Research Paper

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# A Study on Efficieny Indicators of Public and Private Sector Commercial Banks in India

Education

**KEYWORDS :** Private and Public sector banks, Efficiency, Data envelopment Analysis, Correlations

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## ABSTRACT

*In developing economy banks have taken major portion of supply of money for meeting the various obligations of their clients, customers and various organizations in day to day business environment, though the banks will operate their business transaction under the sensitivity of changes in economic indicators. The present study attempts to empirically examine the efficiency of Public and Private sector commercial banks considering various industry specific factors by using non – parametric technique of Data envelopment analysis. And also it examines the relationship between industry specific factors and efficiency of banks. The Industry specific factors considered are cost of deposit ratio, Ratio of Intermediation cost to total asset, Ratio of net interest income to total assets and Ratio of return on equity. The country specific factors also do have an influence on the efficiency of banks along with the changes in industry specific factors. GDP Growth rate, Inflation rate, Cash Reserve Ratio and Statutory liquidity ratio are taken as country specific factors.*

## 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).

## LITERATURE REVIEW

There have been several studies that analysed bank efficiency in India. The studies on analyzing the efficiency of the Indian banks, and comparison among them, are Rangarajan and Mampilly (1972) and Thyagarajan (1975). In order to assess the inter-temporal relationships among problem loans, cost efficient and capital for a sample of US Banks from 1985 to 1994 Granger- causality method was employed by Berger and Young (1997). A simultaneous equation framework was adopted to test hypothesis about the interrelationships between the risk, capitalization and operating efficiency. Kwan and Eisenbeis (1997). Both papers provide evidence that both efficiency and capital relevant determinants of bank risk. Jackson and Fethi (2000) study on Turkish banks found that the profitable banks are more likely to operate at higher levels of technical efficiency. The efficiency of Italian banks was measured by employing stochastic cost-frontier analysis. Lucchetti et al., (2001). The results indicated that volume of originated credit as well as bank specific efficiency scores are positively and significantly related to regional economic growth. Luo (2003) suggests that the likelihood of the bank failure can be predicted by the analyzing the overall technical efficiency of the bank's profitability banks that are not found efficient, as per the acceptable levels, may be closed down which are highly efficient, Luciano and Regis (2007) using DEA investigated the efficiency of Italian banking system. The study concludes that there seem to be economics of scale at the beginning while they do not seem to characterize more in recent years. Akmal and Saleem (2008) studied the technical efficiency of 30 banks efficiency. The results indicate that banking efficiency has improved since 2000 and that foreign banks are more efficient than local private and state owned banks. Dwivedi and charyulu (2011) tried to analyze the impact of various market and regulatory initiatives on efficiency improvements of Indian banks. Prabhakar, Sheriff and Nagadevera (2012) used to statistically measure the efficiency of banks in India for the period 2008-2010.

### Statement of the problem:

Banks are responding to economic factors differently. The efficiency of banks depends upon the strategies implementation at operational level due to the changes in industry factors (CRR and SLR), economy (GDP growth rate) and Govt etc... these indicators do play a key role in the various types of transactions and influence on the banking efficiency.

### Objectives

- To know the efficiency of public and private sector banks operating in India.
- To know the causes for inefficiency of bank and its impact level on efficiency of bank
- To know the relationship between the bank efficiency indicators and economic indicators like GDP Growth rate, CRR, SLR and Inflation rate.

### Research Methodology: Data Collection

The data is collected from the year wise publication from bank websites and issues of Statistical Tables Relating to Banks in India by RBI, the central bank of the country. This publication provides various details such as liabilities and assets, deposits, advances, investment and expenses of commercial banks in India. It also provides consolidated financial statement and balance sheet and financial report of selected ratios of scheduled commercial banks operating in India.

**Method of sampling**: The Banks are selected based on paid up capital. Totally 6 banks are selected in which are 3 Public and 3 Private Sector banks have chosen for the study. The public sector banks are State Bank of India, Andhra Bank, and Overseas Bank. Private Sector Banks are selected for the study viz., ICICI Bank, Axis Bank, and IndusInd bank.

