

# IMPACT OF MERGER ON FINANCIAL PERFORMANCE OF BANKS: A CASE STUDY OF STATE BANK GROUP

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**Abstract**-Bank consolidation through merger and acquisition has been strongly argued by many researchers and policy makers with a view to enhance performances through synergy effect and wider geographical coverage of banking networks in India. The present study attempts to examine the financial performance of State Bank group during the merger period. It aims to determine the technical efficiency of all banks of State Bank group through DEA a non-parametric approach during the period from 2005 to 2016, measuring the effect of merger on State Bank of India by using paired t-test with a variables of Earning Per Shares (EPS), Price Earnings Ratio (P/E) and Market Price to Book Value of Equity (P/B) and also applied Krushkal Wallis test to show the significant difference among the banks. Finally the study found SBI along with State Bank of Indore, State Bank of Patiala and State Bank of Saurashtra have been the better performer during the study period, merger has favourable impact on financial performance of State Bank of India and also proved that, there is no significant difference among the banks.

**Key Words:** DEA, Financial Performance, Krushkal Wallis Test, Merger, Paired t- test.

## 1. INTRODUCTION

The role of banks in the economic development of a country assumes greater significance due to the fact that they provide one of the essential inputs, namely finance, for the growth of various segments of the economy. After two decades of economic reforms it is becoming inevitable for Indian banking sector to go for merger and acquisition in order to make Indian banks more efficient as globally challengeable unit with the help of synergy effect and wider geographical banking network. Companies can grow either internally or externally. Internal growth, which is called organic growth, is achieved by opening up of branches, introducing new products or products lines and the like. The business strategy of external growth or inorganic growth is carried out by companies by resorting to actions which prominently include merger, takeover and strategic alliances. Merger and takeovers have become an important form of geographical expansion across the world. Merger generally involves the combination of two or more existing companies into one company, either old or new, whereas takeover generally involve acquiring the management control of an existing company by another company by acquiring the controlling interest in that company. In a takeover, both set of companies remain separate legal entities though there is a change in the management control of the acquired company. The company which acquires the controlling number of shares in the other company is called acquiring company or purchasing company and the company which is controlled by the acquiring company is called target or acquired company. In spite of several decades of vast research, researcher has not come to the final conclusion on impact of merger on financial performance of companies. While some studies justify merger and acquisition as a socially productive activities has the positive impact on financial performance of companies, while others provide contrary evidence to show that it has an adverse impact on the performance of companies. This paper assesses the impact of merger of State Bank of India with its two associates i.e. State Bank of Saurashtra in 2008 and State Bank of Indore in 2009.

## 2. REVIEW OF LITERATURE

The present study has reviewed various research articles to understand measuring efficiency, determining effect of economic reforms and merger on financial performance of banks. Some of the previous studies has been reviewed based on measuring performance of banks and any other decision making units by using different parametric and non-parametric techniques, whereas some studies has guide us on measuring the effect of merger and acquisition on financial performance of banks and companies. Researchers generally employ two ways to address the impact of merger on performance of a company. The first approach employs share price data to know gain or losses to shareholders. The second approach is to analyse the profitability of companies using accounting data.

Mallikarjunappa and Nayak, (2013) assesses the impact of takeover announcement on the stock price performance of target companies by taking a sample of 227 companies which received takeover bids during 1998-2007. The stock price reaction is examined for a period of 61 days surrounding the bid announcement day employing standard market model. The result shows that, shareholder experience substantial and statistically significant Cumulative Average Abnormal Returns (CAARs) of 27-37% and overall performance of target

companies are consistent with the evidence of extant research and extracting benefits from merger and acquisitions.

Anand and Singh, (2008), analyses the five mergers in the Indian banking sector to capture the returns to shareholders as a result of the mergers announcement using the event study methodology based on Fama and Miller model and Cox and Portes two factor model to understand the shareholder wealth effect of bank merger. They found announcement has positive and significant wealth effect for bidder and Target Company.

