

Measurement of Efficiency in Public and Private sector banks in India

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Abstract: Enhancing efficiency and performance of banks is a key objective of economic reforms in any countries including India. The study attempts to empirically observe the efficiency of Public and Private sector banks considering the efficiency ratios i.e Return on assets and Return on Equity. This study is based on secondary data. Five year data has been used to calculate the efficiency of the public and private sector banks. Efficiency is essential for smooth running of any firm.

Keywords: Efficiency of Banks, ROA, ROE

Introduction

Management always focuses on the effectiveness, efficiency and performance of banks and it reflects the success of the objectives, goals of the banks. In the similar manner performance of any economy depends upon the efficiency of its financial system. Economic growth is determined by the financial system of the country. The Indian commercial banks are traditionally playing most important role as financial intermediaries. The banks comprise more than three- fifth of financial system assets. He growth of an economy. Anil K. Sharma et al., (2012) found that banks having low deposits and high total assets apparent to be on efficiency of commercial banks. Banks diversification into other activities appears to have a negative impact and high probability of inefficiency in banks. Most of the Banks are earning profits through traditional ways only. Profit and growth of banks is based on their efficiency. Therefore this paper focuses on the efficiency of the banks.

Review

Fadzlan and Muhd-Zulhibri (2007) using DEA analyzed the comparative performance of foreign and domestic Islamic banks in Malaysia. The authors found out that foreign banks were higher technically efficient as compared to domestic Islamic banks. Sathye (2003) used DEA to evaluate the productive efficiency of Indian banks for the period 1997-1998. He used two DEA models to calculate the efficiency scores of public, private, and foreign sector banks. He found that efficiency scores of public and private owned banks were lower as compared to the public sector and foreign sector. Ariss (2010) indicated that Islamic banks are more efficient in term of financing activities but still less competitive than conventional banks. In another study carried out by Abdul-Majid et al. (2010), it was found that Islamic banks in different countries had no potential over other conventional banks where Islamic banks suffered poor allocative efficiency, which is a determinant or a subcomponent of cost efficiency.

OBJECTIVES OF THE STUDY

- To analyze the efficiency in selected Indian public sector and private sector banks.
- To compare the level of efficiency in selected Indian public sector and private sector banks.

RESEARCH METHODOLOGY

The present study is an attempt to analyze efficiency in banking sector through the application of profitability ratios which helps in forecasting the efficiency of banks. In order to achieve the objectives of research, a descriptive and analytical approach has been used. Five banks have been selected from public sector and five banks from private. sector. The present study calculates the efficiency for 10 Indian commercial banks for a period of 5 years from 2013-2017. Public sector Banks are State Bank of India, Bank of Baroda, Canara Bank, Punjab National Bank and Union Bank of India and Private sector Banks are ICICI, Axis Bank, Yes Bank, IndusInd bank, Kotak Mahindra bank have been selected. The present study is based on secondary data. Data has been taken for 5 years (2013-2017) from secondary sources such as annual report of banks.

Measurement of ROA of public and private sector banks

ROA show how effective is the management of the company in generating income from utilizing all of the assets at their disposal. It is a useful ratio to evaluate the performance of different departments of a company as well as to understand management performance over time. It measures overall efficiency of a company in generating profits from its total assets. The ROA has been considered as an indicator of profitability of Indian public sector and private sector banks. The ROA of selected banks has been taken over the period of five years (2013-2017).

