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Analysis of Pre and post merger performance of selected commercial Banks – an application of DEA

KEYWORDS: Bank Mergers, DEA Analysis, Performance Analysis,Profit Efficiency Analysis

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ABSTRACT *The present study deals with the merger and acquisition done by Indian Banks domestically. The paper aims to study about the pre and post merger performance of the Banks with its competitor and it will be useful to justify the effectiveness of the merger. Sample size for the Analysis is Four Banks merged during 2003-2005. The data collected for the study is from 2000 to 2011 for pre merger 2000-2003 data are used and for post merger 2005-2011 has been used. Data Envelopment Analysis has been used for the Analysis part. The analysis may be useful to judge whether mergers has the impact on the performance of the banks. Sometimes pre mergers show better performance and some banks shows better performance. Based on the above concept the researcher has attempted to prepare this research article.*

Introduction

Bank is a financial institution which accepts deposits and lending loans through the channel of depositor's money. Modern sense banking in India is originated during 18th century. The first Bank in India were General bank of India (1786) and Bank of Hindustan in 1770, But now both the Banks are not functioning. The oldest banks which still existence are State Bank of India and bank of Calcutta in 1806 and now named as Bank of Calcutta. The three presidential Banks which were established on 1 July 1843, were The Bank of Madras, the Bank of Bengal and the Bank of Bombay, and was headquartered in Madras, now Chennai. The three banks merged in 1921 to form the Imperial Bank of India, which, upon India's independence, became the State Bank of India in 1955. So here starts banks merger.

Finance Banks of World: In the Banking Sector of any economy; the most crucial concern is the Risk Management. Banks of every country are supposed to make a proper risk analysis in order to balance the deposit and credit portfolios. Mergers can diversify these risks to a significant extent. Drastic increase in market competition, innovation of new financial products and consolidation of regional financial systems and national financial systems are the other reasons, for which banks are going for mergers, around the world. Merger can be proved really useful in fighting market competition, as merger has the capability to generate economies of scale. These Economies of scale can help the banks in lowering their servicing cost and in this way can provide a competitive edge to them. Data envelopment Analysis nonparametric test is applied to create a virtually efficient DMU that sits on the efficiency frontier, in which each DMU has a hundred percent efficiency relative to every other DMU. The linear program uses two constraints. The first constraint forces the virtual DMU to produce at least as many outputs as the studied DMU. The second constraint finds out how much input the virtual DMU would need.

Review of Literature

Dimikris angelids, Katerina lyroudi, (2006), found that the productivity of Italian Banking system during 2001-02. Aim is to analyze and examine the bank size and over performance. The sample size for the study are Italian banks 100, year 2001-02, tool used for the study are DEA analysis Regression analysis, Correlation coefficient. To estimate total factor, estimated factor. The result shows that the use of logritahamic values reduces the results in estimated results. It reveals that technical efficiency increased by 0.5% and the technology efficiency by 3% and total factor by 2.6%. The results suggest that the time period is not sufficient to the study.

Santos José O. Dacanay III, (2007), demonstrated that the technical efficiency of Philippine Commercial Banks in post Asian financial crisis by using DEA analysis. Malmquist index and DEA used for the analysis for the study. Sample size for the study is 35 Banks and the time period is from 1998 to 2005. The results shows that Malmquist index shows that on average, banks improved their productivity by 4.6% annually from 1998 to 2005. Efficiency change or the catch-up component has been decreasing by 5.6% annually, suggesting that banks have been actually falling behind in management-influenced productivity rather than catching up. DEA results on technical efficiency show that majority of banks exhibit decreasing returns to scale. Universal banks are more technically efficient than plain commercial banks, providing evidence for scope economies.

Rampratap sinha, (2011), as shown about the temporal difference between public sector bank and private sector bank. The tool used for the study is DEA sample size is 28-public sector bank and 12 private sector bank. Period if study is 2001-02 to 2005-06. Two output indicators: for DEA are total asset and off balance sheet. The results shows that mean efficiency scores of the public and private sector commercial banks it show the declining trend in the analysis period. Technical efficiency results exhibit that state bank implies the efficiency in same level and followed by nationalized bank.

Mohamad Akbar Noor Nor Hayati Bt Ahamad (2012), found that the technical efficiency of the bank during the period 1992-2009 to know about the profitability factor of the Bank. The study conducted for 78 banks totally; countries 28 by using DEA analysis Input used Loan/Advances, Income, and Other earning assets. The results show there is a positive relation between Bank efficiency, Size and profitability, Findings shows that Islamic banks are efficiently exploiting their resources in the fullest extent. Technically more efficient banks are those that have lower market power and high non performing loans. There is a Positive relationship between bank profitability and technical efficiency levels. The favorable economic condition shows positive relation with Bank efficiency.

Research Methodology

Secondary data were used for the period 2000 – 2011 and the data were collected from Bank websites, RBI websites, Capitoline and Money control.com. Tools used by the researcher, measure the performance of merger was Data En-

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velopment Analysis. The data used in this study include the vast majority of consolidation activity that took place during the period and are more detailed and comprehensive than any data available for the years preceding 2003-2005. Banks which are selected for the study are Nedungadi Bank Ltd with Punjab National Bank, South Gujarat Local Area Bank Ltd with Bank of Baroda, Global Trust Bank Ltd with Oriental Bank of Commerce and IDBI Bank Ltd with IDBI Ltd.

