competition. More dynamic analyses of bank competition have been added, examining the effects over time of bank consolidation.

**Bresnahan's (1982)** study focused on the degree of competition among firms with a single product. In such case, banks were viewed as producing a single product, for e.g., loans by using deposits as inputs. Bresnahan model was fitted in a general equilibrium model where the profit maximizing firms would select their prices and quantities at the level, i.e., MC equals the perceived MR. The degree of competition was estimated on the basis of firms' reactions to changes in the slope of the demand

ses were quite few from the side of competitive firms,

Applicability of this test is limited because, banks produce multiple products in real sense. With this ground **Matti Suominen (1994)** extended Bresnahan's (1982) study in the case of two products for Finnish banking. Deposits and loans were the two main banks' output used. Two tests were conducted for measuring the degree of competition in banks. In both the tests, methods of Least Squares estimator (OLS, 2SLS & 3SLS) were applied. The first test was performed using the two-product model with monthly data for the period (Sept. 86 to Dec. 89). Second one was tested using the one-product model with annual data over the period 1960-84. The two-product test gave evidence that some monopoly power was present in the pricing of banking services in the late 1980s. The use of monopoly power was apparent from both deposits and lending activities. For deposit, 18 - 100 percent of the monopoly was used and 4 - 56 percent in case of loans market, to decide their output level in the single market. Result of the one-output test revealed that prior to the mid-1980s, competition was fully intense.

**Sherrill Shaffer (1993)** examined the degree of market power exercised in the Canadian banking industry over the period 1965 to 1989. The sample was limited to a small number of twenty-five observations. Time series data were collected for the Canadian chartered banks in nationwide aggregate figures. Labor, deposits and the physical capital were defined as the input variables. The quantity of output was measured as the dollar value of assets and the price of output as the interest rate earned on assets. A model was developed based on the firms' maximization objective i.e. MC equals perceived MR. The system was estimated simultaneously using a nonlinear simultaneous-equation specification. Empirical findings revealed the presence of perfect competition, and strongly rejected the hypothesis of joint monopoly. In other words the estimated parameter was indistinguishable from zero, implying consistency with perfect competition. And since the upper bound of the 95 percent confidence interval came out to be less than 0.04 or far less than the collusive value of 1, the hypothesis of monopoly power was strongly rejected.

**Bikker & Haff (2001)** assessed competitive conditions and concentration in the banking markets of 23 industrialized countries inside and outside Europe over



using the Panzar-Rosse H-statistic. In order to distinguish the banks three subsamples for each country are taken- small, medium sized and large banks. The estimated H statistic provides strong evidence of the presence of monopolistic competition of the banking markets in the industrialized world. However, in some countries, perfect competition has been found among large banks. Significant increase in the level of competition was found for a number of countries. Competition is stronger among large banks and weaker among small banks while medium size banks take an intermediate position. Competition seems to be somewhat stronger in Europe than in countries like the US, Canada and Japan. Concentration was measured using the k-bank concentration ratios and the Herfindahl Index. It confirms that a few large (cartel) banks can restrict competition and so rest of the competitors are unable to engender competition, supporting the conventional view that concentration impairs competitiveness.

**Stijin Classens and Luc Laeven (2004)** estimated competitiveness indicators for a large section of countries by using the Panzar and Rosse (PR) Methodology. A panel data from BANKSCOPE for the year 1994-2001 were collected. The final sample consisted of 35,834 bank-year observations covering 50 countries. All banks - commercial banks, saving banks, co-operative banks and BHCs were included in the sample. They estimated the H-statistics on the basis of four models and taking average of the estimated four as a measure of the competitiveness of various banking markets. The H-statistic varied generally between 0.60 and 0.80, suggesting that monopolistic competition is the best description of the degree of competition. They found positive results for greater foreign bank presence. They also found some evidence that entry restrictions on commercial banks can reduce competition. There was no evidence that banking system's concentration was negatively associated with competitiveness. On the contrary, they found some evidence that more concentrated banking systems were more competitive. Their findings confirmed that contestability rather than structure, that is more important for competition.

In the Indian context, **A. Prasad & Ghosh (2005)** examined the degree of competition in the Indian banking system by using the Panzar-Rosse Methodology. They took a sample of 27 state-owned banks, 15 incumbent and 8 de novo private domestic banks and 14 major foreign banks. The data covered from 1996 to 2004 with two sub-periods, 1992-99 and 2000-04. Employing the P-R test they studied the

and total revenue as dependent variables. The empirical Indian banking system operated under competitive conditions and earned revenues under monopolistic competition.