Table 2.1 ROA of selected public sector banks over five years (2013-2017)

Public sector banks	2013	2014	2015	2016	2017	Mean	Maximum	Minimum	S.D
Bank of Baroda	0.82	0.69	0.48	-0.8	0.2	0.27	0.82	-0.8	0.64
Canara Bank	0.77	0.54	0.55	0.52	0.2	0.51	0.77	0.2	0.20
Punjab National Bank	1	0.64	0.53	-0.61	0.19	0.35	1	-0.61	0.60
Union Bank of India	0.79	0.52	0.49	0.35	0.13	0.45	0.79	0.13	0.24
State Bank of India	0.97	0.65	0.68	0.46	0.41	0.63	0.97	0.41	0.22
Mean	0.87	0.608	0.546	-0.016	0.226	0.44	0.87	-0.13	0.38
Maximum	1	0.69	0.68	0.52	0.41	0.634	1	0.41	0.64
Minimum	0.77	0.52	0.48	-0.8	0.13	0.278	0.77	-0.8	0.20
S.D.	0.107	0.073	0.080	0.635	0.10	0.139	0.107	0.535	0.22

Sources: Compiled from the annual reports of banks

As shown in table 2.1, during the period of five years, ROA of all public sector banks was positive except Bank of Baroda and Punjab National Bank faced negative ROA in 2016. State Bank of India (0.63) had highest ROA mean followed by Canara bank (0.51) and Union Bank of India (0.45). From the last five years, decreasing trend in ROA of public sector banks has been observed. Bank of Baroda faced sharp decline in ROA. The small value of standard deviation of ROA of SBI and Canara bank shows low variations in ROA values.

ROA of selected public sector banks has increased over the five years.

On the basis of the results of table 2.1, it can be concluded that, there was observed sharp decline in ROA of all selected public sector banks. The ROA of selected public sector banks has progressively fallen over the period of five years.

Table 2.2 ROA of selected private sector banks over five years (2013-2017)

Private banks	2013	2014	2015	2016	2017	Mean	Maximum	Minimum	S.D
Axis Bank	1.65	1.72	1.74	1.64	0.64	1.47	1.74	0.64	0.470
Yes Bank	1.51	1.55	1.64	1.68	1.75	1.62	1.75	1.51	0.097
Kotak	1.82	1.75	1.93	1.4	1.68	1.71	1.93	1.4	0.19
IndusInd	1.62	1.76	1.8	1.8	1.78	1.75	1.8	1.62	0.075
ICICI	1.62	1.73	1.8	1.42	1.31	1.57	1.8	1.31	0.20
Mean	1.64	1.70	1.78	1.58	1.43	1.62	1.80	1.29	0.20
Maximum	1.82	1.76	1.93	1.8	1.78	1.75	1.93	1.62	0.47
Minimum	1.51	1.55	1.64	1.4	0.64	1.47	1.74	0.64	0.07
S.D.	0.11	0.08	0.10	0.17	0.48	0.10	0.075	0.38	0.15

As observed in table 2.2, over the last five years, ROA of selected private sector banks was positive. The highest ROA was secured by IndusInd bank (1.75) followed by Kotak bank (1.71) and Yes bank (1.62). Moreover, Kotak bank (1.93) had highest ROA in 2015. ROE of some private sector were increasing during the last five years, these banks are Yes bank and Kotak Bank. The higher value of standard deviation of ROA of Axis bank depicts high variations in ROA values.

ROA of selected private sector banks has increased over the five years.

On the basis of table 2.2, positive ROA of all selected private sector banks has been observed. The ROA of selected private sector banks was positive and increasing over the period of five years.