**Reference Period:** The period of data is 11 years. (From 2001 to 2011.)

**Data Analysis and Interpretations:**
The key financial ratios are calculated and are used for evaluating the individual bank Performance and Comparison of Private and Public Sector banks efficiency. Data Envelopment Analysis tool (Non- Parametric model) has been used for evaluating Individual Bank efficiency. Correlation analysis is used for measuring relation between dependent variable (efficiency of banks) and their independent variables (input and output factors).

In the DEA methodology, formerly developed by Charnes, Cooper and Rhodes (1978) (CCR), efficiency is defined as a weighted sum of outputs to a weighted sum of inputs, where the weights structure is calculated by means of mathematical programming and constant returns to scale (CRS) are assumed and evaluated through DEA On line software.

The Outputs considered are:
1. Ratio of net interest income to total assets (Net interest margin),
2. Return on Equity.

The Inputs considered are:
1. Cost of deposits
2. Ratio of Intermediation cost to total assets.

The method of DEA model applied for analysis of data is Basic remedial model with Input Oriented.

**Section A: Private sector Commercial banks** Efficiency of the bank always depend on the performance efficiency indicators of any bank, which are considered as weighted sum of output divided by weighted sum of input, in this study inputs are *cost of deposits*, *Ratio of Intermediation cost to total asset*, and outputs are *Ratio of Interest Income to Total assets,* and *Return on Equity.*

**Efficiency Indicators of ICICI Bank:** Table 1 shows that Efficiency indicators of bank vary with changes in period to period for 11 years, the cost of deposits fluctuated with lowest ratio of .0485 in the period 2002 and highest ratio 0.1649 in the period 2003, Ratio of Intermediation cost to total assets ratio lowest was .005 in the year 2002 and highest ratio .031 in the year 2003 remaining years fluctuated between these values. And output indicators values ratio of Interest income to total assets lowest value 0.020 in the year 2002and highest ratio was 0.0819 in the year 2009 here, the interest income is less when comparing total asset, which minimize the efficiency of bank. Another output Roe which had the lowest value .045672 in the year 2002 and highest value is 0.20 in the year 2004.

Table-1: Efficiency & Efficiency indicators of ICICI Bank (%)

| Year | Cost of deposits | Ratio of intermediation cost to total assets | Ratio of net interest income to total assets | Return on equity) | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.051145 | 0.016424 | 0.062935 | 0.133095 | 0.9000 |
| 2002 | 0.048587 | 0.005892 | 0.02067 | 0.045672 | 0.9800 |
| 2003 | 0.164918 | 0.031201 | 0.087706 | 0.173969 | 0.5600 |
| 2004 | 0.103001 | 0.0236 | 0.071022 | 0.204369 | 0.8900 |
| 2005 | 0.065828 | 0.018954 | 0.056125 | 0.159778 | 0.6400 |
| 2006 | 0.058137 | 0.02098 | 0.054833 | 0.114387 | 0.7700 |
| 2007 | 0.070966 | 0.025677 | 0.066716 | 0.127923 | 0.6700 |
| 2008 | 0.096077 | 0.027152 | 0.07701 | 0.089471 | 0.6200 |
| 2009 | 0.104081 | 0.028461 | 0.081973 | 0.075871 | 0.6200 |
| 2010 | 0.087085 | 0.028129 | 0.07074 | 0.077976 | 0.6200 |
| 2011 | 0.075164 | 0.021156 | 0.063939 | 0.093507 | 0.6200 |
| | | Average efficiency = | | | 0.7173 |

**Efficiency Indicators of ICICI Bank:** Efficiency indicator shows the lines of indicator of efficiency which are directly impact on the efficiency of bank, when we observed above the four indicators are different ways which the banks operate under conditions of changes in economic environment. The input indicators value is increasing high the efficiency of bank will decreasing and when cost of inputs is low, efficiency of bank will increasing. And output values viz., ratio of net interest income to total assets and return on equity values are low the efficiency will decrease and these values are low.

**Average Efficiency of ICICI Bank:** It shows efficiency of ICICI bank low efficiency 0.5600 in the year 2003 in this year the cost of deposits and Ratio of intermediate cost to total assets is high and outputs ratio of interest income to total assets are low when compared to cost of deposits and high efficiency 0.9800 in the year 2002 in this year output values are high when comparing the input values, here in the year 2007 on words the bank efficiency value was decreased and coincide with the value of ROE when roe decreased the bank efficiency also decreased.

