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Efficiency of Public & Private Commercial Banks in India A Comparative Study

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Abstract: *In growing economy banks have promised major share of source of money for meeting the numerous obligations of their regulars, patrons and various organizations in day to day marketable environment, though the banks will produce revenue from the business transaction under the kindliness of fluctuations in their operations. The contemporary study attempts to empirically observe the efficiency of PublicandPrivate commercial banks considering interest income to total asset ratio, Total Income to Total asset ratio, Interest expended to Total asset ratio and Total expenditure to total asset ratio taken as input and output for the banks and using non – parametric technique,(Data envelopment analysis) which evaluate efficiency of bank through multiple output and input.*

Keywords: Efficiency of Banks, Data envelopment analysis,*Public (SBI and Andhra bank) and Private (ICICI Bank and Kotak Mahindra) Commercial Banks*

I. Introduction

Management always looks after the effective ness, efficiency and performance of banks and it indicates the success of the strategic objective, goals of the firms. In the similar manner performance of any economy depends upon the efficiency of its financial system. The performances of financial system of a country determine its economic growth indicators. Indian financial system is based on the Indian banking industry and its capital market. The Indian commercial banks are traditionally playing most important role as financial intermediaries. The banks comprise more than three- fifth of financial system assets and dominate the whole banking sector in India and played a central role in mobilizing savings in growth process. Anil K. Sharma et al., (2012)[1] found that banks having low deposits and high total assets apparent to be on efficiency of commercial banks. Banks diversification into other activities into other activities appears to have a negative impact and high probability of inefficiency in banks. Banks are earning profits through traditional activities only. Big banks profit share is obtained by these big players in industry and therefore higher probability of these banks being on efficiency frontier. Vinod R.R (2013)[2] they tried to find current operation great ness of the operations, the bank has generated a deposit higher (6.33%) than the required level, and non-interest income bank should be able to generate revenue of 115.36 from the existing level of 85.24 (55% more).

II. Literature Review

There have been several revisions that analysed bank efficiency in India. The studies on analyzing the efficiency of the Indian banks, and evaluation among them, are Rangarajan and Mampilly and Thyagarajan (1972) (1975). . Kwan and Eisenbeis (1997). Both identifications provide evidence that both efficiency and capital pertinent determinants of bank risk. Jackson and Fethi (2000) study on Turkish banks originate that the profitable banks are additional likely to operate at sophisticated levels of technical efficiency In order to assess the inter-temporal associationsamongst problem loans, cost efficient and capital for a sample of US Banks from 1985 to 1994 Granger- causality method was engaged by Berger and Young (1997). A simultaneous equivalenceagenda was adopted to test hypothesis about the interrelationships among the risk, capitalization and operating efficiency. The efficiency of Italian banks was dignified by employing stochastic cost-frontier analysis. Lucchetti et al.,(2001). The results specified that measurements of created credit as well as bank explicit efficiency scores are positively and significantly connected to regional economic growth. The study accomplishes that there appear to be economics of scale at the commencement while they do not appear to characterize more in fresh years. Akmal and Saleem (2008) deliberate the technical efficiency of 30 banks efficiency. The consequencesdesignate that banking efficiency has enhanced since 2000 and that foreign banks are additional efficient than local private and public owned banks. Luo (2003) recommends that the possibility of the bank failure can be projected by the examining the complete technical efficiency of the bank's productivity banks that are not originate efficient, as per the satisfactory levels, may be locked miserable which

are highly efficient, Luciano and Regis (2007) using DEA examined the efficiency of Italian banking system.Dwivedi and charyulu (2011) strained to examine the behavior of various market and regulatory creativities on efficiency improvements of Indian banks. Prabhakar, Sheriff and Nagadevera (2012) rummage-sale to statistically quantity the efficiency of banks in India for the period 2008-2010. Tim Coelli A guide to DEAP version 2.1: Data Envelopment Analysis (Computer Program) Centre for Efficiency and Productivity Analysis they describes a computer program which has been written to conduct DEA for purpose of calculating efficiency of banks.

2.1Statement of the problem:

Banks are answering towards thecommercialissuesin a different way. The efficiency of banks be contingent upon the functioning level due to the changes in businessoperations and make profits more or less with respective of total income received and total expended of paid for various activities with effective utilization of bank resources do play a key role in the maximizing the banking efficiency.