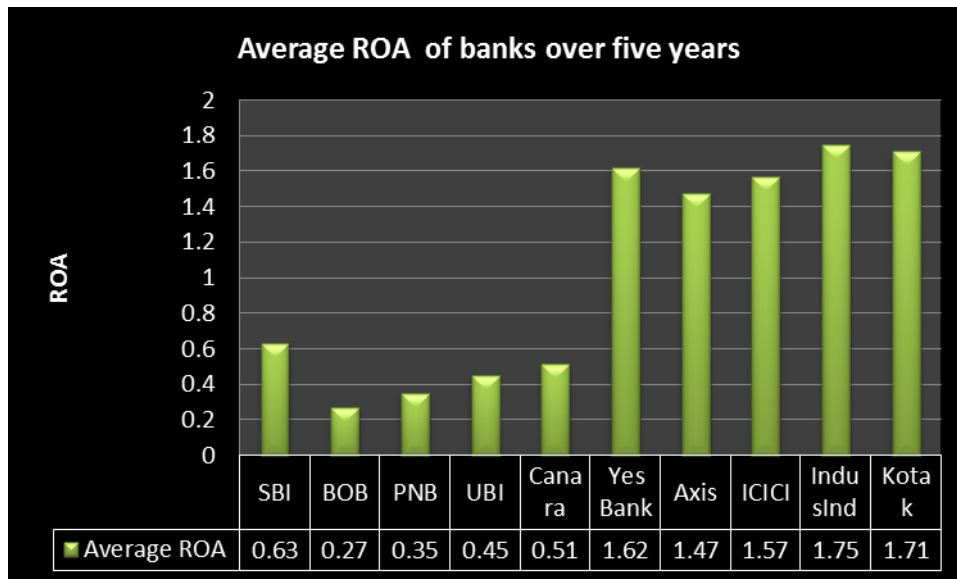
Table 2.3 Average ROA of selected public and private sector banks (2013-2017)

Scheduled Commercial banks	ROA (2013-2017)
SBI	0.63
BOB	0.27
PNB	0.35
UBI	0.45
Canara	0.51

Yes Bank	1.62
Axis	1.47
ICICI	1.57
IndusInd	1.75
Kotak	1.71

Table 2.3 shows the average ROA of selected 10 scheduled commercial banks (5 public and 5 private sector banks). The highest ROA was obtained by IndusInd bank followed by Kotak bank and Yes bank. The lower ROA was secured by Bank of Baroda followed by Punjab National bank and Union bank of India. The selected public banks have lower ROA during the period of study.

Figure 2.3 Average ROA of scheduled commercial banks



Source:

Interpretation: above chart shows the average ROA of selected scheduled commercial banks. The higher ROA was observed in private sector banks. Public sector banks had secured very low ROA. It shows the poor financial performance of public sector banks. The highest ROA was attained by IndusInd bank and Bank of Baroda had lower ROA.

Public sector banks are more efficient than private sector banks in terms of profitability.

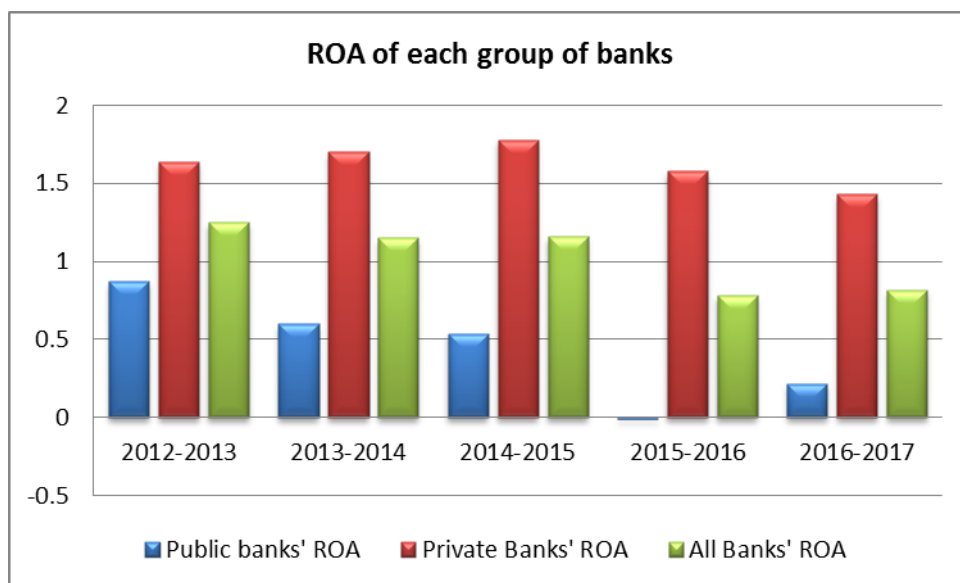
On the basis of figure 2.3, it can be concluded that public sector banks secured very low ROA than ROA of private sector banks. Therefore, public sector banks are not more efficient than private banks due to low ROA recorded by public sector banks.

