International Journal of Scientific Research in Science and Technology
Print ISSN: 2395-6011 | Online ISSN: 2395-602X (www.ijsrst.com)
doi : https://doi.org/10.32628/IJSRST218399

An Analysis of Profitability of Selected Public Sector Banks

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Article Info
Volume 8, Issue 2
Page Number : 668-675

Publication Issue
March-April-2021

Article History
Accepted : 25 March 2021
Published : 30 March 2021

ABSTRACT

The purpose of this paper is to determine and compare financial performance of banks based on banks' profitability ratios. The objective is to rank a sample of 12 banks which comprise the National Stock Index's PSU Bank Nifty index for a period of five years from 2015 to 2019. The study uses ANOVA analysis to compare various banks based on their profitability ratios.Based on ANOVA analysis the study tests various hypothesis regarding significance of difference in profitability ratios of the sample banks. The study reveals that for the period the banks have heterogeneous performance indicators although the population group is homogeneous during sample selection. The conclusions part also discusses importance of well-functioning public sector banks in India.

Keywords : National Stock Exchange (NSE), NIFTY PSU Bank Index, ANOVA, Profitability Ratios.

I. INTRODUCTION

Public Sector Banks play very important and crucial role in resource mobilization in any economy. It fulfills the need of all sectors of the economy specially developing economy like India. Financial ratios are standard tool for analyzing an enterprise and its financial performance over a period of time. Researchers combine key financial ratios across the industries whether of any type with qualitative and quantitative to analyze the firms (Barnes, 1987). The financial performance of a firm is assessed by the comparison of different ratios(Benishay, 1971). The Banking industries financial reporting is prominently different from other industries. The foremost task of any bank is to attract funds at a reasonably lower cost and reinvest them at higher return on investment. Therefore, measures of several types of financial ratios are critical. The maximum number of financial ratios published in different sources may create confusion in understanding the actual financial health of an enterprise (Gombola and Ketz, 1983). In the recent report ofRBI it said that the ability of public sector banks to sustain credit growth in consonance with the financing requirements will led by recapitalization. Public sector banks were recapitalizedwith Rs. 90,000 crore in Financial Year 18 and another Rs 1.6 trillion was also infused into these banks in Financial Year19. This will support to maintain their capital position. The report revealed that in January 2019, there were 11 Public Sector Banks and one Private Bank under the Prompt Corrective Action (PCA) framework.

In this paper, we measure banks financial performanceon the basis of profitability ratios i.e. ROA, NIM and ROE. This procedure can determine best and worst public sector bank in the given set of PSU BANK Nfity Index.In the practice, stock market investor used to analyze banks' liquidity, solvency and overall performance to predict the prices. We propose to use profitabilityratios to determine the performance of banks on stock market returns.The data used in the empirical study is obtained from National Stock Exchange, a regular financial database of Moneycontrol.com.The sample includes annual financial data of 12 PSU Banks of India comprising PSU Bank Nifty observed over the period 2015 to 2019.

II. REVIEW OF LITERATURE

Lartey, V. C., Antwi, S., &Boadi, E. K. (2013). The research was to find out the association between the liquidity and the profitability of listed banks on GSE (Ghana Stock Exchange). Total seven banks was taken for the study.In the descriptive study it panel data method. The study regressed liquidity ratio on profitability ration and found very weak relationship between them. Kemal, M. U. (2011). They used accounting ratios to assess the financial performance. They assessed the performance of Royal bank of Scotland in their study for the period of 2006 to 2009. They used 20 ratios to assess the profitability, liquidity, asset management, leverage and cash flows.Alam, H. M., Raza, A., &Akram, M. (2011). They studied the banks mainly private and public sector banks between the period 2006 to 2009 and assess financial performance with the help of ratios.Arora and Kaur (2006) on the basis of ROA, NPA, Business per Employee ration they assessed that banks should upgrade the technology and training to enhance the performance of the selected banks.Prasad, K. V. N., &Ravinder, G. (2011) Twith the help of Fundamental analysis they assessed the performance of the selected banks. Ratios were used OPM, GPM, NPM, EPS, Dividend Payout Ratio, ROE, ROA, PE ratios and they were applied SBI, PNB, ICICI and HDFC four major banks of India. Ganesan, P. (2003) paper investigates the priority sector banks advances and its relationships between the profitability of the selected banks. Padma, D., &Arulmathi, V. (2013) study attempts to investigate profitability of State Bank of India (SBI) and ICICI bank. Profitability ratios, Solvency ratios and Management efficiency ratios were applied on SBI and ICICI Bank to assess the efficiency and solvency position. Saini, N. (2014) their study attempts to analyze Banks and considered the backbone of the economy. SBI, PNB, ICICI and HDFC. banks were analyzed to assess the profitability and productivity.

