A Comparative Study on Return on Investments of Different Indian Banks

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Abstract - **Banks are most important components of any financial sector. Some of the ratios which are used to evaluate the financial performance of banks are return on net worth, return on assets, return on equity, return on investment, operating income, earnings before interest and taxes, net asset value, etc. Return on investment indicates how effectively a bank manages their average investment so as to contribute its impact on the overall profitability. The findings revealed on average, return on investment of Private Bank scores lowest, then, scores Public Sector Bank, and Foreign Bank scores the highest.**

Index Terms - **Commercial Bank, Return on investment, Profitability.**

INTRODUCTION

Banks are most important components of any financial sector. Banking industry plays a vital role in sustained growth of any economy. One of the important roles of banks are to provide funds for the growth of the economy. Various financial ratios are being used to evaluate the performance of banks. Some of the ratios which is used to evaluate the financial performance of banks are return on net worth, return on assets, return on equity, return on investment, operating income, earnings before interest and taxes, net asset value, etc. These ratios not only assist the policy makers to take suitable decision but also helpful to compare the performance of different classes of banks operational in the economy. Return on investment indicates how effective a bank manages their average investment so as to contribute its impact on the overall profitability

LITERATURE REVIEW

Pandya (2015) analyzed the impact of priority sector advances of scheduled commercial banks operating in India on their profitability. Author, considered all the scheduled commercial banks operating in India for this purpose. Ratios of Priority sector advances to total advances of all commercial banks during the study period taken as an independent variable whereas, Return on Assets (ROA), Return on Investment (ROI), Return on Equity (ROE), Ratio of Operating Profit to Total Assets, (OPTA) and Ratio of Interest Income to Total Assets (INTTA) were taken as dependent variables. The study revealed that there exists a statistically significant relationship among ROI, ROA, OPTA, INTTA. The study further revealed that priority sector advances affect ROA and ROI of the banks.

Dr. Devarajappa S(2017) examined performance of the Indian Commercial banks by using CAMEL model. The study revealed that, private sectors banks have more efficient than the public sectors banks. It was suggested that government should take steps to liberalize the public sectors banks with respect investment, loans and collection of loan so that public sector banks can compete with private sectors of banks.

Ramamurthy (1998), in his paper on the profitability and productivity in Indian banking stated that the banking structure and profitability structure of the banking system across the country have a bearing on the profitability of the banks. The author opined that one of the main determinants of banks' profitability is the network of branches, frequently termed as franchise strength.

Pathak (2003) compared the financial performance of private sector banks since 1994-95. He studied the performance of these banks in terms of financial parameters like deposits, advances, profits, return on assets and productivity.

Jain (2006), in his article titled, "Ratio Analysis: An Effective Tool for Performance Analysis in Banks" discussed various ratios relating to profitability of the banks classifying them into Costing Ratio, Returns /

Yield Ratio and Spread Ratios. These ratios are used used to make an inter-branch comparison for investigating the strengths and weaknesses of individual banks and to enable them to take planned decisions and initiate necessary corrective actions.

Arora and Kaur (2006) made an attempt to review the performance of banking sector in India during the post-reforms period. For the purpose of investigation, banks have been broadly characterized into four groups, i.e., private sector, foreign banks, nationalized banks, and SBI and its associates. They made a comparative appraisal of banks on the basis of seven key performance measures such as returns on assets (ROA), capital asset, risk weighted ratio, NPA to net advances, business per employee, net profitability ratio, NPA level for a time period of 9 years, i.e., 1996-2005.

Cheenu Goel and Chitwan Bhutani Rekhi (2013) in their study on "A Comparative Study on the Performance of Selected Public Sector and Private Sector Banks in India" the various indicators are used for measuring productivity of banking sector. Analysis concluded that the new banks are more efficient than the old ones. The performance depends upon ROA, ROE and NIM.

Srivastaw (2013) investigated the performance of select foreign and new private sector banks using certain financial performance indicators. Performance has been compared by dividing total study period into two parts viz. Supra and Umbra periods. The study revealed that performance of banks showed improving trends throughout the study period both in respect of Foreign Banks as well as in respect of New Private Sector Banks.

Jha and Sarangi (2011) analysed the performance of seven public- sector and new private-sector banks, for the year 2009-10. They used three sets of ratios, operating performance ratios, financial ratios, and efficiency ratios. In all, eleven ratios were used. They arranged the banks in their descending border of performance as Axis Bank, BOI, PNB, SBI, IDBI, and HDFC.

OBJECTIVES

We want to compare the performances of three different banks, public sector, private sector and foreign bank. There are many indicators for accomplishing such comparison. We choose an important indicator i.e., return on bank's investment.

We are particularly interested in the return on investment for different banks. Our objectives are:

1. To determine whether public sector bank or private bank has higher test scores on average.
2. To determine whether private bank or foreign bank has higher test scores on average
3. To find out the difference between the paired population mean of return on investment of public sector bank and private bank.
4. To find out the difference between the paired population mean of return on investment of private bank and foreign bank.
5. To compare the difference among each pair of return on investment of public sector bank and private bank
6. To compare the difference among each pair of return on investment of private bank and foreign bank.
7. Lastly, to rank the return on investment of public sector bank, private bank and foreign bank.

