

## COMPARISON OF PUBLIC, PRIVATE AND FOREIGN BANKS

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### ABSTRACT

*Performance measurement in banking sector is not straight forward because it is difficult to define and measure both inputs and outputs. Further, banks may not be homogenous with respect to the types of output actually produced. In present study 23 financial ratios are computed on which performance is measured. Average composite scores of most of the foreign banks are positive depicting above average performance. In the case of private sector banks some have positive composite scores and some have negative scores. This reveals, some have above average performance and others are not up to the mark. Majority of the public sector banks have negative composite scores resulting in poor performance.*

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**Keywords:** z-Sum, Standard Normal Distribution, Composite Score, Performance Evaluation.

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### Introduction

The present study aims to analyse the financial performance of public, private and foreign banks in India. Several private and foreign Sector Banks commenced operations since introduction of reforms, which provide a big challenge to the public sector banks. Now a days, the functions of banks are not limited to within the geographical limit of any country but extend their services outside the country also. A comparative analysis of public, private and foreign banks will definitely help in evaluating the overall performance of the Indian Banking System.

Performance evaluation is at the core of management activities. One can improve the performance, if one can measure the performance. Performance measurement is the means by which a company can predict whether its operations have been delivering its objectives or not. There are many different ways to view an organization and each view gives a different perspective of the attributes which define good performance. Ideally, performance measurement system should give an accurate assessment of how well an organization is performing (based on chosen parameters) and also provide an insight into areas needing improvement.

Has the performance of commercial banks in India improved since the setting of financial deregulation? The question is important due to number of reasons. First, it is important to know whether one of the objectives of deregulation i.e. improved performance has been achieved? In recommending the liberalized entry and expansion of private banks and foreign banks, it was expected that Indian banks would become more competitive in their operations to improve their performance. Also the globalization and changed technology have brought many new changes and innovations in the banking sector. It has introduced newer technology and techniques in the areas of fund management and security creation. New frontiers in the activities of bank call for understanding and up-gradation of skills. Since, it is the performance of commercial banks which to a large extent is going to affect the stability of the financial system, therefore it is essential to know that how on account of financial reforms, the performance has been affected in the commercial banks.

However, performance measurement in banking sector is not straight forward because it is difficult to define and measure both inputs and outputs. Further, banks may not be homogenous with respect to the types of output actually produced. Appropriate policies to enhance performance can be designed, if the dimensions along which performers get clearly demarcated from non-performers and are properly identified.

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## Review of Literature

**Sathye (2005)** measures the productive efficiency using Data Envelopment Analysis (DIA). Two models were constructed to show how efficiency scores vary with change in inputs and outputs. The efficiency scores, for three groups of banks, that is, public, private and foreign was measured. The study shows that the mean efficiency score and the efficiency of private sector banks as a group are paradoxically lower than that of public sector banks and foreign banks in India.

**Biswas (2006)** analyzed the performance of new private sector banks with the help of the CAMELS model. Data of five years, i.e., from 2000-2001 to 2004-2005, had been analysed. The findings of the study revealed that the aggregate performance of IDBI bank was the best among all the banks, followed by UTI bank.

**Ruchi Gupta (2014)** study also revealed that there is a statistically significant difference between the CAMEL ratios of all the Public Sector Banks in India. Thus, signifying that the overall performance of Public Sector Banks within themselves differ significantly. Also, it can be concluded that the banks with the least ranking need to improve their performance to come up to the desired standards.

**Dhanesh Kumar Khatri (2019)** in his study inferred that there was no significance difference between the performance of public sector banks and private sector banks covered under the study. Therefore, on the basis of test of hypothesis it is proved that these private sector banks and public sector banks have shown almost equal performance on difference parameters of CAMELS rating.

## Section II Methodology

Most of the earlier studies compared the performance on the basis of capital, assets quality, managerial efficiency, earning, liquidity and sensitivity separately. In some studies, certain selected banks are compared and not large number of banks. But in the present study majority banks are selected compared by selecting 23 financial ratios. Further, composite scores are computed to access the overall performance not piece meal approach.