Objective of the Study

1. To study the Profitability ratios of constituent Bank of NIFTY PSU Bank Index.
2. To make a comparison of Stock Market performance ofconstituent Bank of NIFTY PSU Bank Indexfor the entire study period.

III. Research Methodology

Three most important measures of bank profitability are recognized as the "Return on Assets" (ROA) , "Return on Equity" (ROE) and the "Net Interest Margin" (NIM). Ratios are comparisons of various quantities. Used these formulas to determine the profitability ratio of a bank

1)

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

2)

$$\text{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}}$$

3)

$$\text{NIM} = \frac{\text{Investment Returns} - \text{Interest Expenses}}{\text{Average Earning Assets}}$$

To analyze the profitability ratio of the selected PSU Banks F test or ANOVA (Analysis of Variance), means analysis of variances is applied. ANOVA is a statistical model which analyzes the variation among and between the selected groups. In the present study the group of banks (constituent Bank of NIFTY PSU Bank Index) was selected.Analysis of variance (ANOVA) is a collection of statistical models and their associated estimation procedures (such as the "variation" among and between groups) used to analyze the differences among group means in a sample. ANOVA was developed by statistician and evolutionary biologist Ronald Fisher. The ANOVA is based on the law of total variance. ANOVA provides a statistical test of whether two or more population means are equal, and therefore generalizes the t-test beyond two means.

The formula used for the study is

$$F = \frac{MSB}{MSW}$$

MSB = Mean Square between Groups

MSW = Mean Square within Groups

Data Analysis, Hypothesis Testing and Interpretation

ROA %

Before applying any parametric test it is inevitable to check whether the selected data for the test are normally distributed or not. To check the normality Jarque-Bera test were applied with the help of EVIEWS version 10 and following hypothesis were formed.

H0 :the selected ratios for the banks are normally distributed

H1= the selected ratios for the banks are not normally distributed

Descriptive/Banks	Mean	Jarque-Bera	Probability	Rank as Per Mean
INDIAN_BANK	0.42	0.462	0.794	1
SBI	0.254	0.459	0.795	2
J_K	-0.03	1.697	0.428	3
BOB	-0.084	0.397	0.82	4
CANARA	-0.092	0.484	0.785	5
UBI	-0.15	0.611	0.737	6
SYNDBANK	-0.346	0.565	0.754	7
OBC	-0.53	1.507	0.471	8
PNB	-0.558	0.533	0.766	9
BNKOFINDIA	-0.566	0.693	0.707	10
CENTRAL_B	-0.852	0.417	0.812	11

ALL_BK	-1.072	0.651	0.722	12

As per the above table the probability value of the each bank for the corresponding Jarque-Bera test is more than 5%. Hence we cannot reject thy null hypothesis rather we accept the null hypothesis and can infer that all the banks ROA ratio is normally distributed and further can go for ANOVA test. Along with the test above table shows the different descriptive of the selected banks. And as per the value of the mean of the ROA ratio rank has been given to the selected banks. According to the rank Indian Bank is having the best ROA ratio and Allahabad Bank is having the worst.

As abasic condition to apply ANOVA test there is a need to check the homogeneity of variances. following hypothesis were formed and Leven's test were applied with the help of EVIEWS version 10.

H0 : Variances arehomogeneous of the selected banks

H1= Variances are not t homogeneous of the selected banks

Method	Df	Value	Probability
Bartlett	11	20.91308	0.0343
Leven	(11,48)	2.452495	0.0160
Brown-Forsythe	(11,48)	0.695656	0.7360

The probability value of Leven's test is less than 5% so that we can reject the null hypothesis and can assume that variances of the selected banks are not homogeneous and cannot apply the ANOVA test. To check the significance valueWelch test is applied tocheck the mean value of ROA ratio of the selected banks.