Based on the total assets data for the period 1998-99 to 2008-09, **Sharma and Bal (2010)** examined the nature and extent of changes in the market concentration and their impact on competition among the Indian banks. The samples covered total assets of 75 scheduled commercial banks in the initial period of study and which gradually decreased to 61 banks in the conclusive period of study. The study focused on both absolute and relative measures of market concentration. The methods employed were the k-concentration ratio, HHI, CCI, Entropy and Gini Index. The empirical results showed that the concentration ratios based on HHI and k-bank concentration decreased from the initial year of study, reflecting a greater degree of banking competition in India. Further, the Gini index as a relative measure of concentration was also decreased during the time period of study, showing a decrease in inequality among commercial banks operating in Indian banking market. In other words, the study found strong evidence of change in market structure of banking in India during the period of study.

Using Panzar-Rosse H-statistic, **Misra (2011)** analyzed the degree of competition in the Indian banking sector after the Financial Sector Reforms. The period of study was spread over 1997 to 2008 with two panel data sets of each 6 years, i.e., (1997-2002) and (2003-08). Total revenue as a percentage to total assets was taken as a dependent variable. Independent variables employed were employee expenses, administrative expenses and funds expenses. Empirical results indicated that there had been progressive enhancement of competition in the Indian banking system as the PRH statistic has improved between the two sub periods. The PRH values for the two sub-periods were 0.549 and 0.551 respectively. The result rejected the monopoly and perfect competition as PRH is neither zero nor, indicating the presence of monopolistic-free market conditions. With the two panel data analysis, it found that there has been improvement in the degree of competition since 1997.

**Gajurel & Pradhan (2012)** studied about the Nepalese banking industry for an unbalanced panel of 15-25 commercial banks for the period 2001 to 2009. Concentration ratios and the HHI were used to measure the market concentration

– total deposits, total loans and total assets. A test of  
conducted using the PRH statistic. Concentration ratios and  
HHI show decreasing market concentration in Nepalese banking industry and  
decreasing market share of largest banks over the sample period. The evidence  
suggests that the banking industry is less concentrated, and hence more competitive.  
The results from the PR model estimate indicate monopolistic competition in the  
Nepalese banking industry.

#### **2.4 Literature on Profitability:**

Using bank level data of 80 countries, **Demirguc-Kunt and Huizinga (1998)** analyzed the determinants of profitability and net interest margin for the period 1988 to 1995. Profitability was measured by the ratio of before tax profits to total assets and various bank characteristic variables, macroeconomic variables as well as institutional and legal variables were taken as explanatory variables. Empirical findings found positive relationship between profitability and the capitalization of banks whereas negative relation between reserves and profitability. Larger bank asset to GDP ratio and lower market concentration ratio were associated with lower margins and profits. Foreign banks as compared to domestic banks were found with higher margins and profits in developing countries, while the reverse held in case of developed countries. And institutional factors have more pronounced effects on interest margins and profitability in developing countries than in developed countries. Also, there was evidence that the corporate tax burden was fully passed on to bank customers.

**Goddard and Wilson (2004)** investigated about the profitability of major banking sectors of six European countries based on cross-sectional, pooled cross-sectional time series and dynamic panel models for the period 1992-98. ROA is taken as a measure of profitability, and the ratio of capital to total assets is also used for a measure of risk. OLS methods and the two step GMM method for the dynamic panel model were used. Empirical results found that, despite the growth in competition in European financial markets, there was significant persistence of profit from one year to the next. And, positive relationship was found between the ratio of capital to assets and profitability, which contradicts the theoretical relationship between risk and return.

panel data of 33 commercial and merchant banks, determinants of profitability of Nigerian banks over the period 2000-2004. A linear regression model predicted profitability based on each of indicator. ROA and the ratio of before tax profits to total assets were taken as profitability parameters. Deposit liabilities, credit portfolios and its compositions, labor productivity, the state of information technology, risk factor, size, structural affiliation variable and the ownership and its concentration were taken as explanatory variables. The OLS results indicated that capital size, size of credit portfolio, and ownership concentration significantly determine bank profits. Whereas, size of deposits liabilities, labour productivity, state of IT, ownership, control-ownership disparity and structural affiliation were found insignificant. And the relationship between risk and profitability was inconclusive.

