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AN EMPIRICAL ANALYSIS OF SOUNDNESS OF STATE BANK OF INDIA (SBI) AND AXIS BANK DURING 2008-09 TO 2015-16

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Abstract
Soundness of banking system and sustainable development of economy go hand with hand. The sounder the banking system; the more is the capacity of the economy to accommodate endogenous and exogenous shocks and to deliver a decent rate of growth over a long period of time. In simple term, soundness implies absence of instability – representing a situation in which economic performance is not undermined by the price fluctuations of financial assets or financial institutions are unable to meet contractual obligations. On this backdrop, the present study aims at comparing the soundness of the two better managed commercial banks – one in the public sector (State Bank of India or SBI) and the other in the private sector (AXIS Bank) – during the period 2008-09 to 2015-16 in order to verify whether these two banks are significantly different in statistical term so far as soundness is concerned.

Key Words: Basel III, Financial Soundness, Capital Adequacy Ratio (CRAR), Non-Performing Assets (Npas), State Bank of India (SBI), Axis Bank, Return on Asset (ROA), Return on Equity (ROE), Liquid Ratio.

1. Introduction

It is a common knowledge that finance acts as life blood for trade, commerce and industry. Development of any country mainly depends upon the ease, availability and proper utilization of finance. In this respect, role of banks as a provider of finance to the trade and industry is very important. In India, as in many developing countries, the commercial banking sector has been the dominant element in the country's financial system and has performed the key functions of providing liquidity and payment services to the real sector and has accounted for the bulk of the financial intermediation process. Since, banking sector constitutes a major component of the financial service sector, its soundness is essential for a healthy and vibrant economy (Khatik and Nag, 2014).

The efficient, productive, profitable, stable and shock free economy is possible only when a country is having a sound and healthy banking sector. A financially sound banking system offers many benefits and gives guarantee to not only its depositors but also its shareholders, employees and to the whole economy. Over the years, it has been seen that the Indian banking system helped the real economy to survive various national and worldwide economic shocks and meltdowns. At the same time, Indian banking has witnessed significant changes especially in the last two and half decades or so. The process of liberalization has made ingress of new private sector banks possible in the banking sector. As a result of which, the Public Sector Banks (PSBs) were forced to face the cutthroat competitions created in the market. The private banks are coming up with their attractive policies and providing the customer with better services by leveraging on technology and new ways of providing convenience to customers. This gives rise to the debate whether newly established private banks are performing better or not; more efficient or not; better managed or not and more sound or not as compared to PSBs.

Coming to the issue of financial soundness of Indian Banking System, it can be safely said that soundness has had a direct bearing on the overall progress of economy because growth backed by adequate financial soundness is a sign of sustainable growth. In this backdrop, a comparative study on the soundness of the two better managed commercial banks – one in the public sector (State Bank of India or SBI) and the other in the private sector (AXIS Bank) – may not be out of the context to verify whether these two banks are significantly different in respect of soundness.

2. Review of Literature

Several studies have been undertaken to explore the importance, measurement and improvement of soundness of banking system in India and related issues especially during the post-reform era. The following studies are worth mentioning in this regard:

Srinivas and Saroja (2013) analyzed and compared the Financial Performance of HDFC and ICICI Bank and offer suggestions for the improvement of efficiency. They concluded that there is no significance difference between the ICICI and HDFC bank's financial performance but the ICICI bank performance is slightly less compared to HDFC Bank.

Parmar (2014) studied various dimensions of NPAs among SBI and ICICI Bank over the years 2011 - 2013. It highlighted the relationship between Net Profit and Net NPA – while SBI has shown positive relationship between Net Profit and Net NPA, negative relationship has been found in ICICI between Net Profit and Net NPA.

Mishra et.al. (2013) analyzed the soundness and the efficiency of 12 public and private sector banks based on market capitalization. CAMEL model has been applied over a period of twelve years (2000 – 2011) and it is established that private sector banks are at the top of the list, with their performances in terms of soundness being the best. Public sector banks like Union Bank and SBI have taken a back seat and display low economic soundness in comparison.

Makkar, A. (2013) made a comparative study of the financial performance of Indian commercial banks by considering a sample of 37 banks (22 public and 15 private sector banks) during the period from 2006-07 to 2010-11. CAMEL model was used to measure the performance. The study found that the IDBI Bank was the best performing bank followed by Kotak Mahindra Bank and ICICI Bank. The result of statistical test disclosed that there is a significant difference in the capital adequacy, asset quality and earning capacity of public and private sector banks in India, while there is no significant difference in the management, liquidity position and sensitivity to market risk of two banking groups.

Mahajan, P. et. al. (2012) empirically predicted the Return on Assets (RoA) performance of the public sector banks in India for the years 2005-06 and 2009-10. The results revealed that spread, credit-deposit ratio, NPAs, non-interest income and provision and contingencies have the capacity of predicting the profitability (RoA) of PSBs.