Table 2.4 Comparison of mean of ROA of public and private sector banks

Years	Public banks' ROA	Private Banks' ROA	All Banks
2012-2013	0.87	1.64	1.25
2013-2014	0.6	1.7	1.15
2014-2015	0.54	1.78	1.16
2015-2016	-0.01	1.58	0.78
2016-2017	0.22	1.43	0.82

Table 2.4 indicates the comparison of mean of ROA of public and private sector banks. It can be seen that mean value of ROA of private sector banks were found higher than ROA of public sector banks. The ROA of all public sector banks has continued to decline from 2013 to 2017. Public sector banks had faced progressive decline in ROA. On the other hand, condition of ROA of private sector banks was good and acceptable. Private sector banks secured higher and positive ROA.

Figure 2.4 Comparison of mean of ROA of public and private sector banks

**Source:**

Interpretation: above chart shows the average ROA of selected commercial banks including private sector banks and public sector banks. The highest ROA was obtained by public sector banks in 2013 whereas private sector banks had highest ROA in 2015. As compared to public sector banks, ROA of private sector banks was higher during the period of study. The level of ROA of public sector banks has declined in last five years. The financial performance of public sector banks has not much improved over the last five years.

There found differences between mean values of ROA of public sector banks and private sector banks over the five years. As data were normally distributed, one sample t-test has been applied to compare the mean value of ROA of public sector banks and private sector banks. To determine the extent of change in the ROA of each sector of the banks, one sample t-test was applied. The output of one sample t-test have been shown in table 2.5

Table 2.5: One sample T-test

Groups of banks	Test Value =0						
	T	df	Sig. level (2-tailed)	Mean Difference	S.D	95% confidence interval of the difference	
						Lower	Upper
Public sector banks	2.89	4	0	0.444	0.34	0.0177	0.870
Private sector banks	27.5	4	0	1.626	0.13	1.4618	1.790
All Banks	10.69	4	0	1.032	0.21	0.764	1.299

H1: There are not significant differences between the mean values of ROA of each sector of banks.

The computed t-value in respect of two sectors of banks reveals that there is significant difference between the mean values of ROA of each sector of banks over the period of five years. Therefore, null hypothesis H1 has been rejected because the mean values of ROA of different sectors of bank are not the same, it differs significantly. The mean value of ROA is recorded highest for private sector banks and the mean of ROA of each sector of bank is significantly different.

(ii) Measurement of ROE of public and private sector banks

ROE (Return on equity) is a ratio related to net profit (net income) to shareholders' equity. It can be calculated as:

$$\text{ROE} = \text{Profit after tax} / (\text{Total equity})$$

The ROE (return on equity) has been used as an indicator of profitability which shows the financial performance of Indian public sector and private sector banks. The ROE of selected banks has been shown for the period of five years (2013-2017).

Table ROE of scheduled commercial banks

Scheduled commercial banks	2013	2014	2015	2016	2017
Bank of Baroda	14.59	13	9.21	-17.64	4.53
Canara Bank	14.03	10.59	11.06	10.69	4.15
Punjab National Bank	16.48	10.17	8.48	-10.87	3.52
Union Bank of India	15.05	10.41	10.11	6.99	2.91
State Bank of India	15.94	10.49	11.17	7.74	6.97
Axis Bank	18.53	17.43	17.75	16.81	6.76
Yes Bank	24.81	25.02	21.33	19.94	18.58
Kotak	15.65	13.83	14.13	10.97	13.23
IndusInd	17.81	17.56	19.01	16.6	15.27
ICICI	13.1	14.02	14.55	11.63	10.66
Mean	16.59	14.25	13.68	7.28	8.65
S.D	3.32	4.687	4.43	12.1	5.48
Maximum	24.81	25.02	21.33	19.94	18.58
Minimum	13.1	10.17	8.48	-17.64	2.91

ROE of selected ten scheduled commercial banks which comprises five public and private sector banks has been shown in above table. In 2013, higher ROE mean of all banks was observed but it continued to decline till 2016 and little rise in 2017. It can be said that ROE of all banks were higher in initials years as compared to 2016 and 2017. In 2016, Bank of Baroda and Punjab National bank had negative ROE.

