

## A COMPARATIVE STUDY ON RETURN ON ASSETS OF DIFFERENT INDIAN COMMERCIAL BANKS

**Author's Name:** Dr. Barnali Basu (Banerjee)<sup>1</sup>, Dr. Sanjeev Kumar Srivastaw<sup>2</sup>

**Affiliation:** <sup>1</sup>Assistant Professor in Economics, Barasat College, Kalyani Road, Barasat, Kolkata, West Bengal, India.

<sup>2</sup>Associate Professor in Commerce, Barasat College, Barasat, Kolkata, West Bengal, India

**E-Mail:** [srisks1925@gmail.com](mailto:srisks1925@gmail.com), [barnalibasubanerjee@gmail.com](mailto:barnalibasubanerjee@gmail.com)

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### Abstract

Banks are one of the important constituents of financial sector that plays significant role in capital formation in an economy. Therefore, a comprehensive, progressive and active banking sector is required for sustainable economic growth of a country. Profitability of the banks can be examined with the help of number of parameters; one of such parameters is return on asset. The profitability of Indian commercial bank has shown marginal improvement in terms of return on assets. We have taken 15 years data (i.e., from 2004-05 to 2018-2019) of return on asset for three different banks, i.e., public sector bank, private bank, and foreign bank from RBI website. We mainly use SPSS 17 version for this analysis. We want to see whether any mean difference between public sector bank private bank and foreign bank exists with respect to Return on Asset. 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 Asset of different Banks. For this, we calculate the Cohen's D of each pair to compare the difference, so that we can rank the return from asset of different bank. We get that, on average, return on asset of Public Sector Bank scores lowest, then, scores Private Bank, and Foreign Bank scores the highest. The correlation between return on asset of Public Sector Bank, Private Bank and Foreign Bank scores (taking two at a time), are all insignificant. Public Sector Bank score is weakly, positively correlated with both the remaining two Banks. But return on asset of Private and Foreign Bank scores is negatively correlated. The mean difference between return on asset of all the three banks' scores are statistically significant at 95% level. Cohen's D effect size indicates the highest size difference exists among Public Sector Bank, and Foreign Bank, then Private Bank, and Foreign Bank, and the lowest size difference exists among Public Sector Bank, and Private Bank, spread and operating expenses have significant impact on return on asset of banks.

**Keywords:** Commercial Bank, Return on Asset, Profitability

### INTRODUCTION

Banks are one of the important constituents of financial sector that plays significant role in capital formation in an economy. Therefore, a comprehensive, progressive and active banking sector is required for sustainable economic growth of a country. Due to the challenges faced from both domestic and international developments the performance of Indian banks remained stressed during last few years. The profitability of Indian commercial bank has shown marginal improvement both in terms of return on Assets and return on equity. Profitability of the banks can be examined with the help of number of parameters one of such parameters is return on asset. Return on asset is an indicator of how profitable a company is relative to its total assets. It shows how profitable a bank's assets are in generating revenue. A lower Return on Asset (ROA) means that bank is not able to utilize its assets efficiently, however, negative Return on Asset implies the

bank's assets are yielding negative return. The ROA reached an all-time high of 1.200 % in 2004 and a record low of -0.150 % in 2018.

### LITERATURE REVIEW

Literature review involves a collection of literatures in the selected area of investigation in which the researcher has insufficient knowledge. In the past, various studies relating to the financial performance of banks have been conducted by researchers that highlighted performance of Indian Banks in the present economic scenario. A few selected studies were reviewed some of which are mentioned as under:

**Prasuna (2003)** analyzed the performance of Indian banks by adopting the CAMEL Model. The performance of 65 banks was studied for the period 2003-04. The author concluded that the competition was tough and consumers benefited from better services quality, innovative products and better bargains.

**Gupta and Kaur (2008)** conducted the study with the main objective to assess the performance of Indian Private Sector Banks on the basis of Camel Model and gave rating to top five and bottom five banks. They ranked 20 old and 10 new private sector banks on the basis of CAMEL model. They considered the financial data for the period of five years i.e., from 2003-07.