Makkar (2013) made a comparative study of the financial performance of Indian commercial banks by considering a sample of 37 banks (22 public and 15 private sector banks) during the period from 2006-07 to 2010-11. The study found that the IDBI Bank was the best performing bank followed by Kotak Mahindra Bank and ICICI Bank. The result of statistical test disclosed that there is a significant difference in the capital adequacy, asset quality and earning capacity of public and private sector banks in India.

Bhowmik (2014) studied the safety and soundness of Indian banking in the context of adoption of Basel III Norm. He concluded that safety and soundness has always been associated with costs. Naturally, the adoption of Basel III will going to adversely affect some crucial variables like profitability, growth and existing business model of Indian banks.

Ponraj and Rajendran (2012) measured the bank competitiveness among the select Indian commercial banks in terms of financial strength (measured in terms of financial ratios like efficiency ratio, profitability ratio, CRAR, income-expenditure ratio, deposit and return ratios). Factor analysis was used to structure and detect the components of financial strength. It was found that Foreign Banks were most competitive as compared to the public and private sector banks.

Fadzlan (2012) examined the internal and external factors that influenced the performance of banks operating in India during the period 2000 – 2008. The empirical findings suggested that credit risk, network, operating expenses, liquidity and size have statistically significant impact on the profitability of Indian banks.

Kumar (2009) in his study examines how the financial performance of SBI group, nationalized banks group, private banks group and foreign banks group has been affected by the financial deregulation of the economy.

Arora and Arora (2012) examined productivity growth in PSBs in India in the post-liberalization period from 1991-92 to 2008-09. Total Factor Productivity (TFP) was computed using Hicks-Moorsteen Index Number as given by O'Donnell (2010). Results showed that Indian PSBs have experienced positive productivity growth since liberalization. There also exist significant difference in the productivity growth experienced by SBIG and NBs with the latter having higher TFP growth. Baidya and Mitra, D. (2012) evaluated the technical efficiency of 26 Indian PSBs from the cross-sectional data for the financial year 2009-10 and to provide ranking of efficiency to these banks using DEA model. The results revealed that average technical efficiency of entire sample is 86.5% and that only 23% were found to be fully efficient.

Khatik, S.K. and Nag, A.K. (2014) analyzed the soundness of five nationalized banks in India. In order to measure the performances of these banks, CAMEL model has been applied, incorporating important parameters like Capital Adequacy, Assets Quality, Management Efficiency, Earnings Quality and Liquidity. The finding of the study shows that Bank of Baroda has been ranked at the top position, the Union Bank of India and Dena Bank secured the 2nd position, the next was the State Bank of India which secured the 4th position and in the last position was the UCO Bank which secured the 5th position.

Veena and Prasad (2014) studied the quality of assets by analysing the trends of assets, liabilities and finally the analysis of Provision adequacy. The primary focus of this paper is to compare and contrast the asset quality and management by the banks belonging to public sector and private sector viz., SBI and ICICI banks.

Subbulaxmi and Abraham (2006) discussed the common causes of crises and their impact on the economic conditions. The authors discuss the various options of resolution available depending on the intensity and the cause of the crises. Several

other studies such as Prasuna (2003), Bodla and Verma (2006), Ghosh (2010), Sen Gupta (2011), Chaudhary and Singh (2012) can also be cited. But no study has been made to compare and contrast the soundness of SBI (the largest bank under the Public Sector) and Axis Bank (considered as one of the most efficient banks under the Private Sector) in statistical terms. The present paper aims to fulfill that gap.

3. Concept of Financial Soundness

Financial Soundness is a difficult concept to explain because there is no widely acceptable definition of the term. Some authors explained the concept of soundness in terms of what financial soundness is not. Simply speaking, financial soundness implies absence of instability – representing a situation in which economic performance is not undermined (weak) by the price fluctuations of financial assets or because financial institutions are unable to meet contractual obligations. Broadly speaking financial soundness implies the followings:

a) Monetary stability,
b) Confidence in financial institutions and the functioning of financial markets in the economy
c) Absence of Relative motion of asset prices (real or financial) in the economy that would undermine the above two elements

Viewed from positive perspective we can define the term 'Financial Soundness as a situation in which the financial system is capable to: (a) allocate resources efficiently between its activities over time, (2) access and manage financial risk, and (3) to absorb shocks arising from both endogenous and exogenous factors.

Table 1: Financial Soundness Indicators and their Measures

Broad Soundness Indicator	Measures
Capital Adequacy	Tier I Capital to Risk Weighted Assets
	Tier I Capital to Risk Weighted Assets
	Total Regulatory Capital to Risk Weighted Assets (CRAR)
Quality of Asset Portfolio	Gross Non-Performing Assets to Gross Advances (GNPA Ratio)
	Net Non-Performing Assets to Net Advances (NNPA Ratio)
	Provision Coverage Ratio (PCR)
Liquidity	Liquid Asset to Total Asset (Liquid Ratio)
Earnings and Profitability	Return on Asset (ROA)
	Return on Equity (ROE)

From the perspective of Banking, the presence of above three elements is necessary for Financial Soundness. The first involves the formation of an individual assessment policy and procedure for efficient allocation of resources in cost effective manner. The second involves identifying the main sources of risk and vulnerability that could pose challenges for the future stability of the bank and the broad policy measures to manage those challenges. The third and last step is an assessment of the capacity of the bank to cope with the systemic crisis arising from both endogenous and exogenous factors. In the banking parlance, some broad areas are being considered for the understanding of financial soundness of banking institutions. Such parameters that are used to judge the financial soundness of bank are shown in Table 1.