Table 2.9 ROE of selected public sector banks over five years (2013-2017)

Public sector banks	2013	2014	2015	2016	2017	Mean	Maximum	minimum	S.D
Bank of Baroda	14.59	13	9.21	-17.64	4.53	4.738	14.59	-17.64	13.09
Canara Bank	14.03	10.59	11.06	10.69	4.15	10.1	14.03	4.15	3.61
Punjab National Bank	16.48	10.17	8.48	-10.87	3.52	5.55	16.48	-10.87	10.28
Union Bank of India	15.05	10.41	10.11	6.99	2.91	9.09	15.05	2.91	4.49
State Bank of India	15.94	10.49	11.17	7.74	6.97	10.46	15.94	6.97	3.539
Mean	15.21	10.932	10.0	-0.618	4.41	7.99	15.21	-2.896	7.007
Maximum	16.48	13	11.17	10.69	6.97	10.46	16.48	6.97	13.09
Minimum	14.03	10.17	8.48	-17.64	2.91	4.73	14.03	-17.64	3.539
S.D.	0.99	1.16	1.16	12.7	1.5	2.6	0.99	10.74	4.40

Sources: Compiled from the annual reports of banks

As shown in table 2.9, ROE of all public sector banks was positive except Bank of Baroda and Punjab National Bank, these banks faced negative ROE in 2016. State Bank of India (10.46) had highest ROE mean followed by Canara bank (10.1) and Union Bank of India (9.09). Over the last five years, ROE of selected public sector banks has declined sharply. Bank of Baroda faced negative ROE. The higher value of standard deviation of ROE of Punjab national bank and Union bank shows high variations in ROE values.

ROE of selected public sector banks has increased over the five years.

On the basis of the findings of table 2.9, it can be concluded that there is sharp decline in ROE of all selected public sector banks has been observed. The ROE of selected public sector banks has fallen progressively during last five years.

Table 2.10 ROE of selected private sector banks over five years (2013-2017)

Private Banks	2013	2014	2015	2016	2017	Mean	Maximum	Minimum	S.D
Axis Bank	18.53	17.43	17.75	16.81	6.76	15.45	18.53	6.76	4.90
Yes Bank	24.81	25.02	21.33	19.94	18.58	21.93	25.02	18.58	2.88
Kotak	15.65	13.83	14.13	10.97	13.23	13.56	15.65	10.97	1.70
IndusInd	17.81	17.56	19.01	16.6	15.27	17.25	19.01	15.27	1.40

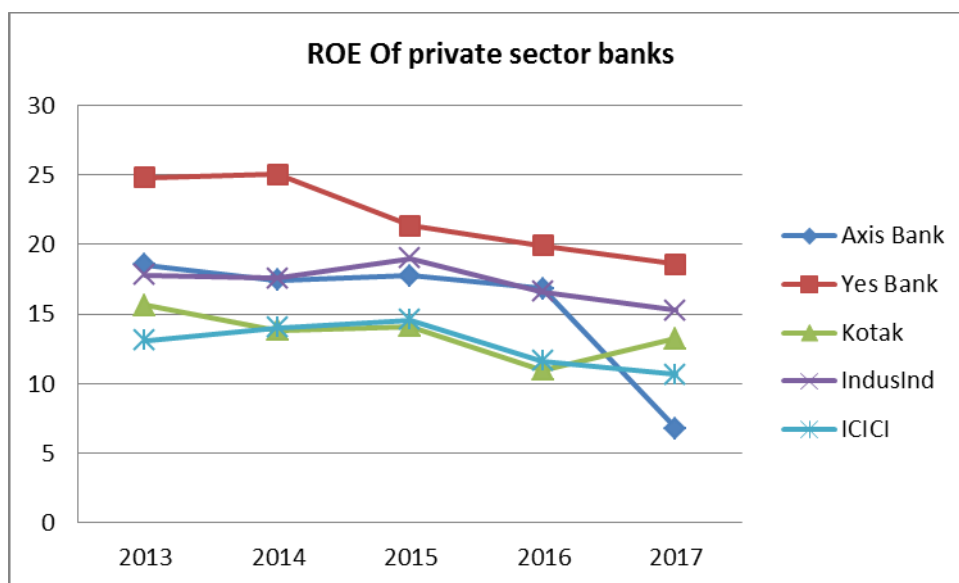
ICICI	13.1	14.02	14.55	11.63	10.66	12.79	14.55	10.66	1.62
Mean	17.98	17.572	17.354	15.19	12.9	16.19	18.552	12.448	2.50
Maximum	24.81	25.02	21.33	19.94	18.58	21.93	25.02	18.58	4.90
Minimum	13.1	13.83	14.13	10.97	6.76	12.792	14.55	6.76	1.40
S.D.	4.36	4.53	3.03	3.79	4.49	3.64	4.07	4.56	1.45