Following hypothesis were formed to analyze the differences of ROA ratio among the selected banks.

H0= There is no significant difference between ROA Ratio in selected banks under the study

H1= There is significant difference between ROA Ratio in selected banks under the study

To test the above hypothesis Welch test was applied on the above table with the help of EVIEWS version 10 and the following results were shown.

Method df	df	Value	Probability
*Anova*F-test	(11,48)	1.437240	0.1876
Welch F-tesl	(11,18.611	2.661309	0.0303

The Probability value of the corresponding test is less than 5%. Therefore we can reject the null hypothesis that there is no significant difference between the ROA Ratio in selected banks under the study rather we accept the alternate hypothesis that There is significant difference between ROA Ratio in selected banks under the study.

ROE (%)

Before applying any parametric test it is inevitable to check whether the selected data for the test are normally distributed or not. To check the normality Jarque-Bera test were applied with the help of EVIEWS version 10 and following hypothesis were formed.

H0 :the selected ratios for the banks are normally distributed

H1= the selected ratios for the banks are not normally distributed

Descriptive/ Banks	Mean	Jarque-Bera	Probability	Rank As per Mean
ALL_BK	6.582	0.523	0.770	1
BNKOFINDIA	4.160	0.498	0.780	2
BOB	-0.518	1.767	0.413	3
CANARA	-1.224	0.373	0.830	4
CENTRAL_B	-1.986	0.502	0.778	5
INDIAN_BANK	-2.866	0.607	0.738	6
J_K	-8.278	0.579	0.749	7
OBC	-10.542	0.542	0.763	8
PNB	-11.332	0.512	0.774	9
SBI	-11.988	1.589	0.452	10
SYNDBANK	-15.654	0.392	0.822	11
UBI	-39.848	0.824	0.662	12

As per the above table the probability value of the each bank for the corresponding Jarque-Bera test is more than 5%. Hence we cannot reject thy null hypothesis rather we accept the null hypothesis and can infer that all the banks ROE ratio is normally distributed and further can go for ANOVA test. Above table shows the different descriptives of the selected banks. And as per the value of the mean of the ROE ratio rank has been given to the selected banks. According to the rank Allahabad Bank is having the best ROE ratio and Union Bank of India is having the worst.

As a basic condition to apply ANOVA test there is a need to check the homogeneity of variances. following hypothesis were formed and Leven's test were applied with the help of EVIEWS version 10.

H0 : Variances arehomogeneous of the selected banks

H1= Variances are not t homogeneous of the selected banks

Method	Df	Value	Probability
Bartlett	11	46.61718	0.0000
Leven	(11,48)	5.507016	0.0000
Brown-Forsythe	(11,48)	1.304772	0.2510

The probability value of Leven's test is less than 5% so that we can reject the null hypothesis and can assume that variances of the selected banks are not homogeneous and cannot apply the ANOVA test. To check the significance value Welch test is applied to check the mean value of ROE ratio of the selected banks.

Following hypothesis were formed to analyze the differences of ROE ratio among the selected banks.

H0= There is no significant difference between ROE Ratio in selected banks under the study

H1= There is significant difference between ROERatio in selected banks under the study

To test the above hypothesis Welch test was applied on the above table with the help of EVIEWS version 10 and the following results were shown.

Method df	Df	Value	Probability
*Anova*F-test	(11,48)	1.580800	0.1351
Welch F-tesl	(11,18.4355	2.534106	0.0376

The Probability value of the corresponding test is less than 5%. Therefore we can reject the null hypothesis that there is no significant difference between the ROE Ratio in selected banks under the study rather we accept the alternate hypothesis that There is significant difference between ROERatio in selected banks under the study.

NIM%

Before applying any parametric test it is inevitable to check whether the selected data for the test are normally distributed or not. To check the normality Jarque-Bera test were applied with the help of EVIEWS version 10 and following hypothesis were formed.