4. Methodology of Study

The study is primarily empirical in nature. It also describes the essence of soundness and the measurement tools used to judge the soundness of banks. The study also attempted to compare and contrast the progress or otherwise of the soundness indicators (as mentioned in section 4) between SBI and Axis Bank over the period 2008-09 to 2015-16. The rationale of the selection of the study period 2008-09 to 2015-16 lies in the fact that in India the effect of Global Financial Crisis was started to felt from the year 2008 onwards and it is widely believed that the effect of Global Financial Crisis was more prominent in the areas of safety and soundness of Banking system at large. The close end of the study period (i.e. 2015-16) coincides with the latest financial year end and therefore enables us to make an up to date assessment between two banks.

The study uses secondary data collected mostly from the annual reports of the banks, Report on Trend and Progress of Banking in India, published reports, published articles and online resources. Descriptive statistics like mean, S.D, etc. are used for the analysis. For further analysis the following hypothesis are formed and tested by applying t test:

H_0 = There is no significant difference in capital adequacy position of SBI and Axis Bank.
H_0 = There is no significant difference in Gross NPA position of SBI and Axis Bank
H_0 = There is no significant difference in Net NPA position of SBI and Axis Bank
H_0 = There is no significant difference in Provision Coverage Ratio of SBI and Axis Bank
H_0 = There is no significant difference in Return on Equity (ROE) of SBI and Axis Bank

H_0 = There is no significant difference in Return of Asset (ROA) of SBI and Axis Bank
H_0 = There is no significant difference in Liquid Asset to Total Asset Ratio of SBI and Axis Bank.

5. Empirical Assessment of Soundness of SBI and Axis Bank: Discussions and Results

In section 4, we have pointed out that soundness of banking institutions can be analyzed broadly on the areas of capital adequacy position, asset quality and its management, earning efficiency and liquidity management. In the following sub-sections, we will first analyze the trend of the parameters over the study period and then test the statistical significance of the parameters between SBI and Axis Bank.

5.1. Assessment of Capital Adequacy Position of SBI and Axis Bank

In banking business, capital is seen as cushion to protect the depositors and promote the stability and efficiency of financial systems. Capital adequacy reflects the overall financial soundness of the banks and also the ability to absorb unforeseen shocks/losses. Overall Capital Adequacy Ratio or Capital to Risk Weighted Asset Ratio (CRAR) is a measure of the amount of a bank's core capital expressed as a percentage of its risk-weighted asset. Mathematically, CRAR is expressed as follows:
CRAR = (Tier I Capital + Tier II Capital) / Risk weighted Assets.

Where, Tier I Capital = (paid up capital + statutory reserves + disclosed free reserves) - (equity investments in subsidiary + intangible assets + current and brought forward losses). Tier I capital can absorb losses without a bank being required to cease trading.

Tier II Capital comprises of undisclosed reserves, general loss reserves, hybrid debt capital instruments and subordinated debts where Risk can either be weighted assets or the respective national regulator's minimum total capital requirement. Tier II capital can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

Apart from the overall CRAR, two other types of capital adequacy ratio are also being used for assessing the soundness of the bank. These are Tier I capital adequacy ratio and Tier II capital adequacy ratio. Banks in India are required to maintain minimum CRAR, Tier I and Tier II Capital adequacy ratio as prescribed by the RBI from time to time. As per the recent guidelines issued by RBI on the adoption of Basel III accord, banks in India are to maintain effective CRAR, Tier I and Tier II capital ratio of 11.5%, 7% and 2% respectively. All these three types of capital adequacy ratios of SBI and Axis Bank during the study period are presented in Table 2.

Table 2: Capital Adequacy Position of SBI and Axis Bank

Financial Year End	State Bank of India (SBI)			Axis Bank		
	Tier I CRAR	Tier II CRAR	Overall CRAR	Tier I CRAR	Tier II CRAR	Overall CRAR
2008-09	9.38	4.87	14.24	9.26	4.43	13.69
2009-10	9.45	3.94	13.39	11.18	4.62	15.8
2010-11	7.77	4.21	11.98	9.41	3.24	12.65
2011-12	9.79	4.07	13.86	9.45	4.21	13.66
2012-13	9.49	3.43	12.92	12.23	4.77	17
2013-14	9.98	2.98	12.96	12.62	3.45	16.07
2014- 15	10.1	2.69	12.7	12.07	3.02	15.09
2015-16	9.92	3.2	13.12	12.51	2.78	15.29
Mean	**9.485**	**3.67375**	**13.14625**	**11.09125**	**3.815**	**14.90625**
S.D	**0.74248617**	**0.72500123**	**0.6980573**	**1.4873893**	**0.78023806**	**1.45607042**

Source: Annual Report of SBI and Axis Bank, Various Years

From the Table 2, it is found that the Overall Capital adequacy of SBI and Axis Bank has been on an average 13.15% and 14.91% over the period under consideration with more variations being noticed in case of Axis Bank (1.45 > 0.69). A capital adequacy in this range seems to be a safe and optimum bet – neither being too low that there is a problem in case of a recession, and not being too high as to hamper growth. This range of overall CRAR is also very healthy considering the regulatory minimum prescription of 9% as per Basel- III Norm[1].