As depicted in table 2.10, ROE of all private sector banks was positive from 2013 to 2017. The highest ROE was secured by Yes bank (21.93) followed by IndusInd bank (17.25) and Axis bank (15.45). Moreover, Yes bank (25.02) had highest ROE in 2014. Only Kotak bank faced little increase in ROE in 2017. Other public sector banks attained continuous decline in ROE. The smaller value of standard deviation of ROE of IndusInd bank reflects low variations in ROE of bank.

ROE of selected private sector banks has increased over the five years.

It can be seen that all selected private sector banks have Positive ROE. The ROE of few private sector banks was increasing in some years but most of the years all banks faced little decrease in ROE.

Figure 2.6 ROE of selected private sector banks (2013-2017)



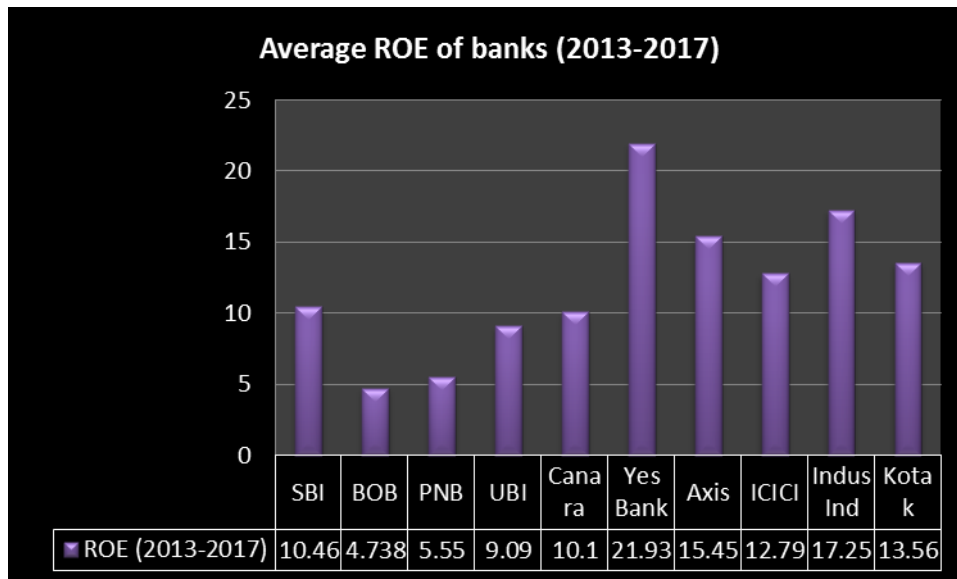
The graph shows the increasing and decreasing trend in ROE of selected private sector banks. All private banks had positive ROE and Axis bank and Kotak bank attained higher ROE in 2013 whereas IndusInd and ICICI attained higher ROE in 2015. Yes bank obtained higher ROE in 2014. The financial performance of private banks was stable and sound as banks had positive ROE. In 2017, all banks obtained little decrease in ROE except Kotak bank.

