CHAPTER VIII

SUMMARY AND CONCLUSIONS

8.1 Introduction

With a series of reforms in the banking sector over the past two decades it is opportune to measure the type of reconstruction and consolidation in Indian banks after the reforms. For this, the performance of the banks is measured in terms of certain bank-specific variables, and financial and accounting ratios of the banks. The major areas of reconstruction and consolidation are economies of scale, mergers and acquisitions, competition level, profitability analysis and the growth analysis. In the current study, 27 public sector banks were chosen for the analysis. The hypotheses examined is that

(a) The performance of the banks is improved after the financial sector reforms in terms of scale efficiency, competition, profitability and growth.
(b) The strategy of mergers and acquisitions improved the performance of the banks after mergers.

These hypotheses are examined with reference to economies of scale, mergers and acquisitions, profitability, competition and growth rates of the firms for the period from 1991-92 to 2006-07.

8.2 Economies of Scale:

The analysis begins with the measurement of the economies of scale on statistical cost approach. The economies of scale [elasticity of total advances with respect to total cost] relating to 27 public sector banks are estimated for selected years, namely 1991-92, 1995-96, 1999-00, 2003-04 and 2006-07. The analysis is carried out for two bank groups – SBI and its associates group and other 19 PSBs group and finally all banks analysis is done for each specified time period. From the perspective of all 27 banks, economies of scale are found in the first two study periods (1991-92 and 1995-96), and at the minimum point of AC curve in the third study period, 1999-00. The scale operation turned to diseconomies of scale in the fourth study period (2003-04) and further exerts at the minimum point of AC curve in the last study period (2006-07). The SBI group operated

urve in each study period except in the period 2003-04, of scale. As against this, the other 19 public sector banks group operated at economies of scale in all the specified study periods as the output elasticity with respect to total cost is close to 1.

From the standpoint of sources of efficiency and inefficiency, it was found that the SBI group enjoyed economies of scale in wages and salaries (1991-92), depreciation (1991-92 and 2006-07) and exerted diseconomies of scale in interest cost (2003-04), wages and salaries (2003-04 and 2006-07), depreciation (1999-00 and 2003-04). For the other 19 public sector group, economies of scale is enjoyed in interest cost items and general expenses in all of the five study periods, for wages and salaries in all the specified period except in 2006-07 and for the depreciation item (1991-92 and 1994-95). In the rest of the period, this bank group operated at the minimum point of AC curve. No diseconomies of scale are found in case of this bank group in each of the study period.

Minimum efficient size/output (MES) of banks, defined as the level of output (Total Advances) at which the fall in average total cost (AC′) is less than one per cent, is obtained at the size of Rs. 4500 crore in 1991-92, Rs. 5000 crore in 1994-95 and declined to Rs. 4000 crore in 1999-00. This MES was attained in all 27 public sector banks for all the successive specified analysis period. However, for the period 2003-04 and 2006-07, no MES is computed as the AC is showing an increasing trend over successive intervals of output. A brief summary report of the analysis of economies of scale y bank group and for whole banks together is reported in Table 8-1 below.

Table 8-1

Summary of cost analysis of each bank group during and after the financial sector reforms

1. Economies of Scale					
Hypothesis: Size has positive impact on the efficiency of the banks					
Scale Position in each period					
Bank Group	***1991-92***	***1995-96***	***1999-00***	***2003-04***	***2006-0***
SBI & its Associates Group	Cost Efficient Scale (**e** = 0.99)	Cost Efficient Scale (**e** = 0.99)	Cost Efficient Scale (**e** = 1.01)	Diseconomies of Scale (**e** = 1.07)	Cost Efficien (**e** = 1.0
Other 19 PSBs Group	Economies of Scale (**e** = 0.88)	Economies of Scale (**e** = 0.83)	Economies of Scale (**e** = 0.84)	Economies of Scale (**e** = 0.80)	Economies of Scale (**e** = 0.94)
All 27 Banks	Economies of Scale (**e** = 0.93)	Economies of Scale (**e** = 0.94)	Cost Efficient Scale (**e** = 0.98)	Diseconomies of Scale (**e** =1.12)	Cost Efficient Scale (**e** = 1.02)
Minimum Efficient Size/Output by bank group in each period					
SBI & its Associates Group	Rs. 4500 crore	Rs.5000 crore	Rs. 4000 crore	Not found	Not found
Other 19 PSBs Group	Rs. 4500 crore	Rs.5000 crore	Rs. 4000 crore	Not found	Not found
All 27 Banks	Rs. 4500 crore	Rs.5000 crore	Rs. 4000 crore	Not found	Not found
Conclusion of Hypothesis Accepted/Rejected: Hypothesis that size has positive impact on the performance of the banks is accepted in case of the 19 public sector banks group. Whereas, for the SBI and its associates group, the hypothesis is accepted except in 2003-04. In terms of all the 27 banks, the conclusion is the same of that of SBI and its associates group.					