[1] *As per Basel III Norm, Indian banks are required to take further steps for strengthening the capital adequacy position by building Capital Conservation Buffer (CCB) at 2.5% and it would be taken into consideration for Effective CRAR. The RBI has provided for a broad*

In case of Tier I capital adequacy ratio, it was found that the mean stood at 9.48% and 11.09% for the period under consideration for SBI and Axis Bank respectively, which is much higher than the minimum regulatory requirement of 7% under Basel III with a higher degree of variability is associated with Axis Bank (1.48 > 0.74). In case of Tier II capital adequacy ratio, we found that both SBI and Axis Bank have more or less similar trend over the years with both mean and standard deviation of the ratio hovering under the same periphery (0.72 for SBI and 0.78 for Axis Bank).

Table 3: Results of Statistical Tests for Capital Adequacy Position of SBI and Axis Bank

Hypotheses / Particulars	**H_0 = No significant difference in Tier I CRAR of SBI and Axis Bank.**	**H_0 = No significant difference in Tier II CRAR of SBI and Axis Bank.**	**H_0 = No significant difference in overall CRAR of SBI and Axis Bank.**
Observed t Value:			
Two tails test	0.02	0.713	0.011
One tail test	0.01	0.356	0.005
Critical Region at 5% and 1% level of significance (LoC):			
Two tails test	At 5% LoC: $t \geq \pm 2.15$ at 14 degree of freedom At 1% LoC: $t \geq \pm 2.98$ at 14 degree of freedom		
One tail test	At 5% LoC: $t \geq \pm 1.76$ at 14 degree of freedom At 1% LoC: $t \geq \pm 2.62$ at 14 degree of freedom		
Statistical Inferences and Conclusion:			
Two tail test	As the observed value of t lies outside the critical region, the H_0 is accepted both at 5% and 1% LoC. We can conclude that the capital adequacy position in terms of Tier I, Tier II and overall CRAR is not significantly different in case of SBI and Axis Bank for the period under consideration.		
One tail Test	H_0 is accepted both at 5% and 1% LoC and we can conclude that there is no significant difference in terms of Tier I, Tier II, and Overall CRAR of SBI and Axis Bank.		

These are the generalised observations that we can make about the capital adequacy position of the banks. But as we are interested to see whether there is any significant difference between the capital adequacy position of the SBI and Axis Bank under the period of study, we are to test the first hypothesis formed in the methodology section. Since, capital adequacy is measured in terms of three ratios – Tier I capital adequacy, Tier II capital adequacy and overall capital adequacy, we have to formed three separate Null Hypotheses for the three measures of capital adequacy. Let us check the results of the t test as presented in Table 3 above.

The result of the statistical test as presented in Table 3 points out that capital adequacy position of the SBI and Axis Bank in terms of Tier I CRAR, Tier II CRAR and Overall CRAR do not differ in statistical terms at least for the period under consideration both in case of two tails test and one tail test at 5% and 1% LoC. Overall speaking, we can say that the capital adequacy position of SBI and Axis Bank over the years reveal a similar pattern and there is no justification in claiming that one is sounder than the other in terms of capital adequacy.

5.2 Assessment of Asset Quality and its Management of SBI and Axis Bank

The quality of loan and advances portfolio (technically known as Asset Quality) has important significance for general health and soundness of banking system. Quality of asset in banking perspective means the soundness of loan and advances portfolio in terms of generating regular flow of income and return of principal amount. This quality is affected by the generation of Non-Performing Assets (NPAs).The occurrence of NPAs may have serious consequential adverse effects on the profitability, liquidity and hence competitive functioning of the banking sector in general.

From banking point of view, a contract of lending generally includes a binding regarding the payment of interest and principal by the borrower. If any one of them is not performed duly, then the advance should be termed as NPA. Internationally as well as in India, 90 days overdue norm is followed to identify a loan facility as NPA.

transitional arrangement for the same by 2018 (for more details refer to Bhowmik, G (2014), Management Accountant, October. Here, although the average takes into account the CRAR calculated on the basis of Basel II norm in some years yet the higher margin than the minimum can withstand the dilution in the ratio under Basel III very safely.