2.3. Objectives

1. To know the efficiency of public and private banks operating in India.
2. Toknow the bank efficiencyin terms of bank sizes and causes for inefficiency with a given level of variables.

2.4Data and Methodology

We apply non-parametric operation research based Data envelopment Analysis to assess the efficiency of banks. Efficiency scores are obtained by using DEA model. The data collected from scheduled commercial banks operating in India for the period of 2008-2013 is applied to assess efficiency of banks. Therefore our sample size is public State bank of India and Andhra Bank.PrivateBanks are ICICI Bank and Kotak Mahindra banks. The data obtained from the various published reports of RBI and Capitalize financial database.DEA model is more appropriate for practical scenario (sufian, 2009; Casu et al, 2003; Sathye et al., 2003; Gupta et al.,2008)

Output variables	**Input variables**
1. Interest Income to Total asset	1. Interest Expenditure to Total asset ratio
2. Total Income to Total asset	2. Total Expenditure to Total asset ratio

III. Tools For Efficiency Measurement:

DEA model procedures the efficiency of each DMU which obtained as a maximum of a ratio of total sum of weighted output to total sum of weighted inputs. Consequently, the efficiency can be defined as follow.

$$\text{Efficiency} = \frac{\text{WEIGHTED SUM OF OUTPUT}}{\text{WEIGHTED SUM OF INPUT}} \qquad (1)$$

$$\text{Max } h_o(u,v) = \frac{\sum_{r=1}^{s} V_r\, Y_{ro}}{\sum_{\mathrm{r}=1}^{\mathrm{m}} U_i\, X_{io}} \qquad (2)$$

$$Subjectto = \frac{\sum_{r=1}^{s} V_r\, Y_{rj}}{\sum_{\mathrm{r}=1}^{\mathrm{m}} U_i\, \mathrm{X}_{ij}} \leq 1 : \mathrm{j} = 1,2 \ldots \ldots . n$$

$$U_i \geq 0;\ I = 1,2 \ldots \ldots \ldots M$$

$$V_r \geq 0;\ I = 1,2 \ldots \ldots \ldots S$$

Where X_{ij} = the amount of input *i* utilized by the J_{th}DMU

Y_{rj} =the amount of output *r* produced by the J_{th}DMU

U_i = weight given to input *i*

V_r = weight given to output *r*

Following the charms-cooper transformation (1962), one can select a representative solution (v, u) for which

$$\sum_{t=1}^{s} (U_i \times X_{io} = 1) \qquad (3)$$

Hence, the denominator in the efficiency score ***h****o* shown above set equal to one, the transformed linear programming model for DMU_0 can be written as follow.

$$Subject\ to \qquad \sum_{r=1}^{s} \boldsymbol{V_r Y_{rj}} - \sum_{t=1}^{m} \boldsymbol{U_i X_{ij}} \leq 0\ ;\ \ j = 1,2, \dots \dots \dots n \ \ Max\ Z_o = \sum_{t=1}^{s} V_r \ \times \ Y_{r\,o}$$

$$\sum_{t=1}^{m} \boldsymbol{U_i X_{io}} = 1$$

$$U_i \ \geq 0;\ \ i = 1,2 \dots \dots \dots m$$

$$V_r \ \geq 0;\ \ I = 1,2 \dots \dots \dots S$$

The linear programming model shown above will be run ***n*** times in identifying the relative efficiency scores of all the DMUs. Each DMU select the input and output weights that maximize its efficiency score. Generally, a DMU is considered to be efficient if it obtain a score of 1.00 implying 100% efficiency; whereas a score of less than 1.00 implies that it is inefficient.

IV. Analysis And Inferences:

Efficiency Of Public Sector Commercial Banks

STATE BANK OF INDIA					
Year	**IE to TA R**	**TI to TA**	**IEX to TA**	**TE to TA**	**Efficiency**
2000	8.49	9.85	5.84	9.07	100%
2001	8.28	9.51	5.63	9.00	99.30%
2002	8.56	9.76	5.95	9.07	99.70%
2003	8.27	9.80	5.62	8.97	96.80%
2004	7.47	9.34	4.73	8.26	97.60%
2005	7.05	8.60	4.02	7.66	98.80%
2006	7.25	8.74	4.08	7.85	95.50%
2007	6.97	8.28	4.14	7.48	96.40%
2008	6.78	8.09	4.43	7.15	100%
2009	6.61	7.93	4.45	6.98	100%
2010	6.74	8.16	4.49	7.29	95.10%
2011	6.65	7.87	3.99	7.27	90.30%
2012	7.98	9.05	4.73	8.17	100%
2013	7.64	8.66	4.81	7.76	96%
Average	**7.48**	**8.83**	**4.78**	**8.00**	**97.54%**
Variance	**0.48**	**0.48**	**0.45**	**0.54**	**0.00**