In the present study various important ratios are selected to evaluate bank's performance. The study is based on the secondary data. The data is collected from the Reserve Bank of India official web site namely rbi.org.in. Statistical Tables Relating to Banks provide the important financial ratios. The data is further updated from the Published Annual Reports of Bank and from their websites, Magazines and Journals on finance have also been used as sources of data. In the present study, analysis is based on 26 public sector banks, 19 private sector banks and 24 foreign banks. Banks are selected on the basis of availability of complete data from 2005 to 2017. If any data is missing then that bank is not included in the sample.

### Objectives

- To compare the performance of public, private and foreign banks in India.
- Ranking the public, private and foreign banks on the basis of their overall performance.
- Ranking of public, private and foreign banks within their group.

### Hypothesis

From the above objective of the following hypotheses are formulated to test the performance of the Bank:

#### Bank Group Wise

**H<sub>0</sub>:** There is no significant difference in the performance of public, private and foreign banks

**H<sub>1</sub>:** At least there is significant difference in two banks groups.

In the present study, 23 ratios are selected to evaluate the performance of public, private and foreign banks. The performance of banks can be broadly divided into seven parameters, which are. The financial ratios are as follows:-

#### Deposit and Credit Ratios

R<sub>1</sub>: Cash to Deposit Ratio

R<sub>2</sub>: Credit to Deposit Ratio

R<sub>3</sub>: Investment to Deposit Ratio

R<sub>4</sub>: Term Deposit to Total Deposits

R<sub>5</sub>: Secured advances to total advances

R<sub>6</sub>: Investment in non-approved securities to total investment

- R<sub>7</sub>: Priority Sector Advances to Total Advances
- R<sub>8</sub>: Net NPA to Net Advances

**Income Ratios**

- R<sub>9</sub>: Interest Income to Total Assets
- R<sub>10</sub>: Non Interest Income to Total Assets
- R<sub>11</sub>: Net Interest Margin to Total Assets

**Expenses Ratios**

- R<sub>12</sub>: Wage Bill to Total Expenses
- R<sub>13</sub>: Wage bill to total income

**Cost of Funds**

- R<sub>14</sub>: Cost of Deposits
- R<sub>15</sub>: Cost of Borrowing
- R<sub>16</sub>: Cost of Funds

**Return Ratios**

- R<sub>17</sub>: Return on Advances
- R<sub>18</sub>: Return on Investment
- R<sub>19</sub>: Operating profit to total assets

**Efficiency Ratios**

- R<sub>20</sub>: Profit Per Employee
- R<sub>21</sub>: Business Per Employee

**Capital Adequacy Ratios**

- R<sub>22</sub>: Capital adequacy ratio
- R<sub>23</sub>: Capital adequacy ratio- Tier-I

**The Data is given in the Annexure-I.**

The composite scores for each bank are computed. Since some ratios are in rupees namely business per branch, profit per branch. In some ratios high values depict a good performance like credit to deposit ratio, investment to deposit ratio, secured credit to total credit, return on deposits and return on borrowing etc. Some ratios having low values depicts good performance namely cost of deposit, cost of borrowing, cost of funds, NPA to total advances, wage bill to total expenses and wage bill to total assets. Hence data is standardized with the help of Z scores. To make the data unidirectional, the six aforementioned ratios having low score depicting good performance are multiplied by -1. Now the data is unit free and unidirectional. The Z scores of all the ratios are added and ranked by assigning rank 1 to the highest z score (best performer).

Firstly, for a set of 'n' banks and 'j' indicators provide a n \* j matrix in the following format:

X <sub>11</sub>	X <sub>12</sub>	.....X <sub>1j</sub>
X <sub>21</sub>	X <sub>22</sub>	.....X <sub>2j</sub>
X <sub>1j</sub>	X <sub>2j</sub>	.....X <sub>ij</sub>

Where X<sub>ij</sub> represent i<sup>th</sup> bank and its j<sup>th</sup> indicator. The subscript i = 1.....69 represent the banks and j=1.....23 denotes the indicator. Thus every bank is represented by a vector in the matrix.

The indicators in the above matrix have different measurement units. To bring the uniformity in the data so as to make a composite index of banking performance. It is necessary to transform the indicator matrix into a standard matrix where each indicator is made unit free of measurement. It is done with the help of standard normal variate having mean value of zero and standard deviation unity. The data is converted into standard normal variate with the help of following equation:

$$Z_{ij} = \frac{X_{ij} - \bar{X}_j}{\sigma_j}$$

Where Z<sub>ij</sub> is the j<sup>th</sup> indicator of the i<sup>th</sup> banks.  $\bar{X}_j$  and  $\sigma_j$  are the mean score and standard deviation of the j<sup>th</sup> indicator respectively. The new matrix is:

Z <sub>11</sub>	Z <sub>12</sub>	.....Z <sub>1j</sub>
Z <sub>21</sub>	Z <sub>22</sub>	.....Z <sub>2j</sub>
Z <sub>zi</sub>	Z <sub>z2</sub>	.....Z <sub>ij</sub>

In new matrix, each bank is represented by a vector in M dimensional space.