Table 4: Asset Quality and Provision Coverage Ratio of SBI and Axis Bank

Financial Year End	Gross NPA Ratio		Net NPA Ratio		Provision Coverage Ratio	
	SBI	Axis Bank	SBI	Axis Bank	SBI	Axis Bank
2008-09	2.5	1	1.79	0.35	56.98	63.56
2009-10	3.05	1.1	1.72	0.36	59.23	72.38
2010-11	3.28	1	1.63	0.26	64.95	80.9
2011-12	4.44	0.94	1.82	0.25	68.1	80.91
2012-13	4.75	1.06	2.1	0.32	66.58	79.15
2013-14	4.95	1.22	2.57	0.4	62.86	78.1
2014-15	4.25	1.34	1.12	0.44	69.13	77.73
2015-16	6.5	1.67	3.2	0.7	60.69	72
Mean	**4.215**	**1.16625**	**1.99375**	**0.385**	**63.565**	**75.59125**
SD	**1.268981594**	**0.241716333**	**0.63704536**	**0.14262839**	**4.366446741**	**5.951769095**

Source: Annual Reports of SBI and Axis Bank, Various Issues

Naturally, the quality of asset portfolio of banks is inversely related to the NPAs. NPAs can be measured in two ways – Gross NPA and Net NPA[2]. For our study, we will use the Gross NPA ratio as a percentage of Total Advances and Net NPA Ratio as a percentage of Net Advances. The trend and progress of asset quality of SBI and Axis Bank over the years 2008-09 to 2015-16 are presented in Table 4 along with Provision Coverage Ratio (PCR)[3] which is considered to be a very significant soundness indicator in relation to management of quality of asset portfolio.

It can be seen that both the Gross NPA ratio and Net NPA ratio of SBI and Axis Bank showed a rising trend during the period 2008-09 to 2015-16 with more variations being noticed in case of SBI (1.27 > 0.24 for GNPA ratio and 0.63 > 0.14 for NNPA ratio respectively). Another noticeable fact is that Axis Bank had been able to keep both the Gross NPA and Net NPA ratio within a low bandwidth over the years, whereas the ratios had gone far above in case of SBI. The mean GNPA ratio of SBI during the period (4.215%) is much higher (2.5 times) than that of Axis Bank (1.67%). Similarly, the Average Net NPA ratio of SBI (1.99%) over the period under consideration is 5.16 times higher than that of Axis Bank (0.385) during the same period.

It clearly indicates a better management of quality of asset portfolio on the part of the Axis Bank as compared to SBI. In respect of PCR, Axis Bank showed more robustness as compared to SBI as both the Average PCR and its variability during the period is comparatively higher in case of the latter. While the mean PCR stood at 63.57% and 75.59% for SBI and Axis Bank respectively but more variations is noticed in case of Axis Bank as compared to SBI (5.95 > 4.37).

Table 5: Results of Statistical Tests for Asset Quality and Provision Coverage between SBI and Axis Bank

Hypotheses / Particulars	H_0 = There is no significant difference in Gross NPA position of SBI and Axis Bank	H_0 = There is no significant difference in Net NPA position of SBI and Axis Bank	H_0 = There is no significant difference in PCR of SBI and Axis Bank
Observed t value:			
Two tails test	0.0002	0.0001	0.0004
One tail test	0.0001	6.96*	0.0002
Critical Region at 5% and 1% level of significance (LoC):			
Two tails test	At 5% LoC: t ≥ |2.15| at 14 degree of freedom At 1% LoC: t ≥ |2.98| at 14 degree of freedom		
One tail test	At 5% LoC: t ≥ |1.76| at 14 degree of freedom At 1% LoC: t ≥ |2.62| at 14 degree of freedom		
Statistical Inferences and Conclusion:			
Two tail test	As the observed value of t lies outside the critical region, the H_0 is accepted both at 5% and 1% LoC. We can conclude that GNPA Ratio, NNPA ratio and PCR do not significantly differ in case of SBI and Axis Bank for the period under consideration.		

2 The sum total of the Sub-standard advances, Doubtful advances and Loss advances is known as Gross NPAs. While Net NPAs are obtained from Gross NPAs after deducting the interest due but not received, claims received from credit guarantors and pending final settlement, part payment received and kept in suspense account and total provisions made up to date.

3 PCR refers to the cumulative provision held for NPAs as a percentage of Gross NPAs. It measures the extent of provisional back up for the existing NPAs.

One tail test	H_0 is accepted both at 5% and 1% LoC. GNPA ratio does not differ significantly in case of SBI and Axis Bank	H_0 is rejected both at 5% and 1% LoC. NNPA ratio differ significantly in case of SBI and Axis Bank	H_0 is accepted both at 5% and 1% LoC. PCR of SBI and Axis Bank do not differ significantly.

Note: * indicates significant at 1% LoC and ** indicates significant both at 1% and 5% LoC

Now, we are interested to know whether the ratios between the SBI and Axis Bank are different in statistical terms. In order to understand the relation, we performed t test with unequal variance and the results are presented in Table 5. From the table, it is seen that neither the asset quality nor its broad management measure (PCR) differ significantly between the banks during the period under consideration under two tail t test. So, we can say that the quality of asset portfolio and the protective cushion available on deterioration of quality is alike in both the banks.