k-specific financial and accounting ratios, pre-merger and post-merger performance of the merging firms is evaluated. A paired sample t-test is used to examine the performance of the merging banks in two different periods. Five merging banks are applicable for the present study. These banks are the Bank of Baroda, Oriental Bank of Commerce, Punjab National Bank, State Bank of India and Union Bank of India. Out of the seven performance indicator variables, only two variables are found significant at the one per cent level. These are the ratio of operating cost to total assets and profit per employee. Whereas, the variables like solvency ratio measured by CAR, profitability ratios i.e. ROE and ROA, growth rates of total assets and the efficiency parameter, i.e. net interest income are not found significant. In other words, although mergers have some positive effect on the size and productivity of the firms, its impact on profitability, regulation and growth rates is not significant. It is because merger is a long-term strategy, its benefit could be realized in the long-run. Hence the null hypothesis that there is no significant improvement after merger is accepted. This indicated that pre-merger and post-merger performance is indifferent, although some of the parameter estimates are found to increase marginally in average values during the post-merger period.

Table 8-2

Performance analysis of merging Banks

2. Mergers and Acquisitions		
Null Hypothesis (H_0): There is no significant change in the performance of banks after mergers		
Alternative Hypothesis (H_1): There are significant changes in the performance of banks after mergers		
Merged Banks	***Hypothesis Accepted/Rejected***	***Significant ratios***
1.) Bank of Baroda	Partially accepted the Alternative Hypothesis	ROA, ROE and profit per employee
2.) Oriental Bank of Commerce	Partially accepted the Alternative Hypothesis	Spread (Net Interest margin) and ratio of Operating Cost to Total Assets
3.) Punjab National Bank	Partially accepted the Alternative Hypothesis	Ratio of Operating Cost to Total Assets and Profit per employee
4.) State Bank of India	Accepted the Null Hypothesis	No Change
5.) Union Bank of India	Accepted the Null Hypothesis	No Change
All (five) Banks	Partially accepted the Alternative Hypothesis	Ratio of Operating Cost to Total Assets and profit per employee

the firms are measured with certain bank specific characteristic variables by using the traditional methods of k-firm concentration ratios and the Herfindhal-Hirschman Index. In the present study, one-firm concentration ratio and four-firm concentration ratios are used to measure the degree of concentration and hence competition in the banking industry. Further the Herfindhal-Hirschman Index (HHI) is also as a secondary method for measuring the degree of competition among the banks. The variables used to measure competition of banks are total assets, total income, total deposits, total advances and net worth. The State Bank of India is having the largest market share in each of the banking variables over the entire period with a share of 29 to 30 per cent of the total market share for each respective banking variable. Results of four-firm concentration ratios indicated that about 49 to 50 per cent of the market share is held by the largest four firms in the industry for all the parameters. The trend of Concentration ratios indicated a declining trend over the period for each parameter except the parameter net worth. This shows that the nature of the firms is oligopolistic in nature. Similar trend is visible in terms of the HHI values. The mean HHI for each variable is found low index, i.e. low competition. But, if looking from the trend of the HHI index, there is a declining trend for each variable except net worth over the period. It shows the existence of competition among the firms even though not highly competitive. The evidence of oligopolistic behavior of the firms is also well supported by the trend of HHI values

Table 8-3

Level of competition and concentration ratios for five banking parameters during the period from 1991-92 to 2006-

3. Competition			
	C_1 (One-firm Concentration Ratio)	***C_4 (Four-firm Concentration Ratio)***	***Herfindhal-Hirschm Index (HHI)***
Total Assets	29 per cent (Concentration exists)	49 per cent (low concentration)	0.11 (low competitio
Total Advances	27 per cent(Concentration exists)	49 per cent (low concentration)	0.11(low competitio
Total Deposits	26 per cent(Concentration exists)	47 per cent (low concentration)	0.10(low competition)
Total Income	29 per cent(Concentration exists)	49 per cent (low concentration)	0.11(low competition)
Net Worth	24 per cent(Concentration exists)	45 per cent (low concentration)	0.09(low competition)
Nature of the Bank(s)	Oligopoly	Oligopoly	Oligopoly
Conclusion of Hypothesis Accepted/Rejected	Accepted the Null Hypothesis (that there is no difference in the degree of competition of the banks after the financial sector reforms)		