DATA AND METHODOLOGY

We have taken 15 years data (i.e., from 2004-05 to 2018-2019) of return on investment for three different banks, i.e., public sector bank, private bank, and foreign bank. These data have been published and used for the present analysis. We mainly use SPSS 17 version for this analysis.

The Paired Samples t Test compares two means that are from the same individual, object, or related units. The purpose of the test is to determine whether there is statistical evidence that the mean difference between paired observations on a particular outcome is significantly different from zero. The Paired Samples t Test is a parametric test. The variable used in this test is known as: Dependent variable, or test variable (continuous), measured at two different times or for two related conditions or units. Here return from investment is the test variable. Data of return from investment of three different types of banks i.e Public Sector Bank, Private Bank and Foreign Banks of year 2004-05 to 2018-19 are collected. Now we want to see whether any mean difference between public sector bank private bank and foreign bank exists or not? For this, we pursue the paired t test taking two types of Banks as a pair at a time. Then we want to rank the return on investment from different Banks. For this purpose, we calculate the Cohen's D of each pair to

compare the difference, so that we can rank the return from investment of different bank.

ANALYSIS

Paired Samples T-Test Assumptions
It requires the same 2 assumptions. These are:
1. Independent observations;
2. Normality: The difference scores must be normally distributed in the population. Normality is only needed for small sample sizes, say N < 25 or so

HYPOTHESES

The hypotheses can be expressed is the following.
Hypothesis 1: H0: $\mu 1 - \mu 2 = 0$ ("the difference between the paired population mean of return on investment of Public Sector Bank and Private bank is equal to 0")
H1: $\mu 1 - \mu 2 \neq 0$ ("the difference between the paired population mean of return on investment of Public Sector Bank and Private sector bank is equal to 0).
Hypothesis 2: H0: $\mu 1 - \mu 2 = 0$ ("the difference between the paired population mean of return on investment of Public Sector Bank and Foreign Bank is equal to 0")
H1: $\mu 1 - \mu 2 \neq 0$ ("the difference between the paired population mean of return on investment of Public Sector Bank and Foreign Bank is equal to 0).
Hypothesis 3: H0: $\mu 1 - \mu 2 = 0$ ("the difference between the paired population mean of return on investment of Private Bank and Foreign Bank is equal to 0")
H1: $\mu 1 - \mu 2 \neq 0$ ("the difference between the paired population mean of return on investment of Private Bank and Foreign Bank is equal to 0).
Our returns on investment of each year data probably hold independent observations: each case holds a separate which didn't interact with the other year. Since we've only N = 15, we do require the normality assumption. The only way to look into this is actually computing the difference scores between each pair of bank as new variables in our data. We'll do so later on.

PROBLEM STATEMENT

The sample dataset has placement test scores for three banks: Suppose we are particularly interested in the return on investment for public sector bank and private bank sections and want to determine whether public sector bank or private bank has higher test scores on average. We could use a paired t test to test if there was a significant difference in the average of the two tests.

There are three tables: Paired Samples Statistics, Paired Samples Correlations, and Paired Samples Test. Paired Samples Statistics gives univariate descriptive statistics (mean, sample size, standard deviation, and standard error) for each variable entered. Notice that the sample size here is 15; this is because the paired t-test can only use cases that have non-missing values for both variables. Paired Samples Correlations shows the bivariate Pearson correlation coefficient (with a two-tailed test of significance) for each pair of variables entered. Paired Samples Test gives the hypothesis test results.

PRESENTATION, ANALYSIS AND FINDINGS

Although our primary interest when we run a Paired t Test is finding out if the means of the two variables are significantly different, it's also important to consider how strongly the two variables are associated with one another, especially when the variables being compared are at different time period. SPSS creates 3 output tables when running the test. The Paired Samples Test-shows the actual test results.

Table 1. Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ROIPSBNK	7.4040	15	.43733	.11292
	ROIPVTBNK	6.9413	15	.43600	.11258
Pair 2	ROIPSBNK	7.4040	15	.43733	.11292
	ROIFRNBNK	7.4473	15	.73473	.18971
Pair 3	ROIPVTBNK	6.9413	15	.43600	.11258
	ROIFRNBNK	7.4473	15	.73473	.18971

Table 2. Paired Samples Correlations			N	Correlation	Sig.
Pair 1	ROIPSBNK ROIPVTBNK	&	15	.194	.488
Pair 2	ROIPSBNK ROIFRNBNK	&	15	.240	.388
Pair 3	ROIPVTBNK ROIFRNBNK	&	15	.123	.662