But in case of one tail test, the result is slightly different. The Net NPA ratio is found to be statistically significant both at 5% and 1% level of confidence but GNPA ratio and PCR do not show any statistically significant difference for the SBI and ICICI Bank. So, we can conclude that Axis Bank has been able to manage its asset quality in terms of Net NPA ratio more efficiently and effectively as compared to SBI during the period under consideration.

5.3. Assessment of Profitability of Axis Bank and SBI

There are various measures available in order to judge the efficiency of earnings or profitability. Among them Return on Assets (ROA), Return on Equity (ROE), Profit per Employee, Interest Margin to Gross Income are important. As mentioned in section 4, we would use ROA and ROE of Axis Bank and SBI over the period 2008-09 to 2015-16 for comparison and statistical tests. The data over the study period is presented in Table 6 below.

In case of banks, ROA is an indicator of how profitable a bank is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Return on Equity (ROE), on the other hand, measures the extent of return generated by the bank on its shareholders' equity. It measures profitability by revealing how much profit a company generates with the shareholders fund.

Table 6: Profitability Ratios (ROE and ROA) and Liquid Ratio of SBI and Axis Bank

Financial Year End	ROE		ROA		Liquid Ratio	
	SBI	Axis Bank	SBI	Axis Bank	SBI	Axis Bank
2008-09	15.07	19.93	1.04	1.44	5.76	10.17
2009-10	14.04	19.89	0.88	1.67	5.82	8.42
2010-11	12.84	20.13	0.71	1.68	7.71	8.83
2011-12	14.36	21.22	0.88	1.68	6.97	4.88
2012-13	15.94	20.51	0.97	1.7	6.81	6.02
2013-14	10.49	18.23	0.65	1.78	6.98	7.4
2014-15	11.17	18.57	0.68	1.83	7.73	7.81
2015-16	7.74	17.49	0.48	1.72	6.87	6.33
Mean	**12.70625**	**19.49625**	**0.78625**	**1.6875**	**6.83125**	**7.4825**
SD	2.738915	1.26661458	0.1871544	0.1144864	0.73615677	1.7017449

Source: Annual Report of SBI and Axis Bank, Relevant Years

Table 7: Results of Statistical Tests for Profitability and Liquidity Management of SBI and Axis Bank

Hypotheses / Particulars	H_0 = There is no significant difference in Return on Equity (ROE) of SBI and Axis Bank	H_0 = There is no significant difference in Return of Asset (ROA) of SBI and Axis Bank	H_0 = There is no significant difference in Liquid Asset to Total Asset Ratio of SBI and Axis Bank.
Observed t value:			
Two tails test	8.72**	9.72**	0.345
One tail test	4.36**	4.86**	0.17
Critical Region at 5% and 1% level of significance (LoC):			
Two tails test	At 5% LoC: t ≥ |2.15| at 14 degree of freedom At 1% LoC: t ≥ |2.98| at 14 degree of freedom		
One tail test	At 5% LoC: t ≥ |1.76| at 14 degree of freedom At 1% LoC: t ≥ |2.62| at 14 degree of freedom		

Statistical Inferences and Conclusion:			
Two tail test	H_0 is rejected both at 5% and 1% LoC and we can say that ROE of SBI and Axis Bank differ significantly during the period under review.	H_0 is rejected both at 5% and 1% LoC and we can say that ROA of SBI and Axis Bank differ significantly during the period under review.	H_0 is accepted both at 5% and 1% LoC. We can conclude that Liquid Ratio do not significantly differ between SBI and Axis Bank. during the period under consideration
One tail Test	H_0 is rejected both at 5% and 1% LoC and we can say that ROE of SBI and Axis Bank differ significantly during the period under review.	H_0 is rejected both at 5% and 1% LoC and we can say that ROA of SBI and Axis Bank differ significantly during the period under review.	

Note: * indicates significant at 1% LoC and ** indicates significant both at 1% and 5% LoC\

From Table 6, we can observed that SBI's ROA come down from 1.04 to 0.48 whereas Axis Bank's ROA gone up from 1.44 to 1.72 for the period 2008-09 to 2015-16. The average ROA during the period is much higher in case of Axis Bank (1.69%) as compared to SBI (0.79%) with comparatively more variations is being attached with SBI (0.19> 0.11). Apparently, the trend and progress of ROA indicate that Axis Bank performed is far better than SBI during the period under review. On the other side, ROE of SBI showed overall declining trend over the years under consideration. ROE of SBI decreased from 15.07% to 7.74% during the period 2008-09 to 2015-16. In case of Axis Bank, ROE showed overall steady trend in which the ratio being eventually decreased during the period from 19.93% in 2008-09 to 17.49% in 2015-16. But if we look at the average during the period, we found that average ROE of SBI (12.71%) is much lower than that of Axis Bank (19.50 %) because of the higher variations being attached with SBI (2.74>1.27). Let us now statistically investigate these generalised observations which are presented in Table 7.

The results of statistical tests as presented in Table 7 lends supports to our generalised observations for profitability of the two banks and dictates us to conclude that the profitability of Axis Bank and SBI in terms of ROE and ROA differ significantly both under one tail t test and two tail t test at least for the period under consideration. So, we can say that in terms of ROE and ROA, Axis Bank has been delivered a better performance than that of SBI during 2008-09 to 2015-16.