banks are measured based on three profitability ratios – Return on Assets (ROA), Return on Equity (ROE) and Profit Margin (PM). Regression is fitted for each profitability measure based on certain bank specific explanatory variables for the entire period. Before going for regression a descriptive analysis of each profitability measure is analyzed based on the trend of the variables for different sub-periods – (1991-92 to 1994-95), (1995-96 to 1998-99), (1999-00 to 2002) and (2003-04 to 2006-07). Regarding the profitability measure ROA, the SBI group shows an increasing trend in each of the sub-periods (from 0.30 per cent to 0.61 per cent, to 0.90 per cent and further to 0.97 per cent respectively). However, for the PSBs group, the mean ROE in the first sub-period was negative (-1.04), and increased to 0.26 per cent, to 0.67 per cent and further to 1.01 per cent successively in each sub-periods. For the ROE, both the group experienced increasing trend although the SBI group experienced a marginal decline in the sub-period 2006-07. Similar trend is discernible in case of third measure of profitability, Profit Margin (PM). From the comparison of both the bank groups it is observed that the growth of 19 public sector bank group is faster than that of SBI group although the PSBs group experienced losses in the early part of the reforms. The PSBs group began to earn larger from the late part of the 90s till the entire period and the growth rate is comparatively higher than that of SBI group in case of ROA and PM as visible in the fourth sub-period (2003-04 to 2006-07).

Regression results of the determinants of profitability shows that irrespective of profitability measures, the estimated coefficient of cost variable, was found to be significant at 5 per cent or more level for each bank group and for whole banks together. The efficiency parameter was also found significant for all profitability measures except for ROE and in case of 19 PSBs group. Other estimated coefficients either do not posses theoretically expected signs or were not found significant. In all, cost and the efficiency parameters are the two variables that fairly influenced the profitability of each bank group and for whole bank in each measure of profitability. Other variables do influence the profitability of the banks depending on the measure of profitability chosen.

Table 8-4

Determinants of profitability by bank-group during the period 1991-92 to 2006-07

4. Profitability		
	Determinants of Profitability (ROA)	***Hypothesis Accepted/Rejected***
SBI & its Associates Group	Efficiency and Cost variables	Two Accepted (H_4 and H_5)
Other 19 PSBs Group	Efficiency and Cost variables	Two Accepted (H_4 and H_5)
All Banks	Efficiency and Cost variables	Two Accepted (H_4 and H_5)
	Determinants of Profitability (ROE)	***Hypothesis Accepted/Rejected***
SBI & its Associates Group	Capital Strength, cost and efficiency variables	Two Accepted (H_4 and H_5)
Other 19 PSBs Group	Capital Strength and cost variables	One Accepted (H_5)
All Banks	Size, capital strength, credit quality, cost and concentration variables	Two Accepted (H_1 and H_5)
	Determinants of Profitability (PM)	***Hypothesis Accepted/Rejected***
SBI & its Associates Group	Size, efficiency, cost and concentration variables	Two Accepted (H_5 and H_6)
Other 19 PSBs Group	Efficiency and Cost variables	Two Accepted (H_4 and H_5)
All Banks	Efficiency and cost variables	Two Accepted (H_4 and H_5)

of growth rates based on total assets, total advances, net worth, number of bank branches/offices and net profit were worked out for the two distinct sub-periods and for the entire time period. The sub periods are the period during and after reforms (1991-92 to 1998-99) and second sub-period (1999-00 to 2006-07), the period after the reforms. The asset growth rate of the 19 PSBs group was found to be higher than that of SBI group in both the sub-periods and for the whole period. In terms of the total advances too the growth rate of other public sector bank group was found higher than that of the SBI group in both the sub-periods and whole time period. But for the net worth, the SBI group has higher growth rate than the other 19 PSBs group in both the sub-periods and for the entire period. However, for both the bank group, the rate of growth in the net worth was found higher in the first sub-period. It indicated the effect of recapitalization that was done for structural adjustments during the reforms period.

Regarding the branching variable, there were not many branches open after the reforms. The branch expansion by all the bank groups is very marginal and remains more or less stagnant over the entire period. One reason for negligible growth rate in branch expansion was that banks embarked on consolidation rather than expansion. For the net profit variable, uneven growth rates were found for both the bank groups and the PSBs group experienced losses in the early and mid part of the 90s. In contrast to the PSBs group, the SBI group earned profits during the reform period, even though there were declining trend in growth rates over the entire period. However, PSBs group were earning large profits in the later part of the 90s although made losses in the initial years of reforms period.