Interpretation
The Paired Samples Statistics output repeats what we examined before we ran the test. The Paired Samples Correlation table adds the information that return on

investment of Public Sector Bank and Private Bank scores are insignificantly positively correlated (r = 0.194), return on investment of Public Sector Bank and Foreign Bank scores are insignificantly positively correlated (r = .240), and return on investment of Private Bank and Foreign Bank scores are insignificantly positively correlated (r = .123)

Table 3. Paired Samples Test										
		Paired Differences								Cohen's D
					95% Confidence Interval of the Difference				Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df		
Pair 1	ROIPSBNK-ROIPVTBNK	.46267	.55434	.14313	.15568	.76965	3.232	14	.006	.83463
Pair 2	ROIPSBNK-ROIFRNBNK	-.04333	.75930	.19605	-.46382	.37715	-.221	14	.828	-.05707
Pair 3	ROIPVTBNK-ROIFRNBNK	-.50600	.80684	.20833	-.95282	-.05918	-2.429	14	.029	-.62714

Reading from left to right:
1. First column: The pair of variables being tested, and the order the subtraction was carried out.
2. Mean: The average difference between the two variables.
3. Standard deviation: The standard deviation of the difference scores.
4. Standard error mean: The standard error (standard deviation divided by the square root of the sample size) used in computing both the test statistic and the upper and lower bounds of the confidence interval.
5. t: The test statistic (denoted t) for the paired T test.
6. df: The degrees of freedom for this test.
7. Sig. (2-tailed): The p-value corresponding to the given test statistic t with degrees of freedom df.

Interpretation
1. SPSS reports the mean and standard deviation of the difference scores for each pair of variables. The mean is the difference between the sample means. It should be close to zero if the population means are equal.
2. The mean difference between return on investment of Public Sector Bank and Private Bank scores t1(14) = 3.232, p=0.006 is statistically significant at α = 0.05. This is because 'Sig. (2-tailed)' or p > 0.05.
3. The 95% confidence interval includes zero: a zero mean difference is well within the range of likely population outcomes.

4. The second test indicates that the means for return on investment of Private Bank and Foreign Bank scores do not differ statistically significantly, t2(14) = -.221, p = .828. The same goes for the 3rd test Return on investment between Public Sector Bank and Foreign Bank, t3(14) =-2.429, p= .029
5. On average, return on investment of Public Sector Bank scores was .463 points higher than Return on investment of Private Bank scores (95% CI[.15568, .76965]). Similarly, on average return on investment of Public Sector Bank scores was.0433 points lower than Return on investment of Foreign Bank scores (95% CI[-.46382,.37715]). On average, return on investment of Private Bank scores was 0.506 points lower than Return on Investment of Foreign Bank scores (95% CI [-.95282, -.05918]).

Effect Size - Cohen's D
Our t-tests show that Return on asset of Public Sector Bank has a lower mean score than the other 2 banks. The next question is: are the differences large or small? One way to answer this is computing an effect size measure. For t-tests, Cohen's D is often used.

The effect sizes thus obtained are
• d = .83463 (pair 1) - large effect;
• d = -.05707 (pair 2) - small effect;
• d = -.62714 (pair 3) - moderate effect
Thus far, we compared the Return on investment of 3 pairs of banks using 3 t-tests. A shortcoming here is that all 3 tests use the same tiny student sample. This

increases the risk that at least 1 test is statistically significant just by chance. There are two basic solutions for this:

- apply a Bonferroni correction in order to adjust the significance level.
- run a repeated measures ANOVA on all 3 banks simultaneously.

CONCLUSION

The study is an effort to compare the performance of Indian commercial banks on the basis of Return on Investment and to identify the best performer in the banking industry during the study period.

1. On average, return on investment of Private Bank scores lowest, then, scores Public Sector Bank, and Foreign Bank scores the highest.
2. The correlation between return on investment of Public Sector Bank, Private Bank and Foreign Bank scores (taking two at a time), are all insignificant.
3. Public Sector Bank score is weakly, positively correlated with both the remaining two Banks. Return on investment of Private and Foreign Bank scores are also positively correlated.
4. The mean difference between return on investment of Public Sector Bank and Private Bank scores are statistically significant at 95% level. But the mean difference between return on investment of Foreign Bank with Public Sector Bank and Private Bank respectively scores are statistically insignificant
5. Cohen's - D effect size indicates the highest size difference exists among Public Sector Bank, and Private Bank, then Private Bank, and Foreign Bank, and the lowest size difference exists among Public Sector Bank and Foreign Bank.

In an economy, banking sector should remain stable and sound as it has significant impact on the economy. In the competitive environment, this all classes of banks operating in India need to perform better as well as to earn sufficient amount of earnings on its investment The investors are concerned about the return on their investment. The findings revealed on average, return on investment of Private Bank scores lowest, then, scores Public Sector Bank, and Foreign Bank scores the highest. The profitability of public sector banks is significantly affected by high operating costs. The management should take effective steps to enhance their productivity by controlling operating cost by increasing labour productivity through the use of technology, low-cost funds and reorganising of unprofitable branches.

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