In this standardized matrix, the sums of the Z scores are computed for each bank. The ranks are assigned to the composite scores. Rank one is assigned to the highest score, since best bank is that having the maximum value.

### **Analysis and Interpretation**

The composite scores and computed ranks for the selected years are presented in table 1. In 2005, Barclays Bank was having the highest composite score 24.47 (rank 1) followed by Sonali bank 13.85 (rank2), Citi bank 12.05 (rank 3), Shinhan bank 11.50 (rank 4) and AB Bank 10.98 (rank 5). All these are foreign banks. The poor performer were Credit Agricole having composite score -14.99 (rank 69) followed by Punjab and Sind bank having a score -13.96 (rank 68). The other poor performer were Abu Dhabi Commercial bank having composite score -12.61 (rank 67), DCB bank has a score -9.53 (rank 66) and Yes bank has a score -9.13 (Rank 65). The poor performer banks belong to public, private and foreign banks. Foreign and private banks improved their performance in later years as is evident from the table 1. The high rank banks have cash to deposit, investment to deposit, term loans to total advances, interest income, non interest income, return on investment adjusted to cost of funds and operating profit to total assets. Most of the ratios in public sector banks are less than zero resulting in poor performance.

The average composite scores of public sector banks was negative in 2005 (-1.6904) with a standard deviation of 3.7478 and in private banks the average score was -1.1744 with a standard deviation of 4.7930. This reveals private sector banks performed better than public sector banks and variation was slightly higher in private sector banks. The foreign banks have the highest average composite score (2.7610) with a standard deviation 8.4862 in 2005. This shows foreign banks performed much better than private and public sector banks. There is no consistency in foreign banks as standard deviation is very high. That's why name of foreign banks appear in top ranking and poor ranking banks. Poor ranking banks improved their performance in the later years.

In 2009, first top five banks were again foreign banks namely J P Morgan Chase bank N.A with a composite score of 21.42 (Rank 1), Mashreq bank PSC with a composite score of 18.95 (Rank 2), Credit Agricole has a score 14.60 (Rank 3), CTBC bank 12.80 (Rank 4), Bank of Ceylon has a score 11.22 (Rank 5). All these banks like in 2005 belong to foreign banks category. These banks performed better in deposit, credit, income ratios. The lowest rank bank was American Express Banking Corporation in 2009 and in 2013 at rank 69 having a composite score of -29.82 and -19.80 respectively. Next poor performer was Dhanlaxmi bank with a score of -12.17 (rank 68) in 2009 and was at rank 67 in 2013. Sonali bank slides down from rank 2 in 2005 to rank 67 in 2009. Catholic Syrian has a composite score -7.20 in 2009 (Rank 66) remained in poor performer category in 2013 and 2017 also. Central bank of India has a composite score -6.55 (rank 65) in 2009 improved its performance in later years.

The average composite score of public sector banks declined to -3.40 in 2009 from -1.69 in 2005 but variation declined among public sector banks. In case of private banks the average composite score declined from -1.17 in 2005 to -1.29 in 2009. Hence private sector banks did not make any improvement in their performance in 2009. Foreign banks improved their composite score from 2.75 in 2005 to 4.71 but variation was very high (9.7641). This shows that there is no consistency in the performance of foreign banks. In 2013, first ten ranks goes to foreign banks. Top five banks was Mashreq bank PSC (Rank 1), Mizuho bank (rank 2), Credit Agricole (Rank 3), J P Morgan Chase bank (Rank 4) and Bank of Ceylon. Poor performing banks were American Express bank (Rank 69), Catholic Syrian bank (Rank 68), Dhanlaxmi bank (Rank 67), Laxmi Vilas bank ( Rank 66). American Express bank made a good progress in 2017 and attained a sixth rank.