Table -2: Efficiency Indicators of Axis Bank & Efficiency

| Year | Cost of deposits | Ratio of intermediation cost to total assets | Ratio of net interest income to total assets | Return on equity | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.075148 | 0.022383 | 0.091962 | 0.160217 | 1.000 |
| 2002 | 0.07866 | 0.021683 | 0.096948 | 0.228851 | 1.000 |
| 2003 | 0.068467 | 0.03125 | 0.088945 | 0.442063 | 1.000 |
| 2004 | 0.057395 | 0.033359 | 0.082464 | 0.321814 | 0.910 |
| 2005 | 0.043716 | 0.025722 | 0.069464 | 0.319309 | 0.920 |
| 2006 | 0.044377 | 0.022079 | 0.065759 | 0.19075 | 0.960 |
| 2007 | 0.045781 | 0.021577 | 0.069736 | 0.170422 | 0.870 |
| 2008 | 0.058054 | 0.018429 | 0.075803 | 0.177137 | 0.900 |
| 2009 | 0.063103 | 0.018613 | 0.078497 | 0.179065 | 0.880 |
| 2010 | 0.053781 | 0.018316 | 0.070541 | 0.237152 | 0.910 |
| 2011 | 0.055019 | 0.019955 | 0.076136 | 0.195161 | 0.910 |
| | | Average Efficiency = | | | 0.932727 |

**Efficiency Indicators of Axis Bank:** The input indicators are cost of deposits and Ratio of intermediate cost to total assets, the outputs are Ratio of net interest income to total assets and Ratio of Return on equity. The cost of deposits to total assets ratio is low 0.043716 in the year 2005 and high value 0.07866 in the year 2002. The ratio of intermediate cost to total assets is low 0.018316 in the year 2010 and high ratio 0.033359in the year 2004. The ratio of net interest income to total assets is low 0.065759 in the year 2006 and high value 0.096948 in the year 2002. The roe is low 0.170422 in the year 2007 and high value 0.442063 in the year 2003.

It represents the behavior of bank efficiency when changes in the value of indicators, here the value of all input indicators like the ratio of intermediate cost to total assets value for all years are low and cost of deposits ratio is lies above the ratio of intermediate cost to total assets, when comparing the all input indicators and output indicator of the bank, the output indicators like return on equity and interest income to total assets indicator values are higher than input indicators.

**Average Efficiency of Axis Bank:** it represent the efficiency behavior of bank when changes in indicators of bank, efficiency

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of bank in the initial years from 2001 to 2003 have maintained high efficiency 1 and later in the years 2007 and 2009 banks have low efficiency.870 and .880 respectively, it causes the output indicators in these years are low.

Table-3:Efficiency Indicators of IndusInd Bank & Efficiency

| Year | Cost of deposits | Ratio of intermediation cost to total assets | Ratio of net interest income to total assets | Return on equity | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.0792 | 0.0119 | 0.0842 | 0.0745 | 0.930 |
| 2002 | 0.0651 | 0.0093 | 0.0696 | 0.0903 | 0.910 |
| 2003 | 0.0650 | 0.0351 | 0.0750 | -0.0040 | 1.000 |
| 2004 | 0.0598 | 0.0250 | 0.0654 | 0.3286 | 1.000 |
| 2005 | 0.0548 | 0.0154 | 0.0726 | 0.2534 | 1.000 |
| 2006 | 0.0582 | 0.0182 | 0.0674 | 0.0425 | 1.000 |
| 2007 | 0.0696 | 0.0191 | 0.0717 | 0.0646 | 0.930 |
| 2008 | 0.0830 | 0.0199 | 0.0825 | 0.0556 | 0.840 |
| 2009 | 0.0837 | 0.0243 | 0.0836 | 0.0892 | 0.780 |
| 2010 | 0.0682 | 0.0245 | 0.0765 | 0.1463 | 0.820 |
| 2011 | 0.0644 | 0.0256 | 0.0787 | 0.1428 | 0.840 |
| | | Average Efficiency = | | | 0.914 |