**R. C. Dangwal and Reetu Kapoor (2010)** conducted a study on financial performance of commercial banks. In this study they compared financial performance of 19 commercial banks with respect to eight parameters and they classified the banks as excellent, good, fair and poor categories.

**Santosh Kumar Das (2010)**, exhibited that in case of foreign banks the efficiency has been excellent and consistent throughout the period of study and the foreign banks have dominated the list of the highly efficient banks as compared to all scheduled commercial banks.

**K. V. N. Prasad and Dr. A. A. Chari (2011)** conducted a study to evaluate financial performance of public and private sector banks in India. In this study they compared financial performance of top four banks in India viz., SBI, PNB, ICICI and HDFC and concluded that on overall basis HDFC rated top most position.

**Namita Rajput and Monika Gupta (2011)** found that in case of foreign banks the efficiency has been excellent and consistent throughout the period of study and the foreign banks have dominated the list of the highly efficient banks as compared to all scheduled commercial banks.

**Dutta et. al (2013)** examined the determinants of ROA of banks in public sector. It also predicated the ROA performance of public sector banks in India on the basis of some parameters. viz. spread ratio, provisions and contingencies, non-interest income, credit-deposit ratio, operating expense, investment-deposit ratio and capital adequacy ratio. For this purpose, backward multiple regression analysis was used. These parameters were found to be significant determinants of ROA of public sector banks.

**T. A. Jayachitra and DR. K.T. Geetha (2014)** compared the pre with post reform period the public sector banks showed a declining growth rate for every parameter with regarding to profitability. The private sector banks achieved a dominant rate of growth with the operating profit margin while public sector banks showed its efficiency in net profit margin.

**Md. Rouf Biswas (2017)** found that state-owned banks are showed lower efficiency in their assets to generate earnings than the private commercial banks. Average value of return on assets (ROA) has shown negative by the state-owned banks.

**Dr. Gagan Deep Sharma and Dr. Divya Sharma (2017)** has tried to compare three top private sector banks on the basis of some financial parameters and one of the parameters was ROA. The bank-wise mean, standard deviation and coefficient of variation of return of assets of selected banks.

The earlier studies differed from one another in the selection of period, selection of banks, selection of indicators and selection of statistical tools and techniques. The results of most of these studies display the efficiency and financial performance of only two categories of banks. In contrast, the present study tried to compare all the three categories of banks by providing ranks to them.

## 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 asset. We are particularly interested in the return on asset 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 asset of public sector bank and private bank;
4. To find out the difference between the paired population mean of return on asset of private bank and foreign bank;
5. To compare the difference among each pair of return on asset of public sector bank and private bank;
6. To compare the difference among each pair of return on asset of a private bank and foreign bank;
7. Lastly, to rank the return on asset 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 asset for three different banks, i.e., public sector bank, private bank, and foreign bank. These data have been published in RBI website and used for the present 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 asset is the test variable. Data of return from asset 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 Asset 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 asset of different bank.

### Paired Samples T-Test Assumptions

It requires two 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

To achieve the above objectives, empirical hypotheses are formulated as:

**Hypothesis:**  $H_0: \mu_1 - \mu_2 = 0$  ("the difference between the paired population mean of return on asset of Public Sector Bank and Private bank is equal to 0")

$H_1: \mu_1 - \mu_2 \neq 0$  ("the difference between the paired population mean of return on asset of Public Sector Bank and Private sector bank is equal to 0).

**Hypothesis 2:**  $H_0: \mu_1 - \mu_2 = 0$  ("the difference between the paired population mean of return on asset of Public Sector Bank and Foreign Bank is equal to 0")

$H_1: \mu_1 - \mu_2 \neq 0$  ("the difference between the paired population mean of return on asset of Public Sector Bank and Foreign Bank is equal to 0).

**Hypothesis 3:**  $H_0: \mu_1 - \mu_2 = 0$  ("the difference between the paired population mean of return on asset of Private Bank and Foreign Bank is equal to 0")

$H_1: \mu_1 - \mu_2 \neq 0$  ("the difference between the paired population mean of return on asset of Private Bank and Foreign Bank is equal to 0).