Dugal, (2015), studying the impact of mergers on the operating and financial performance of Indian pharmaceutical companies examining various financial ratios of the sample of companies listed on the BSE from the period 2000-2006. For the purpose of analysis paired sample t-test is conducted. The results suggested that there was positive impact (t+1 year window) of mergers on the profitability of the acquiring firms but this impact has not sustained in (t+3, t+5 yr period) post merger in terms of selected profitability variables. The results reported in the study points to the positive impact of merger announcement on the operating and financial performance in short run (+1 yr).

Cornett, M., and Teheranian, H., (1992), examines the post-acquisition performance of large bank mergers between 1982 and 1987. On the whole, the merged banks outperform the banking industry. Their better performance appears to result from improvements in the ability to attract loans and deposits, in employee productivity, and in profitable asset growth. Further, they find a significant correlation between announcement-period abnormal stock returns and the various performance measures, showing that market participants are able to identify in advance the improved performance associated with bank acquisitions.

Delong, G., (2001), investigate the paradox of bank mergers: on average, bank mergers do not create value yet they continue to occur. Using cross-sectional analysis to examine 56 bank mergers between 1991 and 1995, tested several facets of focus and diversification. The study finds that upon announcement the market rewards the mergers of partners that focus their activities and geography. Long-term efficiency, however, is enhanced when the merger involves a relatively inefficient acquirer and payment is not made solely with cash. Long-term stock performance is further enhanced when the surviving firm does not engage in cross-subsidization. The study suggests market participants correctly realize that focusing mergers create value, but investors may need to rethink the facets of focus they value.

Sai and Sultana, (2013) evaluated the financial performance of two selected banks by considering various financial ratios, concluded that Net profit margin, Operating profit margin, Return on capital employed, Return on equity and Debt- Equity ratio there is significant difference but no significant difference with respect to Gross profit margin. Based on the analysis of 3 years financial ratios pre and merger data of HDFC bank data it can be concluded that Net profit margin, Operating profit margin, Return on capital employed, Return on equity and Debt-Equity ratio there is no significant difference in these ratios before after merger. However, significant difference with respect to Gross profit margin.

Marfo, E., Amoako, K, and Gyau, E., (2013), analyzes a merger in the oil industry; in the case of Chevron and Texaco. It is shown that merger participants are very asymmetric if prior costs of production differences are moderate. If cost differences are large, however, the more efficient firms participate in the mergers to enjoy production efficiency, while the least efficient firms are not attractive partners and, therefore, remain independent in the post-merger market. Moreover, the research tries to investigate Chevron share returns if the merger has achieved its goal of maximizing shareholders wealth.

Pawaskar, V., (2001), studied the impact of mergers on corporate performance. It compares the pre- and post-merger operating performance of the corporations involved in merger to identify their financial characteristics. Also, the effect on merger-induced monopoly profits is identified by looking at the persistence profile of the profits. Taking a sample of 36 cases of merger between 1992 and 1995, it is seen that there are no significant differences in the financial characteristics of the two firms involved in merger. The mergers seem to lead to financial synergies and a one-time growth. The analysis of the regression to norm shows that there is no increase in the post merger profits. The competitive process is not impeded with merger even when no strong anti-trust laws are present.

Duggal, and Neha, (2015) attempted to analyze the change in financial performance after merger of banks during the period from January, 2001 to December, 2006. A total of 26 banking merger taken in to consideration by collecting data from Bombay Stock Exchange. The study found that, Net Profit and Return on Capital Employed (ROCE) has shown significant improvement and as a whole merger has a positive impact on performance of banks.

Mahesh, and Rajeev, (2004), attempted to examine the changes in the productive efficiency of Indian Commercial Banks after the financial sector reforms initiated in 1992. By using stochastic frontier technique they estimated banks specific deposits, advance and investment efficiencies for the period 1985-2004. The study collected panel data of 94 banks for 20 years from performance highlights of Banks published by Indian Banks Association and Annual Accounts of Scheduled Commercial Banks published by Reserve Banks of India. The result shows that deregulation has favourable impacts on the performance of Public Sector Banks and marked improvement in Private Banks during the post liberalization period.