Table 2.11 Average ROE of selected public and private sector banks (2013-2017)

Scheduled Commercial banks	ROE (2013-2017)
SBI	10.46
BOB	4.738
PNB	5.55
UBI	9.09
Canara	10.1
Yes Bank	21.93
Axis	15.45
ICICI	12.79
IndusInd	17.25
Kotak	13.56

Table 2.11 shows the average ROE of 10 scheduled commercial banks. The highest ROE was secured by Yes bank followed by IndusInd bank and Axis bank. The lower ROE was obtained by Bank of Baroda followed by Punjab National bank and Union bank of India. The private banks have attained higher ROE than public sector banks over the period of study.

Figure 2.7 Average ROE of scheduled commercial banks



The present chart reveals the average ROE of scheduled commercial banks. The higher ROE was obtained by private sector banks throughout the period of study. Public sector banks were worst performers as these banks secured very low ROE. The highest ROE was attained by Yes bank. It shows the sound financial performance of all private sector banks.

Public sector banks are more efficient than private sector banks in terms of profitability (ROE).

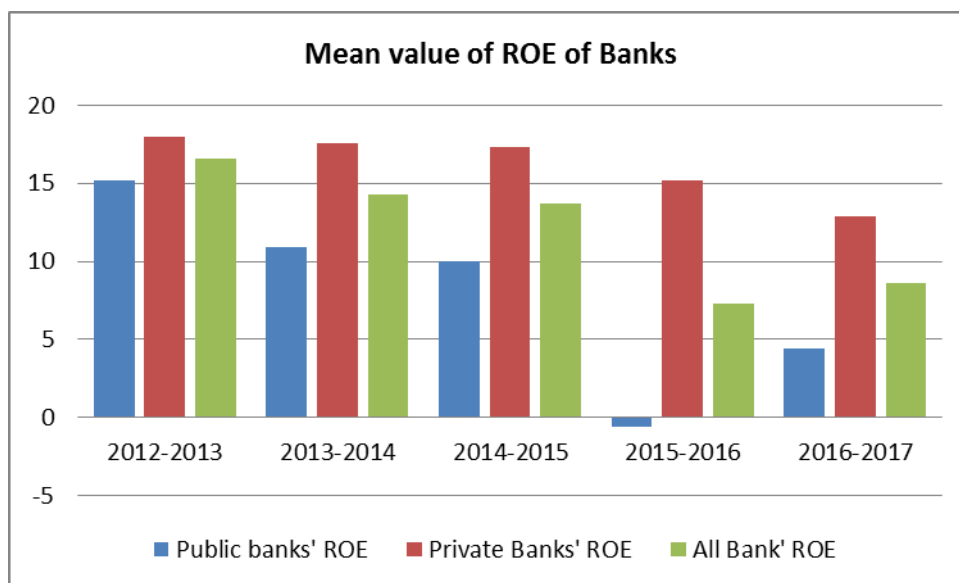
On the basis of results it can be concluded that ROE of public sector banks were very lower than ROE of private sector banks. Hence, private sector banks are more efficient than public banks due to higher ROE attained by private sector banks.

Table 2.12 Comparison of mean of ROE of public and private sector banks

Years	Public banks' ROE	Private Banks' ROE	All Bank' ROE
2012-2013	15.21	17.98	16.59
2013-2014	10.93	17.57	14.25
2014-2015	10	17.35	13.68
2015-2016	-0.61	15.19	7.28
2016-2017	4.41	12.9	8.65

Table 2.12 reveals the comparison of mean of ROE of public and private sector banks. The mean values of ROE of private sector banks were found higher than ROE of public sector banks. The ROE of all public sector banks continued to decrease from 2013 and reached at negative points. Public sector banks faced progressive decline in ROE in last five years. On the other hand, ROE of private sector banks was good and stable as banks secured higher and positive ROE. ROE of private sector banks also decreased in 2016 and 2017 but ROE of these banks was positive and acceptable.