5.4. Comparison of Liquidity Management in Axis Bank and SBI

Liquidity of a bank represents its ability to meet its financial responsibilities. Maintaining correct level of liquidity is important for ensured growth and earning. Banks have to be more careful in investments in order to create more profit on investment as well as to provide liquidity to the depositors. Moderately High Liquidity ratio shows bank's efficiency. The Liquid Ratio as measured by liquid assets to total assets is an important liquidity management tool to assess, ongoing basis, the extent liquid assets can support bank's asset base especially in case of financial crisis.

While asset productivity is important, in a liquidity crisis, low liquid assets to total assets ratio can be hazardous for the financial health and survival of the organizations like bank. Liquid ratio as measured by liquid assets of bank (It include cash and balance with RBI and balance with banks and money at call and short notice) to total assets is one of the most important criteria to evaluate the Liquidity Management of banks. For the present study liquid asset to total asset ratio is calculated from the Annual Reports of SBI and Axis Bank over the period of study as shown in Table 6 above.

Both the banks have the liquid ratio within a range of 6 – 8 % over the years. While Axis Bank maintained liquid ratio of 7.48% on an average, SBI has been managed to keep it at 6.83% with comparatively more variations have been noticed in case of Axis Bank (1.70 > 0.73) as compared to SBI. General observations regarding trend of liquidity ratio between SBI and Axis Bank indicates a broad similarity in managing the liquidity of these two banks for the period under review. The generalised observation with regard to the Liquid Asset to Total Asset Ratio is confirmed by the result of the statistical test as shown in the last column of Table 7. So we can conclude that liquidity management in terms of liquid ratio does not differ significantly between Axis Bank and SBI over the years under consideration.

6. Summary of Findings and Conclusion

Based on the above analysis, the following are the summary of observations that can be made about the Soundness of the SBI and Axis bank:

- Overall Capital adequacy of SBI and Axis Bank has been on an average 13.15% and 14.91% over the period under consideration with more variations being noticed in case of Axis Bank (1.45 > 0.69).

- The average Tier I CRAR stood at 9.48% and 11.09% for the period under consideration for SBI and Axis Bank respectively, which is higher than the minimum regulatory requirement of 7% under Basel III with a higher degree of variability is associated with Axis Bank (1.48 > 0.74).
- In case of Tier II capital adequacy ratio both SBI and Axis Bank have more or less similar trend over the years with both mean and standard deviation of the ratio hovering under the same periphery (S.D was 0.72 for SBI and 0.78 for Axis Bank).
- The result of the statistical test points out that capital adequacy position of the SBI and Axis Bank in terms of Tier I CRAR, Tier II CRAR and Overall CRAR do not differ significantly at least for the period under consideration both in case of two tails test and one tail test at 5% and 1% LoC.
- Gross NPA ratio and Net NPA ratio of both SBI and Axis Bank showed a rising trend during the period 2008-09 to 2015-16 with more variations being noticed in case of SBI (1.27 > 0.24 for GNPA ratio and 0.63 > 0.14 for NNPA ratio).
- Axis Bank had been able to keep both the Gross NPA and Net NPA ratio within a low bandwidth over the years, whereas the ratios had gone far above in case of SBI. The mean GNPA ratio of SBI during the period (4.215%) is much higher (2.5 times) than that of Axis Bank (1.67%). On the other side, the Average Net NPA ratio of SBI (1.99%) over the period under consideration is 5.16 times higher than that of Axis Bank (0.385) during the same period.
- In respect of PCR, Axis Bank showed more robustness as compared to SBI as both the Average PCR and its variability during the period is comparatively higher in case of the latter. While the mean PCR during the period under consideration stood at 63.57% and 75.59% for SBI and Axis Bank respectively but more variations is noticed in case of Axis Bank as compared to SBI (5.95 > 4.37).
- Statistical tests, however, revealed that neither the asset quality (measured by Gross NPA as a percentage of gross advances and Net NPA as a percentage of net advances) nor its broad management measure (PCR) differ significantly between the banks during the period under consideration both under two tails t test.
- But one tail test of Net NPA ratio indicated that there existed significant difference between SBI and Axis Bank both at 5% and 1% LoC and Axis Bank found to be more effective and efficient in managing NNPA ratio than that of SBI.
- SBI's ROA come down from 1.04 to 0.48 whereas Axis Bank's ROA gone up from 1.44 to 1.72 for the period 2008-09 to 2015-16. The average ROA during the period is much higher in case of Axis Bank (1.69%) as compared to SBI (0.79%) with comparatively more variations is being attached with SBI (0.19> 0.11).
- ROE of SBI decreased from 15.07% to 7.74% during the period 2008-09 to 2015-16. In case of Axis Bank, ROE showed overall steady trend in which the ratio being eventually decreased during the period from 19.93% in 2008-09 to 17.49% in 2015-16. But if we look at the average during the period, we found that average ROE of SBI (12.71%) is much lower than that of Axis Bank (19.50 %) because of the higher variations being attached with SBI (2.74>1.27).
- The results of statistical tests lends supports to our generalised observations for profitability of the two banks and dictates us to conclude that the profitability of Axis Bank and SBI in terms of ROE and ROA differ significantly both under one tail t test and two tail t test at least for the period under consideration.
- Both the banks have the liquid ratio within a range of 6 – 8 %. While Axis Bank maintained liquid ratio of 7.48% on an average, SBI has been managed to keep it at 6.83% with comparatively more variations have been noticed in case of Axis Bank (1.70 > 0.73) as compared to SBI.
- General observations regarding trend of liquidity ratio between SBI and Axis Bank indicated a broad similarity in managing the liquidity of these two banks for the period under review which is confirmed by the result of the statistical test.