Shanmugam and Das, (2005), attempted to measure the technical efficiency of the Indian Banking industry from 1992 to 1999 by employing the stochastic frontier function methodology. The panel data of inputs and output of 94 Indian Commercial Banks from 1992-1999 have been compiled from the Statistical Tables relating to Banks in India published by the RBI. The results indicate that the efficiency of raising interest margin its time invariant, while the efficiencies of raising other output-non-interest income, investments and credits are time varying. The study also suggested State Bank Group and Foreign Banks are more efficient than their other counterparts.

Reddy and Bhat, (2006), examined the effects of deregulation on the technical efficiency of Commercial Banks in India by using Stochastic Frontier Approach (SFA) with specification of Cobb-Douglas Production Function for the period 1992-2004. The necessary information for the study were collected from Annual Accounts Data of Scheduled Commercial Banks and Statistical Tables relating to Banks in India published by the Reserve Bank of India (RBI) and PROWESS by (CMIE). The empirical results revealed that, in general, the technical efficiency of Commercial Banks increased during the post reform period. Public Sector Banks achieved relatively higher in terms of technical efficiency, Foreign Banks are more efficient in terms of net interest income and the Private Domestic Banks seemed to be relatively less efficient than others.

Sathya Swaroop Debasish, (2006), attempted to measure the relative performance of Indian Banks over the period 1997-2004 using the output-oriented CRR DEA model. The relevant panel data for the commercial banks were obtained from CMIE data bases. The study concluded that Foreign owned Banks were on an average more efficient and that new banks were more efficient than old ones. In terms of size, the smaller banks were globally efficient, but large banks were locally efficient.

Rampratap Sinha, (2006), tried to make a comparative assessment of public and private sector banks for reform period 1996-2003 by using Data Envelopment Analysis through intermediate cost efficiency. The study relied on the Statistical Table relating to Banks in India for bank wise data published by Reserve Bank of India on an annual basis. The study shows that, the observed Private Sector Commercial Banks have higher cost efficiencies than the observed Public Sector Commercial Banks, if non-increasing return to scale (NIRs) is assumed. However, the results change substantially if one assumes constant return to scale.

The various studies were reviewed to measure the impact of merger on financial performance of banks and DMUs by using share price data and accounting data. Some of the studied like Mallikarjunappa and Nayak (2013), Anand and Singh (2008), Dugal (2015), Cornett, and Teheranian, (1992), Marfo, Amoako, and Gyau, (2013) have shown that merger has the favourable impact on performance of banks and companies but studies like Pawaskar (2001), Sai and Sultana (2013), Delong (2001) going against and proved that merger does not have positive impact on performance.

### 3. OBJECTIVES

The present study attempt to focus on following objectives:

- To determine the technical efficiency score of all banks of State Bank group during the study period from 2005 to 2016.
- To measure the impact of merger on financial performance of State Bank of India.
- To test the significance difference among the banks of State Bank group

### 4. METHODOLOGY

For measuring the impact of merger of State Bank of India with State Bank of Saurashtra in 2009 and State Bank of Indore in 2010 on financial performance of State Bank of India pre & post period, the study used paired t-test by considering a very selective financial indicator like Earning Per Share(EPS), Price Earnings Ratio(P/E) and Market Price to Book Value of Equity(P/B) for the period of Four years before and after merger of State Bank of Saurashtra in 2009 and Five years before and after merger of State Bank of Indore in 2010.