Figure 2.8 Comparison of mean of ROE of public and private sector banks

**Source:**

Interpretation: The chart reflects the mean value of ROE of selected commercial banks including five private sector banks and public sector banks. The highest ROE was recorded by public and private sector banks in 2013. In comparison of public sector banks, ROE of private sector banks was higher and positive during the period of study. The level of ROE of public sector banks fallen in last five years. The financial performance of public sector banks is poor over the last five years due to negative and low ROE.

There observed significant differences between mean values of ROE of public sector banks and private sector banks over the five years. T-test has been employed to compare the mean value of ROE of public sector banks and private sector banks. The normality test has been done to check the assumptions of parametric test. As data are normally distributed and satisfied the conditions of parametric test. Hence, independent t-test has been employed. The output of t-test has been presented in the following table:

Table 2.13: Results of independent T-test

	Public banks' ROE	Private Banks' ROE
Mean	7.98	16.19
Variance	37.89	4.569
Observations	5	5
Hypothesized Mean Difference	0	
Df	5	
t Stat	2.8171	
P(T<=t) two-tail	0.03723	
t Critical two-tail	2.5705	

The computed t-value in respect of ROE mean of two sectors of banks indicates that there is significant difference between the mean values of ROE of public and private sector banks over the period of five years. The difference is significant at 95% level. Based on the results of table 2.13, p value ($0.03 < 0.05$) is less than alpha which rejects the null hypothesis H₂. The absolute value of t statistics ($2.81 > 2.57$) is larger than critical value which indicates the significant difference in the ROE of public banks and private banks.

H₂: There are not significant differences between the mean values of ROE of each sector of banks (Public and private sector banks).

The T-test used to compare the difference in mean of ROE of public and private banks rejects the null hypothesis. It has been found that ROE mean of public banks was lower than ROE mean of private sector banks. The mean of the two sectors of banks is not equal.

Conclusion:

The measurement of efficiency is very crucial for financial managers, analysts, investors and other users of financial statements. ROE and ROA ratios are useful to know the efficiency of the banks. In the present study it is tried to know whether selected private sector banks are more efficient than public sector banks. The study calculates ratios for 10 Indian banks comprising five public and five private sector banks. From the above study we find that mean value of ROA of private sector banks were found higher than ROA of public sector banks. The ROA of all public sector banks has continued to decline from 2013 to 2017. Public sector banks had faced progressive decline in ROA. And also the mean values of ROE of private sector banks were found higher than ROE of public sector banks. So it can be concluded that private sector banks are more efficient than the public sector banks.

References

1. Dr. Anil K. Sharma, Dipasha Sharma Dr. Mukesh K. Barua. "Efficiency and Productivity of Indian Banks: An Application of Data Envelopment Analysis and Tobit Regression. National Conference on Emerging challenges for sustainable Business 2012.
- Fadzlan, S. and Muhd-Zulhibri, A.M. (2007), "Bank ownership, characteristics and performance: a comparative analysis of domestic and foreign Islamic banks in Malaysia", Munich Personal RePEc Archive, 12131.
- Abdul-Majid, M., Saal, D. and Battisti, G. (2010), "Efficiency in Islamic and conventional banking: an international comparison", Journal of Productivity Analysis, Vol. 34, pp. 25-43, available at: SSRN: <http://ssrn.com/abstract/41668966>
- M.N Arora (2010), "Accounting for Management", Himalaya Publishing House, Mumbai-400004, PP- 9.13 & 9.39.
- Dalston L. Cecil & Jenitra L. Merwin (2010) "Management Accounting", Learntech Press, Trichy-620102, PP- 3.23.
- N.P. Srinivasan & M. Sakthivel Murugan (2010), "Accounting for Management", S.Chand & Company Ltd, New Delhi – 110055, pp- 212-213.
- Dr.S.P Gupta (2010), "Statistical methods", S.Chand & Sons, New Delhi-110002, PP 1011-1013