**Efficiency Indicators of IndusInd Bank:** Efficiency of bank input indicators Cost of deposits varied from lowest value 0.0548 in the year 2005 and highest value 0.0837 in the year 2009 corresponding efficiency of banks are 1 and 0.780 respectively. Input indicator ratio of intermediate cost to total assets varied from lowest value 0.0093 in the year 2002 and highest value 0.0351 in the year 2003 and efficiency of banks are .910 and 1 respectively. Efficiency of bank output indicator ratio of net interest income to total assets values are varied from lowest value 0.0654 in the year 2004 and highest value 0.0836 in the year 2009 and corresponding efficiency are 1 and 0.780 respectively. Another output indicator is ratio of return on equity values are varied from the lowest value with negative -0.0040 in the year 2003 and highest value 0.3286 in the year 2004 and relative efficiencies of banks are 1 for both years.

Efficiency an indicator of banks return on equity is in the year 2003 is lowest and negative and highest value in the year 2004, roe is more fluctuating for all years. The ratio of intermediate cost to total asset ratio is low when comparing all bank efficiency indicators. The ratio of net interest income to total asset ratio is always greater than the ratio of intermediate cost to total assets ratio, it indicate that interest income is greater than the operating expenditure for all years.

**Average Efficiency of IndusInd Bank:** The efficiency of bank is varied with lowest value 0.780 in the year 2009 and highest value 1in the years 2004, 2005 and 2006. The average efficiency of bank is 0.913. Efficiency of bank fall below the average efficiency in the years 2008,2009,2010 and 2011 due to the increase in the operational cost to total assets a decrease in the value of net interest income to total assets ratio.

**Section B: Public Sector Commercial Banks**

Table-4: Efficiency & Efficiency indicators of State Bank of India

| Year | Cost of deposits | Ratio of Intermediation cost to total assets | Ratio of net Interest Income to Total assets | Return on Equity | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.0731 | 0.0263 | 0.0828 | 0.1192 | 0.860 |
| 2002 | 0.0766 | 0.0207 | 0.0856 | 0.1597 | 0.860 |
| 2003 | 0.0713 | 0.0280 | 0.0827 | 0.1805 | 0.890 |
| 2004 | 0.0605 | 0.0317 | 0.0747 | 0.2164 | 0.830 |
| 2005 | 0.0504 | 0.0245 | 0.0705 | 0.1788 | 0.890 |
| 2006 | 0.0530 | 0.0240 | 0.0725 | 0.1594 | 0.920 |
| 2007 | 0.0538 | 0.0234 | 0.0697 | 0.1451 | 0.850 |
| 2008 | 0.0594 | 0.0202 | 0.0678 | 0.1372 | 0.840 |
| 2009 | 0.0578 | 0.0188 | 0.0661 | 0.1574 | 0.870 |
| 2010 | 0.0589 | 0.0237 | 0.0674 | 0.1390 | 0.810 |
| 2011 | 0.0523 | 0.0257 | 0.0665 | 0.1134 | 0.840 |
| | | Average Efficiency = | | | 0.860 |

**Efficiency indicators of State Bank of India :** The bank efficiency input indicators cost of deposits are varied from lowest value 0.0504 in the year 2005 and highest value 0.0766 in the year 2002 and corresponding efficiency are 0.890 and 0.860 respectively. The ratio of intermediate cost to total asset are varied from lowest value0.0188 in the year 2009 and highest value 0.0317 in the year 2004 and relative efficiency of bank is 0.870 and 0.830 respectively. The ratio of net interest income to total assets are varied from lowest value 0.0661 in the year 2009 and highest value 0.0856 in the year 2002 and efficiency of banks are 0.870 and .860 respectively. The roe are varied from lowest value 0.1134 in the year 2011 and highest value 0.2164 in the year 2004 and efficiency of banks are 0.840 and 0.830 respectively.

The efficiency input indicators cost of deposits and ratio of intermediation cost to total assets lines are lower than the output indicators ratio of net interest income to total asset and return on equity for all years from 2001 to 2011. Even comparing all output and input indicators return on equity is always greater than that of other output indicator ratio of net interest income to total assets ratio.