The study also used Krushkal Wallis test to show the significant difference among the banks. It is considered as an appropriate method because of its robustness arising from lack of restrictive assumptions such as population normality and homoskedastic variance. It requires entire set of observations being ranked-higher the value, higher the rank and vice versa- then arranged in to  $n_{ix}$  matrix, where  $n_i$  represents the rank of the efficiency score. The formula for calculating the test statistic 'H' is as follows:

$$\left[ \frac{12}{N(N+1)} \sum_{i=1}^k \frac{R_i^2}{n_i} \right] - 3(n+1)$$

Where,

$$N = \sum n_i$$

$R_i$  = Size of  $i^{th}$  sample

DOF = Number of samples-1 i.e. k-1

To determine the technical efficiency score of banks and any other DMU, there are many parametric and non-parametric approaches i.e. parametric approaches includes Stochastic Frontier Analysis, Free Disposal Hull, Thick Frontier Analysis and Distribution Free Approach and non- parametric approaches includes Data

Envelopment Analysis i.e. Malmquist Total Factor Productivity index DEAP ( Frontier Version 4.1) 1996, developed by Tim Coelli. Charles et al. (1978) extended the single input-output model to a multiple input-output generalization. The input variables selected for the study are Total Assets, Loans and Advances, Advances to other and Deposits. The output variables selected for this study are Earning Per Share (EPS), Profit After Tax (PAT) and Total Income of all banks of State Bank group from 2005 to 2016 except Eight years data from 2009 to 2016 of State Bank of Saurashtra and Seven Years data from 2010 to 2016 of State Bank of Indore has been excluded because of merged with State Bank of India. The technical efficiency is measured as ratio of virtual output produced to virtual input used with the help of production approach on Constant Return to Scale (CRC) mode. Known as the CCR model (after their names) Charles et al. (1978) popularized the application of Data Envelopment Analysis (DEA). There are a number of papers that describe the methodology of DEA as applied to banking, what follows a brief description.

## 5. RESEARCH HYPOTHESIS

These are the following hypothesis has been set to measure the impact of merger on financial performance of State Bank of India by making a comparisons between pre and post merger period i.e. four years before and after in case of merger of State Bank of India with State Bank of Saurashtra in 2009 and five years before and after in case of merger of State Bank of India with State Bank of Indore in 2010:

Null Hypothesis: Merger has no effect on performance of State Bank of India.

Alternative Hypothesis: Merger has effect on performance of State Bank of India.

The study applied Krushkal Wallis test to show whether there are any significant differences among the banks or not. The following hypothesis has been set:

$H_0$ : There is no significant difference among the banks of State Bank group.

$H_a$ : There is significant difference among the banks of State Bank group.

## 6. SOURCES OF DATA

Mostly the secondary data is used for this present study collected from Annual Data of Scheduled Commercial banks and statistical table relating to banks in India published by RBI, PROWESS online data base of CMIE, BSE and NSE website. The study has based on data from 2005 to 2016 of State Bank of India, State Bank of Bikaner and Jaipur, State Bank of Travancore, State Bank of Maysore, State Bank of Hyderabad, State Bank of Indore, State Bank of Saurashtra and State Bank of Patiala.

## 7. SCOPE AND LIMITATION

This present study has particularly considers a very small sample size where only selected banks of State Bank Group has focused i.e. State Bank of India, State Bank of Bikaner and Jaipur, State Bank of Travancore, State Bank of Maysore, State Bank of Hyderabad, State Bank of Indore, State Bank of Saurashtra and State Bank of Patiala for Twelve years from 2005 to 2016. On the other hand the study could not able to cover other financial aspects of bank of State Bank group as well as other scheduled Commercial Banks are completely excluded from this study.

## 8. EMPIRICAL RESULTS

The present research is attempting to highlight the following empirical data followed by analysis and interpretation of those in order to cater the needs and requirements of thrust objectives.