**Dietrich et al. (2009)** analyzed the profitability of Swiss banking market of an unbalanced panel dataset of 453 commercial banks over the time period from 1999 to 2006. Profitability was measured by return on average assets (ROA) and return on average equity (ROE). A linear regression model was fitted, based on three categories of explanatory variables namely bank-specific characteristics, industry-specific factors and macro economic variables. Empirical results indicated that for the profitability measure, ROA, bank specific variables like capital ratio, cost to income ratio, interest rates positively influenced the profitability whereas provisions for loan loss and growth of deposits did not have any impact. Statistically significance was also found for the macro economic variables such as, GDP and taxation and concentration in the industry. And larger banks were found less profitable than the medium sized banks. Regarding another parameter or ROE, negative coefficient was found for the capital ratio. It means that more capital has negative impact on the return on equity.

**Ayadi et al (2012)** analyzed the profitability of twelve Tunisian banks using a technique of panel data over the period 1995-2005. Return on average assets was taken as a measure of profitability. Bank specific variables, financial structure variables and macro economic variables were used in order to explain profitability of the chosen banks. The empirical results suggested that bank specific variables – bank capitalization and size have a positive and significant effect on the bank profitability. Macro economic variables like GDP and inflation did not have any significant effect

But, the variables like credit risk and the concentration ratio did not explain the profitability of the selected banks.

**Smaoui et al (2012)** investigated the profitability of 44 Islamic banks belonging to the GCC region. The study used three proxies of bank profitability – ROA (Return on Assets), ROE (Return on Equity) and NIM (Net Interest Margin). Capital Adequacy, liquidity, asset quality, GDP growth, efficiency and rate of inflation were the variables used to explain profitability. Empirical results indicated that ratio of equity to assets was found significant and explained well for ROA and NIM. The ratio of cost to income also determined the profitability of the banks for all the profitability proxies. Impact of liquidity on profitability was found significant for only NIM. Asset quality also explained profitability on all measures, except ROE. Further strong positive association between size and profitability of Islamic banks was found, irrespective of the profitability measure chosen. And the hypothesis that growths in GDP and inflation rate stimulate the profitability was supported by the empirical analysis.

**Alper and Anbar (2011)** examined the profitability of banks in Turkey over the period from 2002 to 2009. Panel data method (fixed effects model) was applied by using bank-specific and macro economic variables. Bank profitability was measured by return on assets (ROA) and return on equity (ROE). Empirical results indicated that asset size has a significant and positive effect on profitability for both the profitability measures. The ratio of loans to assets and the ratio of non-interest income to total assets were also found significant and explained profitability, as measured by ROA. On the macroeconomic variables, only real interest rate was found to have significant impact on profitability, measured by ROE. The remaining explanatory variables (capital adequacy, liquidity, deposits/total assets ratio and NIM, GDP growth, inflation rate) did not have impact on bank profitability.

In the Indian context, **Batra (1996)** analyzed the profitability of the Indian Scheduled Commercial banks by using a hybrid profit function which is translog in labour input prices and Cobb-Douglas in the prices of output and other inputs and quantities of fixed inputs for the period 1955-1987. As a profitability measure, the

net operating expenses and the ratio of gross profits to the independent variables employed were gross rate of loans and investments, average total wages, policy variables, prices paid on deposits and borrowings, and the branch variable in order to capture the economic feasibility of banking. Application of OLS method gave good results from both the profitability concepts. The results also indicated the importance of loans and investments in the banks assets' portfolio and as also of policy variables SLR and CRR. The price paid on deposits was significant and negative over the period. It indicated the higher rate of growth of total deposits and higher rates of interests and shifts in maturity pattern towards longer term deposits. But the analysis found limited contribution of the branching variable in explaining profitability.