**Average Efficiency of SBI:** Efficiency of state bank of India is varied with the lowest value of .810 in the year 2010 and highest value of .920 in the year 2006, the average efficiency of SBI is 0.86. The efficiency of bank is more volatile for all years due to the changes in input indicators value increase in cost of deposits and ratio of intermediation cost to total assets.

Table-5: Efficiency & Efficiency Indicators of Andhra Bank

| Year | Cost of deposits | Ratio of Intermediation cost to total Assets | Ratio of net Interest Income to Total Assets | Return on Equity | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.0751 | 0.0224 | 0.0920 | 0.1602 | 1.000 |
| 2002 | 0.0787 | 0.0217 | 0.0969 | 0.2289 | 0.950 |
| 2003 | 0.0685 | 0.0313 | 0.0889 | 0.4421 | 1.000 |
| 2004 | 0.0574 | 0.0334 | 0.0825 | 0.3218 | 1.000 |
| 2005 | 0.0437 | 0.0257 | 0.0695 | 0.3193 | 1.000 |

| | | | | | |
|---|---|---|---|---|---|
| 2006 | 0.0444 | 0.0221 | 0.0658 | 0.1908 | 0.940 |
| 2007 | 0.0458 | 0.0216 | 0.0697 | 0.1704 | 0.970 |
| 2008 | 0.0581 | 0.0184 | 0.0758 | 0.1771 | 0.970 |
| 2009 | 0.0631 | 0.0186 | 0.0785 | 0.1791 | 0.960 |
| 2010 | 0.0538 | 0.0183 | 0.0705 | 0.2372 | 1.000 |
| 2011 | 0.0550 | 0.0200 | 0.0761 | 0.1952 | 0.970 |
| | | Average Efficiency = | | | 0.9781818 |

**Efficiency Indicators of Andhra Bank:** Input indicators of bank are cost of deposits are varied with lowest value 0.0437 in the year 2004 and highest value 0.0787 in the year 2002 and relative bank efficiencies are 1and .950 respectively. Ratio of intermediate cost to total assets varied with the lowest value 0.0183 in the year 2010 and highest value 0.0334 in the year 2004 and relative bank efficiency for both the period are1. Ratio of net interest to income to total assets are varied with the lowest value 0.0658 in the year 2006 and highest value 0.0969 in the year 2002 and relative bank efficiencies are 0.940 and 0.950 respectively. Return on equity are varied with the lowest value of .1602 in the year 2001 and the highest value of 0.4421 in the year 2003, relative bank efficiency for both the period are 1.

The input indicators of bank are cost of deposits and ratio of intermediation cost to total assets line are below the lines of output indicators like ratio of net interest income to total assets and return on equity lines. The interest payment on fixed deposits is low when compared to the income on interest received and earnings to equity share holders are high when comparing to cost of deposits.

**Average Efficiency of Andhra Bank:** Efficiency of Andhra bank varied with the lowest value of 0.940 in the year 2006 and highest value of 1 in the years 2001, 2003 to 2005 and 2010. The average efficiency of bank was .978. In the years 2002, 2006, 2007, 2008, 2009 and 2011, the efficiency of bank fall below the average efficiency of 0.978.

Table-5: Efficiency & Efficiency Indicators of Indian Overseas Bank

| Year | Cost of Deposits | Ratio of Intermediation cost to Total Assets | Ratio of Net Interest income to Total Assets | Return on Equity | Efficiency |
|---|---|---|---|---|---|
| 2001 | 0.070 | 0.029 | 0.092 | 0.124 | 0.920 |
| 2002 | 0.069 | 0.025 | 0.089 | 0.203 | 0.980 |
| 2003 | 0.062 | 0.029 | 0.085 | 0.285 | 0.880 |
| 2004 | 0.052 | 0.032 | 0.079 | 0.246 | 0.970 |
| 2005 | 0.047 | 0.029 | 0.078 | 0.253 | 1.000 |
| 2006 | 0.046 | 0.025 | 0.074 | 0.247 | 1.000 |
| 2007 | 0.048 | 0.020 | 0.071 | 0.253 | 1.000 |
| 2008 | 0.063 | 0.016 | 0.078 | 0.248 | 1.000 |
| 2009 | 0.068 | 0.019 | 0.080 | 0.185 | 0.920 |
| 2010 | 0.064 | 0.026 | 0.078 | 0.094 | 0.860 |
| 2011 | 0.054 | 0.020 | 0.068 | 0.115 | 0.870 |
| | | | Average Efficiency = | | 0.945 |