ANDHRA BANK				
IE to TA R	**TI to TA**	**IEX to TA**	**TE to TA**	**Efficiency**
9.12	10.59	6.49	9.83	99.20%
9.20	10.20	6.74	9.61	99.50%
9.69	11.15	6.95	10.18	100%
8.89	11.34	5.84	9.34	100%
8.25	10.77	4.87	9.04	97.10%
6.95	9.25	3.68	7.46	100%
6.58	7.70	3.70	6.34	100%
6.97	8.07	3.99	6.94	100%
7.58	8.75	5.07	7.73	100%
7.85	8.97	5.47	8.01	99.90%
7.05	8.12	4.62	6.96	98.80%
7.61	8.44	4.66	7.27	100%
9.07	9.76	6.07	8.69	100%
8.82	9.54	6.26	8.66	99.40%
8.12	**9.48**	**5.32**	**8.29**	**99.56%**
0.96	**1.33**	**1.14**	**1.36**	**0.00**

State bank of India Average of Interest earned to total assets ratio is 7.48 percent and Total Income to total asset ratio is 8.83 percent as a output and Interest expended to total asset ratio is 4.78 percent, average of Total expenditure to total asset ratio is 8 percent, here the output one is greater than the input one and output two is greater than the input two and the average efficiency of banks are 97.54 percent.

Andhra Bank: average of interest earned to total asset ratio is 8.12 percent as an output 1 and Average Total Income to total asset ratio is 9.48 percent as an output 2 and Average of interest expended to Total asset ratio is 5.32 percent as a input 1 and Total expenditure to total asset ratio is 8.93 percent and average efficiency of bank is 99.56 percent for the study period 2000-2013.

Indicatesthe Andhra bank has99.56 percent more efficient in terms of generating the output with controlling of input variables. State Bank of India has average efficiency is 97.54 percent indicate less efficiency in terms of generating output with given level of controlling the input variables.

EFFICIENCY OF PRIVATE SECTOR COMMERCIAL BANKS

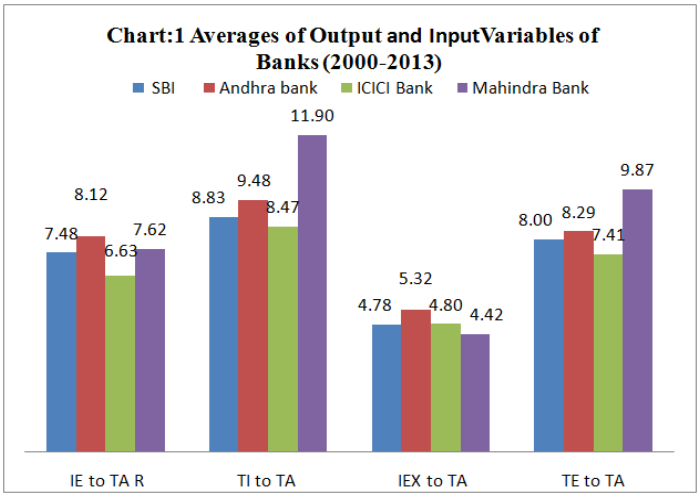
ICICI BANK					
Year	**IE to TA R**	**TI to TA**	**IEX to TA**	**TE to TA**	**Efficiency**
2000	7.06	8.67	5.52	7.80	100%
2001	6.29	7.41	4.24	6.54	100%
2002	2.07	2.63	1.50	2.38	92.40%
2003	8.77	11.73	7.44	10.60	91.20%
2004	7.10	9.55	5.60	8.24	95.80%
2005	5.61	7.65	3.92	6.45	95.60%
2006	5.48	7.49	3.82	6.48	97.20%
2007	6.67	8.69	4.75	7.79	95.90%
2008	7.70	9.92	5.87	8.88	98.70%
2009	8.20	10.34	5.99	9.35	97.30%
2010	7.07	9.08	4.84	7.97	99.50%
2011	6.39	8.03	4.17	6.76	99.20%
2012	6.86	8.39	4.66	7.07	100%
2013	7.47	9.02	4.88	7.47	100%
Average	**6.63**	**8.47**	**4.80**	**7.41**	**97.34%**
Variance	**2.35**	**3.94**	**1.72**	**3.27**	**0.00**