So it can be concluded that the soundness of SBI and Axis Bank in respect of capital adequacy, Gross NPA ratio, provision coverage and liquidity management have shown no significant evidence of difference at least during the study period. But in case of Net NPA ratio, quality of earnings as measured by ROA and ROE differ significantly and on both these counts, Axis Bank has been found to deliver a better performance than that of SBI during 2008-09 to 2015-16. Therefore, it can be safely said that Axis Bank had been able to manage some of the crucial variables relating to financial soundness like Net NPA ratio, ROA and ROE than that of the largest commercial bank of India (SBI) at least for the period under consideration.

References

1. Arora, H. and Arora, P. (2012) "Bank Productivity Measurement using Hicks-Moorteen Indices: Evidence from JPSB", *International Journal of Business Performance Management*. Vol.13, issue 3(4), pp.386-407.
2. Ashok, K.M. (2009) "Financial Performance of Scheduled Commercial Banks in India – CRAMEL Analysis" *Ph.D Thesis*, Bharathiar University, Coimbatore.
3. Axis Bank. (2008-09 – 2015-16) *Annual Report*, Mumbai

4. Baidya, M.A. and Mitra, D. (2012) "An Analysis of the Technical Efficiency of Indian Public Sector Banks through DEA Approach", *International Journal of Business performance Management*, Vol.13, Issue 3(4), pp.341-365.
5. Bhowmik, G. (2014), "Adoption of Basel III Accord: Impact on Indian Banking System", *Management Accountant*, October.
6. Bhowmik, G. (2010), *Management of Non-Performing Assets in the Indian Public Sector Banks: Concepts, Methods, Implications and Progress*, Lambert Academic Publishing, Germany, November.
7. Fazhan, S. (2012) "Determinants of Bank performance in a Developing Economy", *Global Business Review*. Vol.13, pp.1-23.
8. Gokhale, M. (2009) "Capital Adequacy Standards-where do we stand?", *Indian Banker*, Volume IV, No.7, July.
9. Khatik, S.K. and Nag, A.K. (2014), "Analyzing Soundness of Nationalized Banks in India: A CAMEL Approach", *Applied Studies in Agribusiness and Commerce*, Vol. 8 No. 1.
10. Mahajan, P., Bhatia, A. and Chander, S. (2012), "ROA performance of public sector banks in India", *IUP Journal of Bank Management*, Vol. XI, issue 3, pp.22-35.
11. Makkar, A. and Singh, S. (2013), "Analysis of the financial performance of Indian Commercial Banks: A comparative study", *Indian Journal of Finance*, Vol. 7, Issue 5, May
12. Mishra, A.M., Gadhia, J.N., Prasadkar, B., Bismabaspatra and ShiviAnand. (2013), "Are Private sector Banks More sound and efficient than public sector Banks? Assessments Based on Camel and Data Envelopment Analysis", Research *Journal of Recent Sciences*. Vol.2 (4), April pp.28-35
13. Pannerselvam, R. and Radjaramane .V (2012) "A study on the Financial Performance of Nationalised Banks in India: A Post Liberalization Analysis", *International Journal of Current Research*, Vol.4, Issue 1, pp.262-267, January.
14. Parmar, R. (2014), "Non Performing Assets (NPAs): A Comparative Analysis of SBI and ICICI Bank", *International Journal for Management and Pharmacy*, Vol.3, Issue 3, April.
15. Ponraj, P. and Rajendran, G. (2012), "Financial Strength as an indicator for Measuring Bank competitveness: An Empirical evidence from Indian Banking Industry", *Journal of Applied Economic Sciences*, Vol.7, Issue 2(20) pp.179-188.
16. Srinivas, K and Saroja, L. (2013) "Comparative Financial Performance of ICICI Bank and HDFC Bank", *Scholars World*, Vol. 1, Issue 2, July.
17. State Bank of India. (2008-09 – 2015-16) *Annual Report*, Mumbai.
18. Subbulaxmi, V. and Abraham, R. (2006) "*Banking Crises and Resolution*" ICFAI University Press.
19. Veena, D and Prasad, G.V.B (2014), "Asset Quality Management in Indian Banks: A Study of SBI and ICICI", 2nd International Conference on Innovation Challenges in Multidisciplinary Research & Practice, December 17-18, 2014. ICMRP, Kuala Lumpur, Malaysia.