Table 1 shows the findings on impact of merger on financial performance of State Bank of India in respect of the entire selected financial indicator that, in both the merger case of 2009 and 2010, the Mean value has been improved positively and also the impact has been significant enough as P value is significant and more than 0.05. So, it can be concluded that merger has definitely a favourable impact on financial performance of State Bank of India. Table 2 shows the overall ranking of efficiency score of all banks of State Bank group, which helps for Krushkal Wallis test. Where test conducted at 5% level of significance with a degree of freedom of 7 by rejecting alternative hypothesis. It means, there are no significance differences among the banks. Table 3 on efficiency score of all banks of State Bank group shows that, State Bank of Indore and State Bank of Saurashtra have been the best performer along with State Bank of India have higher Mean value, whereas State Bank of Travancore has been the lower performer. Table 4 depicts descriptive statistics of output variable shows that in 2013 EPS and PAT have shown higher mean value in comparison to other financial years, whereas in 2009 total income has the higher mean value. Table 5 shows the descriptive statistics of input variables in which the mean value of total assets and deposits and advance have been increasing gradually right from the beginning of study period i.e. from 2005 to 2016. But in 2007 advances to others has higher mean value and in 2014 loan and advances have higher mean value in comparison to other financial years.



**CONCLUSION**

The Indian banking sector is the backbone of Indian financial system, playing a very important role in economic development of the country and also going by remarkable phase since last two decade witnessing high NPA, lower profitability etc. So, it is becoming very essential to go for merger for wider geographical coverage and maximising financial stability of banks. The present study has concluded with the results that, merger has positive impact on financial performance of bidder bank which can paves the way for further merger of State Bank of India with remaining associate banks by March 2017 and also found that, there are no significance difference among the banks.

**Table-1 Paired Sample t-test of Various Financial Indicator Pre & Post Mergers of State Bank of India**

Financial Indicators	Mean Value Pre & Post SBI Merger with SBS in 2009 & t- Value Pre & Post SBI Merger with SBS in 2009 & with State Bank of Indore in 2010.				t- Value Pre & Post SBI Merger with SBS in 2009 & with State Bank of Indore in 2010.	
	(-4)	(+4)	(-5)	(+5)	(-4,+4)	(-5,+5)
<b>Total Return</b>	-1.1275 (6.304425)	-0.17 (0.325014)	-0.03 (10.75085)	-0.006 (3.67578)	-0.50227* [0.325014]	-0.01356* [0.494916]
<b>EPS</b>	82.7 (285.7464)	143.53 (2646.846)	94.72 936.7118	114.122 (5181.124)	- 3.08241* 0.027017	-0.44721* [0.338935]
<b>P/E</b>	12.46 (5.1982)	17.3 (42.76347)	11.462 8.87867	17.858 (31.90442)	-1.28235* [0.144914]	-1.8195* [0.07148]
<b>P/B</b>	1.76 (0.067467)	1.975 (0.284167)	1.642 0.12022	1.732 (0.33062)	-0.66805* [0.275951]	-0.25535* [0.405524]

Values in ( ) denotes Standard Deviation.

Values in [ ] denotes Significance t values.

\*Denotes significant at 0.05.

EPS denotes Earning per Share.

P/E denotes Price Earnings Ratio.

P/B denotes Market Price to Book value of Equity.

**Table-2 Overall Ranking of Efficiency Score of All Banks of SBI Group**

S. No.	Year	State Bank Of Bikaner & Jaipur	State Bank Of Hyderabad	State Bank Of India	State Bank Of Indore [Merged]	State Bank Of Mysore	State Bank Of Patiala	State Bank Of Saurashtra [Merged]	State Bank Of Travancore
1	2005	15	1	1	1	1	1	1	1
2	2006	1	1	1	1	16	1	1	8
3	2007	13		1	1	1	1	1	1
4	2008	1	1	1	1	3	1	1	10
5	2009	1	1	1	1	1	1		1
6	2010	1	1	1		1	1		1
7	2011	1	1	1		1	1		1
8	2012	6	14	1		2	1		1
9	2013	7	1	1		1	1		1
10	2014	12	11	1		5	1		1
11	2015	1	9	1		1	1		1
12	2016	4	1	1		1	1		1
TOTAL		63	42	12	5	34	12	4	28

**Table-3 Efficiency Score of all Banks of SBI Group**

S. No.	YEA R	State Bank Of Bikaner & Jaipur	State Bank Of Hyderabad	State Bank Of India	State Bank Of Indore [Merged]	State Bank Of Mysore	State Bank Of Patiala	State Bank Of Saurashtra [Merged]	State Bank Of Travancore
1	2005	0.91885	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	2006	1.00000	1.00000	1.00000	1.00000	0.91805	1.00000	1.00000	0.97416
3	2007	0.92515	0.90658	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