**Efficiency Indicators of Indian Overseas Bank:** The input indicators of bank efficiency are cost of deposits are varied with the lowest value of 0.046 in the years 2006 and highest value of 0.070 in the year 2001 and relative bank efficiencies are 1 and 0.920 respectively. Ratio of intermediation cost to total assets are varied with the lowest value of 0.016 in the year 2008 and highest value 0.032 in the year 2004 and relative bank efficiencies are 1 and 0.970 respectively. The ratio of net interest income to total assets are varied with the lowest value of 0.068 in the year 2011 and highest value of 0.092 in the year 2001 and relative bank efficiencies are 0.870 and 0.920 respectively. The ratio of return on equity is varied with the lowest value of 0.094 and highest value of 0.285 in the year 2003 and relative bank efficiencies are 0.860 and 0.880 respectively.

The input indicators of efficiency are cost of deposits and ratio of intermediation cost to total assets lines are lower than the output indicators ratio of net interest income to total assets and return on equity. When the value of output indicators are decreased the efficiency of bank was decreased in the years 2009, 2010 and 2011.

**Average Efficiency of Indian Overseas Bank:** The efficiency of Indian overseas bank are varied with the lowest value of 0.860 in the year 2010 and highest value of 1 in the years continuously from 2005 - 2008. The efficiency of bank fall below the average efficiency of bank 0.9454 in the years 2001, 2003, 2009 -2011 which is due to the increasing the cost of deposits and decreasing the return on equity are causes for decreasing the efficiency in these years.

**EXTERNAL INDICATORS**

**Cash Reserve Ratio**

Cash Reserve Ratio is a certain percentage of bank deposits which banks are required to keep with RBI in the form of reserves or balances .Higher the CRR with the RBI lower will be the liquidity in the system and vice-versa. RBI is empowered to vary CRR between 15 percent and 3 percent. But as per the suggestion by the Narshimam committee Report the CRR was reduced from 15% in the 1990 to 5 percent in 2002. As of January 2013, the CRR is 4.00 percent.

**Statutory Liquidity Ratio**

Every financial institution has to maintain a certain quantity of liquid assets with themselves at any point of time of their total time and demand liabilities. These assets can be cash, precious metals, approved securities like bonds etc. The ratio of the liquid assets to time and demand liabilities is termed as the statutory liquidity ratio. There was a reduction of SLR from 38.5% to 25% because of the suggestion by Narshimam Committee. The current SLR is 23%.

Economic Indicators

| Year | Average CRR (%) | Average SLR (%) | GDP Growth rate (%) | Inflation rate (%) |
|---|---|---|---|---|
| 2000-2001 | 8.500 | 25.000 | 4.350 | 7.100 |
| 2001-2002 | 8.250 | 25.000 | 5.810 | 3.600 |
| 2002-2003 | 6.250 | 25.000 | 3.840 | 3.400 |
| 2003-2004 | 4.875 | 25.000 | 8.520 | 5.500 |
| 2004-2005 | 4.500 | 25.000 | 7.600 | 6.500 |
| 2005-2006 | 4.875 | 25.000 | 9.490 | 4.400 |
| 2006-2007 | 6.000 | 25.000 | 9.600 | 6.500 |
| 2007-2008 | 6.813 | 24.000 | 9.300 | 4.800 |
| 2008-2009 | 7.341 | 25.000 | 6.700 | 8.000 |
| 2009-2010 | 5.750 | 25.000 | 8.400 | 3.600 |
| 2010-2011 | 5.125 | 24.000 | 8.390 | 8.600 |

The CRR Indicator has been fluctuating from the period 2001 to 2011 with varying ratio of 8.500 to 5.125, the ratio is directly or indirectly influencing on the bank operations, in terms of collection of deposits, bank credits or borrowings, payment of inter-