**Koeva (2003)** examined the behavior of the determinants of bank intermediation costs and profitability of all commercial banks in India for the period 1991-92 to 2000-01. The method of ordinary least squares, fixed and random effect models were applied for the analysis based on the explanatory variables - bank specific variables, industry level variables and macroeconomic variables. Banks with higher administrative costs were found to have significantly higher spreads and lower profitability. Banks with higher level of NPAs were found to have significantly lower profitability. However, in some specifications, larger share of investment in government securities were associated with higher spreads. Banks with higher share of current deposits have significantly lower bank spreads and higher profitability. Branches as a variable did not have significant impact on the profitability but number of branches was found to have a positive and significant impact on the net interest margin. The empirical results also indicated that ownership type has a significant effect on some performance indicators. Foreign banks and private sector banks were found to perform better than the nationalized banks over the study period. Industry concentration as measured by the Herfindahl index declined during the decade. And that the observed increased in competition during financial liberalization was associated with lower intermediation costs and profitability of the Indian banks.

**Kaur and Kapoor (2007)** studied the profitability of public sector banks in India in the post-reform period for five years (2001- 2005). Analysis was carried out by simple mean, standard deviation, coefficient of variation and exponential growth rate. Herfindahl's index of concentration was used to find out the relative efficiency



ratios like return on assets, credit-deposit ratios, operating expenses to total assets, interest income to total income and interest expenses to total expenditure were used for explaining the profitability of banks. Each of the banks was found to contribute different score for each of the six parameters used for profitability. The overall profitability of the public sector banks has increased during the study period. Thus the hypothesis that profitability of banks in post-reform period improved was accepted. But the alternative hypothesis that the relative efficiency of State Bank of India and its associates is higher than that of nationalized banks is rejected.

**Rakhe (2010)** analyzed the performance of foreign banks in comparison to other bank groups in India. A sample of 59 banks, which included 14 foreign banks, 14 old private sector banks, 5 new banks and 26 public sector banks for the period 2000-2009. Net profit to total asset ratio was taken as the dependent variable. Efficiency of fund management, operating expenses to total assets, other income to total assets, credit risk, cyclical output and inflation were used as the explanatory variables. The regression results showed that efficiency of fund management measured as amount of interest expenses required for generating one rupee interest income determined profits to a large extent. The ratio of other income to total income was higher for the foreign banks than other bank groups. And the cost of deposits for foreign banks was the lowest among the bank groups in India. NPAs and the cyclical component of GDP and inflation also influenced the profitability of the foreign banks, but their impacts were less as compared with other determinants. In terms of fund management and other income source, foreign banks were well ahead of domestically owned banks, and so comparatively higher profitability than that of its counterparts.

## **2.5 Literature on firm Growth:**

Literature on the growth of firms with respect to various determinants of firm size is few. Earlier studies on the growth of firm mainly focused on the relationship between the firm size and growth. In other words, the studies were based on growth and one determining variable i.e., size. With the passage of time, researchers also tested the growth of a firm by adding certain possible determinants of growth in addition to the size variable in the growth model. Gilbrat postulates that the growth rate of firm size is equal for all firms regardless of the size of firms in their initial stage, which he names the law of proportional effect. Many empirical studies have

Gilbrat's law. While some studies found a positive correlation on such independence between firm growth and size. Though the sign is mixed, these studies all together renounce Gilbrat's law. Empirical studies for testing Gilbrat's law have been enriched by an introduction of certain possible determinants of growth in addition to the size variable.

**Audretsch & Dohse (2007)** measured the growth performance of small technology-based firms in Germany. The sample data included publicly listed 212 firms in Germany for the period 1997 to 2003. A model of firm growth is introduced that is specific to characteristics of the location as well as the firm and industry specific variables. Firm performance is measured by employment growth, and is expressed as a function of variables like size, age, region, knowledge and other firm as well as industry specific variables. Empirical results indicated that besides the firm and industry specific variables, the growth of the firm is also influenced by other exogenous variable (locational variables).

By using 1987-1996 data, **Philip & Adams (2002)** tested empirically the predictions of Gilbrat's Law of Proportionate Effects in the UK life insurance industry and investigated the influences of other possible firm-specific determinants of corporate growth. In addition to size, other possible determinants were also included in the model. Taking the ten-year period as a whole, the study found no significant difference between the growth rates of small and large life insurance firms, a result that clearly supported Gilbrat's Law as a long-run tendency in the UK's life insurance sector. In addition, no significant influence on growth from input costs, profitability, organizational form, or location was found.