4	2008	1.00000	1.00000	1.00000	1.00000	0.98911	1.00000	1.00000	0.97184
5	2009	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	Merged	1.00000
6	2010	1.00000	1.00000	1.00000	Merged	1.00000	1.00000	Merged	1.00000
7	2011	1.00000	1.00000	1.00000	Merged	1.00000	1.00000	Merged	1.00000
8	2012	0.98380	0.92037	1.00000	Merged	0.99048	1.00000	Merged	1.00000
9	2013	0.98269	1.00000	1.00000	Merged	1.00000	1.00000	Merged	1.00000
10	2014	0.94880	0.96952	1.00000	Merged	0.98551	1.00000	Merged	1.00000
11	2015	1.00000	0.97286	1.00000	Merged	1.00000	1.00000	Merged	1.00000
12	2016	0.98533	1.00000	1.00000	Merged	1.00000	1.00000	Merged	1.00000
<b>TOTAL SCORE</b>		<b>11.74461</b>	<b>11.76933</b>	<b>12.00000</b>	<b>5</b>	<b>11.88316</b>	<b>12.00000</b>	<b>4</b>	<b>8.97184</b>
<b>MEAN Value</b>		<b>0.978718</b>	<b>0.980777</b>	<b>1.00000</b>	<b>1</b>	<b>0.990263</b>	<b>1</b>	<b>1</b>	<b>0.747653</b>

Table-4 Descriptive Statistics of Output Variables

YEAR	EPS		PAT		TOTAL INCOME	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
2005	507.64	500.8688	7093.588	14547.29	67631.8	132729.3
2006	682.4938	802.6828	7444.35	14840.56	74527.04	145835.9
2007	912.9338	859.2074	8213.813	15081.38	79637.65	148624.4
2008	1048.203	981.6016	11255.36	22688.67	104006.9	194440.4
2009	969.6429	1134.798	16991.71	32754.35	151007.2	271240.7
2010	1629.18	2708.374	19769.08	30893.99	217565.4	375028.3
2011	1629.18	2708.374	19769.08	30893.99	217565.4	375028.3
2012	1764.18	2833.609	25553.58	44949.35	271427.4	465254
2013	1710.728	2814.614	29636.4	54652.09	308218.9	519325.1
2014	1276.51	2240.869	22778.45	42291.43	348420.3	597443.2
2015	1486.487	2933.926	27167.43	51012.72	385262.3	674513.3
2016	-147.348	3127.162	19313.08	39919.9	422110	750696

Table-5 Descriptive Statistics of Input Variables

YEAR	Total assets		Loans & advances		Advances to others		Deposits & advances	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
2005	784049.8	1543200	4732.9	6807.4	36351.69	80123.6	985896.9	1904851
2005	865399.9	1649710	2609.986	1384.235	41495.51	85134.64	1142611	2135396
2007	1007622	1886114	4947.343	7389.926	49774.93	113043.6	1394682	2563781
2008	1265052	2410679	5455.788	8045.727	7169.475	9597.34	1709496	3170844
2009	1829752	3452098	7562.457	13065.37	8309.1	13038.43	2494988	4569185
2010	2664830	4697932	11575.07	23078.94	11603.43	23067.59	3733360	6458614
2011	2664830	4697932	11575.07	23078.94	11603.43	23067.59	3733360	6458614
2012	2956341	5109075	16208.23	32449.03	16208.23	32449.03	4261692	7281064
2013	3447478	6000518	13237.32	22545.2	13237.32	22545.2	4996115	8573733
2014	3868005	6900355	27255.14	51231.56	27255.14	51231.56	5654735	9993796
2015	4352241	7921955	23101.1	38868.34	23101.1	38868.34	6189622	11067778
2016	4780064	8748703	25805.28	49713.19	25805.28	49713.19	6816403	12316701

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