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est on total debt funds and facilitating financial needs to their client in the form of advances and investment and collection of interest. SLR indicator has been varying with base point of 25 to 24 from the study period 2001 to 2011, it represents liquidity position of banks assets, these assets can be cash, precious metals, approved securities like bonds etc. The ratio of the liquid assets to time and demand liabilities is termed as the statutory liquidity ratio. GDP Growth rate has been changing from the period 2001-2011 with varying the ratio of 4.3 to 8.6; the growth of GDP will be depending on the income generation from total products produced and services from the various industries. The banking industry will make a contribution in the form of Investments, Gross domestic savings, bank credit growth and Deposit growth.

| Relation between Efficiency of Banks and its Indicators | | | | | | |
|---|---|---|---|---|---|---|
| Economic Indicators | SBI Efficiency | Andhra Bank Efficiency | IOB Efficiency | ICICI Bank Efficiency | Axis Bank Efficiency | Indusind Bank Efficiency |
| Average CRR | -0.10226 | -0.15033 | -0.09649 | 0.39012 | 0.41449 | -0.37083 |
| Average SLR | 0.31587 | 0.17802 | 0.09099 | 0.33523 | 0.28089 | 0.44197 |
| GDP Growth rate | -0.22986 | -0.34210 | 0.42520 | -0.18620 | -0.73938 | -0.14019 |
| Inflation | -0.06453 | -0.01988 | -0.08956 | -0.13355 | -0.45095 | -0.31381 |
| Bank efficiency Indicators | | | | | | |
| Cost of deposits | -0.04241 | 0.05713 | -0.44459 | -0.55916 | 0.64159 | -0.70226 |
| Ratio of intermediation cost to total assets | -0.07043 | 0.49777 | -0.12868 | -0.79011 | 0.31220 | -0.05591 |
| Ratio of net interest income to total assets | 0.27229 | 0.13664 | -0.05826 | -0.69504 | 0.68217 | -0.68569 |
| Return on equity | 0.21756 | 0.54456 | 0.64941 | -0.01269 | 0.32603 | 0.19071 |

**Inference:** It is observed from the above table, relationship between the efficiency of bank and its bank efficiency indicators and economic indicators. It identified that the state bank of India and ICICI bank have a net profit to total asset ratio and their efficiency have shown negative relation -0.0424 and -0.5569 respectively. It is purely increasing the proportionate of assets than income and the bank is generating less income from utilization of total assets. That total income to total expenditure ratio and the efficiency of SBI and ICICI bank have negative relation -0.07043 and -0.79011 respectively, it indicate that when efficiency of bank will increasing with same proportionate increasing its expenditure instead of income. It is observed that Andhra bank and Axis bank have shown positive relation between efficiency and their all efficiency indicators, both banks are also maintaining high efficiency.

**Findings and Conclusions**

It found that Axis bank efficiency input indicator, i.e. the cost of deposits are high, the efficiency of bank was low and cost of deposits are low the efficiency bank was high, it is inverse proportionate relationship between cost of deposits and efficiency of bank.

IndusInd bank ratio of intermediate cost to total assets are high when comparing cost of deposits, proportionate of assets to operating expenditure is high for all years. The operating expenditure could have to be minimized and increased other source of income like net offering modern services to the customers.

The IndusInd bank operational expenditure is less than the net interest income to total assets. The bank has good control on operational expenditure. And the bank is generating interest income it overcome the operational expenditure.

The IndusInd bank interest payment towards fixed deposits holders is low and it maximize profit and earnings capacity of equity share holders.

The IndusInd bank has the average efficiency of 0.913 which causes for higher the value of output indicators and lowers the value of input indicators.

The state bank of India average efficiency was 0.860 and its output indicators Return on equity and Ratio of net interest income to total asset are higher than the input indicators cost of deposits and Ratio of intermediation cost to total assets. The bank is generating less income from other operations. the bank follows the traditional method of banking and financial services and meet current advanced

It found that Andhra bank average efficiency was 0.978 and it had higher level of operations and generating more income from interest and non- traditional operations. the bank has to be increase the operations of net banking and online banking services which increase the other source of income than traditional method

It found that the average efficiency of Indian overseas bank was 0.945, and the bank has good control on intermediation cost to total asset and at the same time it generate more income in the form of interest and paying less on deposits it leads to maximize the return on equity.

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