Our returns on asset of each year data probably hold **independent** observations: each case holds a separate who 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 asset 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	ROAPSBNK	.5127	15	.62811	.16218
	ROAPVTBNK	1.2787	15	.29282	.07560
Pair 2	ROAPSBNK	.5127	15	.62811	.16218
	ROAFRNBK	1.7387	15	.29469	.07609
Pair 3	ROAPVTBNK	1.2787	15	.29282	.07560
	ROAFRNBK	1.7387	15	.29469	.07609

**Table 2. Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	ROAPSBNK & ROAPVTBNK	15	.236	.396
Pair 2	ROAPSBNK & ROAFRNBK	15	.551	.033
Pair 3	ROAPVTBNK & ROAFRNBK	15	-.109	.700

### 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 asset of Public Sector Bank and Private Bank scores are insignificantly positively correlated ( $r = 0.236$ ), return on asset of Public Sector Bank and Foreign Bank scores are insignificantly positively correlated ( $r = .551$ ), and return on asset of Private Bank and Foreign Bank scores are insignificantly negatively correlated ( $r = -.109$ ).

**Table 3. Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)	Cohen's D
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper				
Pair 1	ROAPSBNK - ROAPVTBNK	-.76600	.62717	.16193	-1.11331	-.41869	-4.730	14	.000	-1.221
Pair 2	ROAPSBNK - ROAFRNBK	-1.22600	.52663	.13598	-1.51764	-.93436	-9.016	14	.000	-2.328
Pair 3	ROAPVTBNK - ROAFRNBK	-.46000	.43739	.11293	-.70222	-.21778	-4.073	14	.001	-1.052

Reading from left to right

- First column: The pair of variables being tested, and the order the subtraction was carried out.
- **Mean:** The average difference between the two variables.
- **Standard deviation:** The standard deviation of the difference scores.
- **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.
- **t:** The test statistic (denoted  $t$ ) for the paired T test.
- **df:** The degrees of freedom for this test.
- **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 populations mean are equal.
2. The mean difference between return on asset of Public Sector Bank and Private Bank scores ( $t_1(14) = -4.730, p=0.00$ ) is [statistically significant](#) at  $\alpha = 0.05$ . 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. In a similar vein, the second test indicates that the means for return on asset of Private Bank and Foreign Bank scores *do* differ statistically significantly,  $t_2(14) = -9.016$ ,  $p = 0.00$ . The same goes for the 3rd test Return on asset between Public Sector Bank and Foreign Bank,  $t_3(14) = -4.073$ ,  $p = 0.01$
5. On average, return on asset of Public Sector Bank scores was .766 points lower than Return on asset of Private Bank scores (95% CI [-1.11331, -.41869]). Similarly, on average return on asset of Public Sector Bank scores was 1.226 points lower than Return on asset of Foreign Bank scores (95% CI [-1.51764, -.93436]). On average, return on asset of Private Bank scores was (0.46) points lower than Return on asset of Foreign Bank scores (95% CI [-.70222, -.21778]).

### 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

- $d = -1.221$  (pair 1) - roughly large effect;
- $d = -2.328$  (pair 2) - slightly over the **large** effect;
- $d = -1.052$  (pair 3) - roughly large effect

Thus far, we compared the Return of Asset 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 2 basic solutions for this:

- apply a [Bonferroni correction](#) in order to adjust the significance level.
- run a [repeated measures ANOVA](#) on all 3 exams simultaneously.

### CONCLUSIONS

1. On average, return on asset of Public Sector Bank scores lowest, then, scores Private Bank, and Foreign Bank scores the highest.
2. The correlation between return on asset 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. But return on asset of Private and Foreign Bank scores are negatively correlated.
4. The mean difference between return on asset of all the three banks' scores are [statistically significant](#) at 95% level.
5. Cohen's - D effect size indicates the highest size difference exists among Public Sector Bank, and Foreign Bank, then Private Bank, and Foreign Bank, and the lowest size difference exists among Public Sector Bank, and Private Bank, spread and operating expenses have significant impact on return on asset of banks. In order to improve their ROA, the banks should focus on reducing their operating expenses and special attention may be given for improving NPAs.

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