H0 :the selected ratios for the banks are normally distributed

H1= the selected ratios for the banks are not normally distributed

Descriptive/ Banks	Mean	Jarque-Bera	Probability	Rank as Per Mean
J_K	3.288	0.341	0.843	1
SBI	2.388	0.291	0.864	2
INDIAN_BANK	2.362	0.372	0.830	3
ALL_BK	2.306	0.230	0.892	4
PNB	2.252	0.602	0.740	5
CENTRAL_B	2.126	0.776	0.678	6
OBC	2.070	0.661	0.719	7
BOB	2.042	0.649	0.723	8
UBI	2.036	0.298	0.862	9
SYNDBANK	2.000	0.438	0.803	10
BNKOFINDIA	1.906	0.540	0.763	11
CANARA	1.852	0.618	0.734	12

As per the above table the probability value of the each bank for the corresponding Jarque-Bera test is more than 5%. Hence we cannot reject thy null hypothesis rather we accept the null hypothesis and can infer that all the banks NIM ratio is normally distributed and further can go for ANOVA test. Above table shows the different descriptives of the selected banks. And as per the value of the mean of the NIM ratio rank has been given to the selected banks. According to the rank J&K Bank is having the best NIM ratio and CANARA Bank is having the worst.

As a basic condition to apply ANOVA test there is a need to check the homogeneity of variances. following hypothesis were formed and Leven's test were applied with the help of EVIEWS version 10.

H0 : Variances arehomogeneous of the selected banks

H1= Variances are not t homogeneous of the selected banks

Method	Df	Value	Probability
Bartlett	11	9.285059	0.5956
Leven	(11,48)	1.045807	0.4232
Brown-Forsythe	(11,48)	0.519759	0.8804

The probability value of Leven's test is more than 5% so that we cannot reject the null hypothesis and can assume that variances of the selected banks are homogeneous and can apply the ANOVA test. To check the significance value ANOVA test is applied to check the mean value of NIIM ratio of the selected banks.
Following hypothesis were formed to analyze the differences of NIM ratio among the selected banks.
H0= There is no significant difference between ROE Ratio in selected banks under the study
H1= There is significant difference between ROE Ratio in selected banks under the study
To test the above hypothesis ANOVA test was applied on the above table with the help of EVIEWS version 10 and the following results were shown.

Method df	Df	Value	Probability
*Anova*F-test	(11,48)	18.42428	0.0000
Welch F-tesl	(11,18.8676)	20.51246	0.0000

The Probability value of the corresponding test is less than 5%. Therefore we can reject the null hypothesis that there is no significant difference between the NIM Ratio in selected banks under the study rather we accept the alternate hypothesis that There is significant difference between NIM Ratio in selected banks under the study.

IV. CONCLUSION

Return on Asset ratio of all selected banks among all, Indian Bank is having highest mean that is 0.42 if we consider the five year data of the ratio where as Allahabad Bank is having the worst average mean of ROA ratio. The ROA ratio gives the idea to the investors that how effectively bank is able to convert its investment into income. On this front Indian Bank is performing better where Allahabad Bank were not able to earn on its investments. Return on Equity ratio of all selected banks among all Allahabad bank is having highest mean that is 6.582 if we consider five year data of the ratio where as Union Bank of India is having the worst average mean of ROE ratio. ROE is other than a measure of profit; it's to calculate the efficiency. An increasing ROE suggests that a company is growing its capability to make profit without extra much capital. It is also a measure that how well a management is using shareholders capital to earn profit.Net Interest Margin Ratio of all selected banks among all Jammu and Kashmir Bank 3.288 having highest if we consider five year data of the ratio where Canara Bank is having the worst average mean of NIM Ratio. NIM gives consideration towards the effectiveness of a Bank's investment decisions. NIM is an important indicator of financial consistency however NIM of two banks should not be compared as their behavior may be different due to asset sizes, and customer base, priority sector lending and other factors. Profitability positions of Public sector banks in India playmost importantfunction in banking. A physically powerful financial organizationattracts investment and provides business opportunities also

helps in mobilizing savings. To conclude that there is difference among the mean value of ROA, ROE and NIM. It suggested that management of the banks should take effective steps to improve the profitability positions of the banks.

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Cite this article as :

Dr. Sajan Khatri, Dr. Mansi Kukreja, Dr. Shailesh Singh Thakur, "An Analysis of Profitability of Selected Public Sector Banks ", International Journal of Scientific Research in Science and Technology (IJSRST), Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 8 Issue 2, pp. 668-675, March-April 2021. Available at

doi : https://doi.org/10.32628/IJSRST218399

Journal URL : https://ijsrst.com/IJSRST218399