**Nakano & Kim (2011)** investigated about the relationship between firm growth and profitability by using panel data on 1633 Japanese manufacturing firms for 1987 to 2007. The study is to test the validation of the Gilbrat's size-growth relationship. Return on assets is taken as a measure of profitability and net assets for growth. The empirical findings confirm that firms face a trade-off between growth and profitability. The study confirms that current profits are a pre-requisite for future growth while excessive current growth is detrimental to future growth. The results also exhibit a strong inverse relationship between growth and size, suggesting that smaller firms grow faster than larger firms do.

investigated the roles of firm size, age and industrial networking such as subcontracting and clustering on firm growth. The finding shows the inverse relationship between growth rates and size, indicating diminishing marginal effects of size, suggesting that Gilbrat's law does not hold. In contrast, the inverse relationship between growth rates and age suggests that firm growth declines more rapidly as firms get older. Subcontracting does not have a statistically significant effect on firm growth, but clustering has significant effect on firm growth.

**Goddard et al. (2004)** analyzed the growth dynamics and profitability in banking by taking data for 583 European banks, (all domestic commercial, savings and co-operative banks) operating in the five largest EU countries. A dynamic panel and cross-sectional regressions are used to estimate growth and profit equations. Profit is measured by the return on equity and growth by the logarithmic size growth of the banks. The growth regressions reveal little or no evidence of mean-reversion in bank sizes. The growth regression suggested that banks became larger in relative terms, their growth performance tended to improve further. Profit is an important prerequisite for future growth. Banks that maintain a high capital-assets ratio tend to grow slowly, and growth is linked to macroeconomic conditions.

**Goddard et al. (2002)** investigated the size-growth relationship of U.S. credit unions during the 1990s, by using univariate and multivariate cross-sectional and panel estimation techniques. Empirical results indicated that larger credit unions were found to grow faster than their small counterparts. The specific reasons behind this is that most of the financial structure and performance characteristics used in the multivariate model were found to have a significant influence on the size-growth relationship. Thus, growth was not randomly driven but highly systematic driven.

## **2.6 An Assessment of the literature surveyed:**

A brief literature survey for each area of research is reported in the previous sections. Researchers' differ on the variables taken and the methodology used along with varying time periods of studies.

Study on economies of scale is sensitive to the definition(s) of bank output variable assumed. Benston et al. (1982), Rangarajan and Mampilly (1972), Wheelock

and total deposits as bank output variable. Clark & Speaker (1986), Apergis et al (2004) used total deposits, loans and investment variables as a measure of bank output. In the present study, intermediation approach to the definition of output is adopted. Thus, the amount of total advances held at the end of a year is a measure of bank output because total advances are final output of for banks. Total cost as well as the individual cost item is used to analyze the economies of scale of the banks. These cost items include salary payments and provisions to employees, depreciation on banks' fixed assets, general expenses and the interest cost.

Various studies on bank mergers are found with different approaches of mergers. Most of the studies focus on the impact of mergers on performance of the firms for specific time period. The present analysis is different from those reviewed in the literature. It is an analysis of mergers separately for each merging bank as well as for all banks together.

Research on competition in industry has now advanced beyond the traditional models of structure conduct-performance and used different models of measuring competition in banking industry. Researchers analyzed the nature of bank competition and effects of consolidation through Panzar-Rosse model. It is assumed superior to the traditional approach of structure-conduct-performance paradigm. The most of the studies are based on this Panzar-Rosse H-statistic. However, the present study employs the traditional tool of k-firm concentration ratio and Herfindhal-Hirschman Index. Because both the methods are simple and have the ability to capture the structural features of the market with distribution ranging from very small to very large firms. Further, the degree of competition of banks is analyzed in terms of several banking variables, namely, total assets, total income, total advances, total deposits and net worth.

Review of the studies on bank profitability suggests that more or less the same variables/ratio was used for bank profitability analysis. Most common measures of bank profitability are ROA, ROE, profit margin (PM), gross profits to total funds/operating expenses, spread to total assets ratio, credit-deposit ratio, etc. are treated as determinants of profitability. However, the present study is based on three

, i.e. ROA, ROE and PM in the period during and after

Literature on firm growth of particularly in the banking sector for Indian banks is scanty. Most of the studies on growth of firms relate to banking system in foreign countries like U.K., U.S., Germany, Japanese firms, Korean firms etc. This study attempts to test the validity of the Gilbrat's law with reference to certain bank performance indicators. The present study attempts to measure the growth of the Indian banks in terms of assets, advances, net worth, bank branches, net profit etc.

This study attempts to analyze the performance of the Indian banks during 1990-2006 in terms of above mentioned performance indicators given the data availability.