A model of growth based on the Gilbrat's Law is formulated for all the firms by incorporating certain bank-specific characteristic variables. The regression is fitted for the two distinct sub-periods and for the entire period. Growth is measured by the difference of firm size (total assets) in the current period and previous period. The variables incorporated to explain the growth performance of the firms other than the size variable are cost and efficiency variables which are used in the analysis of profitability in the earlier chapter.

when the coefficient of the size variable is equal to 1, i.e. initial firm size. And if the estimated coefficient is found more than 1, the growth of the larger firms is faster than that of smaller firms and the opposite holds when the coefficient of the size variable is less than 1. In the present analysis, the estimated coefficients of size parameter are found less than 1 in each study period, i.e. (- 0.143), (- 0.059) and (- 0.196) respectively for the first sub-period, second sub-period and whole period. All these estimated coefficients except for the second sub-period are found significant at the 5 per cent level. The other coefficients are not significant and hence excluded from the analysis. The first hypothesis of Gilbrat's law does not hold and is rejected. And for incorporating other bank specific variables as an extension to the Gilbrat's model, none of the variables do not support the hypotheses even though the efficiency variables posses theoretically expected signs over the period and for the cost variable only in the two sub-period.

Table 8-5

Growth performance of the banks during and after the financial sector reforms

5. Growth			
	Hypothesis rejected/accepted in each period		
Hypothesis	***1991-92 to 1998-99 (Period during and after reforms)***	***1999-00 to 2006-07 (Period after the reforms)***	***1991-92 to 200 (Whole Perio***
H_0 (Gilbrat's Law)	Rejected (Size parameter, $\beta_1 < 0$) i.e. Small banks grow faster than the larger counterparts	Rejected (Size parameter, $\beta_1 < 0$) i.e. Small banks grow faster than the larger banks	Rejected (Size parameter, β i.e. Small banks faster than the large banks
H_1 (Growth rate of firms are influenced by other bank specific variables)	Rejected	Rejected	Rejected
H_2 (Higher-cost firm will grow slowly than low-cost banks)	Rejected	Rejected	Rejected
Hypothesis that there is difference in growth rates of the banks in each two sub-period	No changes found in the growth rates of the banks in terms of different banking parameters in the second sub-period (period after the financial sector reforms)		

cy of banks in terms of size/output, the 19 public sector banks group was found to be more efficient than that of the big bank group, i.e. the SBI and its associated group. On the other hand, looking at the performance of the banks in terms of profitability, SBI group did not make any losses over the entire period of study even though this bank group experienced diseconomies of scale. Further, the other 19 PSBs made losses till the mid of 90s and this bank group started earning profits after the onset of the second phase of reforms, i.e. after 1998 but operated at the economies of scale in each of the study period. The argument is that the profits of the banks remained unaffected, whatever be the position of scales experienced by each bank group. In other words, it implies that size has no trade off with profitability.

With reforms, competitive spirit of the banks is increased in terms of new products, skills, technology and so on. But, there is no difference in terms of four firms' market share over the entire study period. But for one-firm concentration ratio indicates the State Bank of India's presence as dominant firm as reflected by its market share of about 29 to 30 per cent (The SBI being the largest bank controls nearly 30 market share).

And from the empirical study of mergers analysis, it can be observed that mergers as a tool of efficiency are rather suspected. To say, mergers cannot be dictated by abstract considerations as to the relationship between size and efficiency. But it does not mean that merger is not a strategy of strengthening the banks, rather it needs to establish from the efficiency point of view but not going for size. Mergers between the small firms or between small and medium size firms would be meaningful as these banks pose a systematic risk because of their weakness. So, through mergers many of these banks have the potential to emerge as viable in the long run. So, it is a bottom up approach, rather than a top down one, that makes more sense in our present conditions. We need to establish in the Indian context, what would be the optimal size. Only two out of the seven banking parameters are found significant in the analysis of merger performance. These are the ratio of operating cost to total assets and profit per employee. The null hypothesis that there is no significant difference in post-merger performance is accepted.

n the secondary data, assumptions and constraints of secondary data are applicable to this study. Further, the time period for the analysis relates to post financial sector reforms and methodologies, dictated by the available data, are borrowed from the earlier studies. Intermediation approach is used to define total output, taking total advances as a measure of the total output variable. However, financial institutions are multi-product firms, and there is no consensus regarding the appropriate definition of bank output. So, a major limitation is the definition of output, as banks also service on deposits as well as investments as a part of their total output. Further, if the cost function specified in the present study provides the estimates of the output elasticity of cost with no indication of profitability. The presence or absence of significant economies of scale has important public policy implications for bank regulation.

The present study covers select issues of financial sector reforms. Other areas of research may focus on macro prudential framework like policy framework, risk management system, asset-liability management, disclosure and transparency, etc. These may be taken up in separate analysis.

In spite of the approximations and limitations, it is hoped that this study makes an important contribution to this area of banking industry.

8.8 Area for further research:

Though stability and efficiency of the public sector banks have improved after the reforms, it is still not very satisfactory mainly in the field of competition among the banks. So, further research for increasing the competitive spirit of the banks is suggestive. Studies in the areas of risk management, human resource management, prudential regulations, ownership structure and implications are some of the areas for further research. Another area of research is the corporate governance practices in banks. Good governance practices are a major mechanism for an institution.