Selection of Input and Output for Performance analysis
Input and Output is selected according to the study of Bhattacharya lovall and Sahay (1997) the Inputs are Interest expenses, Operating Expenses the Outputs are Advances, Investments and Deposits from that I have chose's Operating expenses as Input and Advances and Investments as Outputs.

Selection of Input and Output for Profit Efficiency Analysis
Mergers in Indian Banking: Impact Study Using DEA Analysis, Prakash Singh Input as Shareholder's Capital, Interest Expenses, Operating Expenses, and output as Total assets, Net profit.

Research Analysis
DEA evaluates the inputs consumed and outputs produced by DMUs and identify those units that comprise an efficient frontier and those that lie below this frontier. The standard DEA models have an input and output orientation.

Table 1 pre and post merger performance of the banks from the year 2000 – 2011.

S. No	Name of the Banks	Pre Performance efficiency						
	Year	2000	2001	2002	2003			
1	Punjab national bank	54.66	57.83	-29.74	-7.153			
2	Bank of Baroda	69.08	72.08	-47.08	-11.581			
3	Oriental bank of Commerce	99.99	99.99	-5.197	-9.108			
4	IDBI	100	100	100	100			
	Name of the Banks	Post Performance efficiency						
	Year	2005	2006	2007	2008	2009	2010	2011
5	Punjab national bank	65.15	52.32	44.38	45.73	38.13	38.61	62.16
6	Bank of Baroda	100	100	100	100	100	100	100
7	Oriental bank of Commerce	65.55	71.04	87.51	89.09	55.35	46.09	76.08
8	IDBI	100	100	100	100	100	100	100

In pre merger of the performance analysis the all the other bank except IDBI shows negative performance during last two years but then IDBI shows the 100 percent result during all the year and also it has been chose's as benchmark bank (according to weighted Input and Weighted output) to increase the other bank performance.

During post merger performance analysis it shows better performance after merger. Same like pre merger, in post merger also IDBI has set as the target bank or bench mark (according to weighted Input and Weighted output) bank efficiency has been calculated for seven years. Mostly all the selected banks show the better performance after merger.

Table 2 pre and post merger Profit Efficiency Analysis of the banks from the year 2000 – 2011.

S. No	Name of the Banks	Pre Profit efficiency analysis						
		2000	2001	2002	2003			
1	Punjab national bank	100	100	71.96	60			
2	Bank of Baroda	100	100	100	100			
3	Oriental bank of Commerce	100	33.97	71	100			
4	IDBI	100	99.99	100	100			
		Post Profit efficiency analysis						
		2005	2006	2007	2008	2009	2010	2011
5	Punjab national bank	72.89	100	99.29	49.64	26.52	98.49	22.65
6	Bank of Baroda	99.99	53.29	100	100	20.29	27.18	21.74
7	Oriental bank of Commerce	100	99.99	100	100	100	100	100
8	IDBI	100	100	70	86.92	100	100	100

Punjab national bank shows greater profit efficiency during the time period of pre merger analysis from the year 2000 to 2001 the profit efficiency shows 100 percent profitability and during 2002 and 2003 it was decreased to 60%.with the input of Share holder's capital, Interest expenses, Operating expenses and the output as Total assets and net profit. During the pre merger analysis BOB has kept as the benchmark bank and efficiency has been calculated it give the full 100% profitability efficiency during all the four years. All the other banks show a greater performance during pre merger.

Post merger analysis by keeping oriental bank of commerce

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as benchmark all the selected banks efficiency have measured and it show a better performance efficiency score in post merger as given in the table.

Findings and Conclusion

- **Pre merger in performance analysis** the pre merger shows positive performance for all the selected banks in merger. IDBI has set as a bench mark bank the efficiency has measured
- **Pre merger in Profitability analysis** mostly all the selected banks shows better performance in pre merger there also some fluctuation in the efficiency score.
- **Post merger performance analysis** infer that by keeping BOB as benchmark the efficiency score have calculated there is some positive score in their performance there also 100 percent score for IDBI compare to pre merger they are good in efficiency.
- **Post merger Profitability analysis** shows that Oriental bank of commerce and IDBI shows 100 percent efficiency other two banks show positive performance and also improving in the corresponding years.

To save the banks from failure government taking initiatives to go for the merger like weaker bank merging into well grown bank. The selected variables like Operating expenses, Investments and Advances shows the weighted input and weighted output for the study. To conclude the study the mergers have been found positive efficiency scoring during post merger efficiency. Mostly all the selected four Banks shows the better performance after mergers.

Here input and output making the valuation part for this Operating expenses were used as Input and Advances and Investments were used as Output for the study for the measure of performance efficiency. For the profit efficiency measure the selected inputs were Shareholder amount, Interest Expenses and operating expenses and the outputs are Net profit and Total assets. The results show that all the selected Banks for the study is showing good scoring efficiency during post merger activity. It can be concluded that though same have not performed better after merger, majority of the banks are performed well only after merger.

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