KOTAK MAHINDRA BANK				
IE to TA R	**TI to TA**	**IEX to TA**	**TE to TA**	**Efficiency**
5.19	23.91	7.14	18.72	100%
4.47	22.72	5.99	18.29	100%
8.34	12.82	3.69	9.09	100%
8.05	11.83	4.03	9.75	100%
4.96	6.63	2.03	5.28	100%
6.45	8.48	2.99	7.18	100%
6.82	9.15	3.33	7.99	100%
6.80	8.24	3.51	7.53	100%
8.95	10.05	4.63	9.01	100%
10.68	11.22	5.39	10.26	100%
8.70	9.82	3.73	8.32	100%
8.24	9.77	4.11	8.17	100%
9.41	10.90	5.59	9.25	100%
9.61	11.00	5.78	9.37	100%
7.62	**11.90**	**4.42**	**9.87**	**100%**
3.29	**24.08**	**1.79**	**13.85**	**0.00**

ICICI Bank has the average of Interest earned to total asset ratio is 6.63 percent as an Output 1 and Average of Total Income to Total asset ratio of bank is 8.47percent as a Output2 and Average of Total expended to total asset ratio of bank is 4.80 percent as a Input 1 and Average of Total expenditure to Total asset ratio bank is 7.41 percent and average efficiency of banks is 97.34 percent.

Kotak Mahindra bank has average of Interest earned to total asset ratio is 7.62 percent as Output 1 and average of Total income to total asset ratio of bank is 11.90 percent as a Output 2 and average of total interest expended to total asset ratio of bank is 4.42 percent as a input and Total expenditure to total asset ratio of bank is 9.87 percent as a Input 2 and finally the average efficiency of bank is 100 percent for the study period.

When comparing the banks in terms average efficiency of Kotak Mahindra bank has (100 percent) more efficient than the ICICI Bank (97.34 percent).Banks amendments into other activities seem to have aundesirable impact and high probability of inefficiency of banks.Banking sector still earning profit through outdated activitiesonly. Higher profitability of any bank definitely leads to higher probability of efficiency in bank.



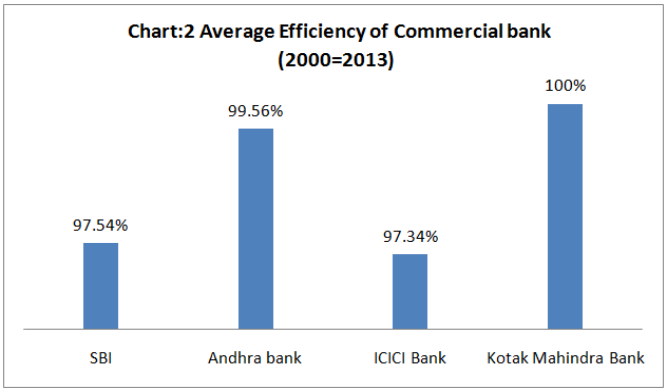


Chart 2: it indicates that the banks with larger the size are less efficiency of banks SBI 97.54 percent and ICICI Bank has 97.34 percent and banks are more efficient with smaller in size and here the banks are bigger in size are not under the control of operations and banks are having good control in operations and implementation on new schemes and services to felicitating to customers in small size are utilizing their resources at optimal level in earning revenue from time to time with competing with banks have larger the network and less important customer services.

V. Conclusions

Indian banking system large banks have a less control over the operations in industry and therefore small size banks are efficient and controlling their operations in the forms of providing the modern banking and financial services and updating technological services private sector banks are more in advance and generating revenue from non-traditional methods and services. Banks having low Total income and high total assets apparent to be on inefficiency of Indian scheduled commercial banks.

Small size banks and Efficient of banks benefited from the reduction of the total expenditure and total interest paid on their deposits.The banks are worked to catch up with the highly efficient, including private banks that have moved into the Indian market. Specific initiatives that have helped them up include modification into such areas as trading and services for individuals, the improvement of settlement systems, the installation of more ATMs, computerization and other forms of technological innovation, and share lifts and restructuring by public sector banks. .

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