The average composite score further declined to -4.34 in 2013 from -3.40 in 2009. In case of private sector banks the average composite score also depicts a decline from -1.29 in 2009 to -2.57 in 2013 and -1.1744 in 2005. Foreign banks made a great progress in 2013 by improving their composite score from 2.76 in 2005 and 4.71 in 2009 to 6.7340 in 2013. There is no consistency in foreign banks as their standard deviation is very high (9.10). In 2017, the first five ranks goes to foreign banks namely Mashreq Bank (rank 1), Bank of Ceylon (rank2), J P Morgan chase (rank 3), Citi Bank (rank 4) and AB Bank (rank 5). American Express bank improved its rank from 69 in 2009 and 2013 to rank 6 in 2017. HDFC Bank improved its rank from 25 in 2013 to rank 8 in 2017. Axis Bank also improved its rank and was in top ten ranking banks.

The overall average composite score of public sector banks further declined to -5.26 in 2017. Private sector banks improved their composite score from -2.57 in 2013 to 0.79 in 2017. Especially HDFC, Axis bank, ICICI bank, Kotak Mahindra and Yes bank improved their performance.

**Table 1: Total Scores and Overall Ranks of Public Banks**

S. No.	Banks	Scores					Overall Ranks				
		2005	2009	2013	2017	Avg	2005	2009	2013	2017	Avg. Rank
1	State Bank of Bikaner & Jaipur	-6.20	-2.965	-2.395	-5.294	-2.819	35	49	34	54	45
2	State Bank of Hyderabad	-2.833	-2.900	-4.062	-6.093	-3.972	52	48	46	61	50
3	State Bank of India	-4.826	-5.145	-3.856	-2.299	-4.031	59	62	42	35	54
4	State Bank of Mysore	-1.264	-3.896	-5.133	-10.363	-5.164	40	54	59	68	63
5	State Bank of Patiala	.570	-4.477	-5.701	-10.850	-5.115	28	57	61	69	62
6	State Bank of Travancore	-1.589	-3.075	-5.265	-5.993	-3.981	43	51	60	60	51
7	Allahabad Bank	-1.068	-2.489	-4.871	-5.000	-3.357	38	42	56	52	48
8	Andhra Bank	.958	-3.049	-3.885	-3.609	-2.396	26	50	44	46	41
9	Bank of Baroda	.455	-4.451	-4.109	-3.326	-2.858	30	56	47	43	46
10	Bank of India	-4.788	-3.593	-5.127	-5.854	-4.840	58	52	58	58	61
11	Bank of Maharashtra	-4.098	-4.276	-2.428	-5.936	-4.184	55	55	35	59	56
12	Canara Bank	-2.648	-4.510	-4.798	-5.496	-4.363	50	58	53	56	59
13	Central Bank of India	-2.549	-6.430	-6.552	.218	-3.828	48	65	63	29	49
14	Corporation Bank	3.368	-1.060	-3.107	-2.956	-.939	17	33	39	39	32
15	Dena Bank	-5.043	-2.476	-1.236	-7.859	-4.153	61	40	32	65	55
16	IDBI Bank Limited	5.020	-1.438	-2.266	-6.944	-1.407	11	36	33	64	36
17	Indian Bank	-2.236	-1.019	-4.237	-2.480	-2.493	46	32	49	38	42
18	Indian Overseas Bank	1.600	-3.615	-6.068	-8.005	-4.022	23	53	62	66	52
19	Oriental Bank of Commerce	4.385	-2.757	-2.859	-5.008	-1.560	14	46	38	53	37
20	Punjab And Sind Bank	-13.963	-4.961	-7.103	-4.372	-7.600	68	61	65	49	66
21	Punjab National Bank	-.749	-2.348	-3.174	-3.913	-2.546	36	38	40	47	43
22	Syndicate Bank	-4.285	-2.855	-4.211	-5.547	-4.224	56	47	48	57	57
23	Uco Bank	-4.684	-5.199	-4.858	-6.290	-5.258	57	63	55	62	64
24	Union Bank of India	-1.112	-2.379	-3.923	-3.094	-2.627	39	39	45	41	44
25	United Bank of India	-2.720	-4.580	-4.822	-6.359	-4.620	51	59	54	63	60
26	Vijaya Bank	.768	-2.482	-6.729	-4.067	-3.127	27	41	64	48	47
	Average	-1.6904	-3.4010	-4.3374	-5.2611						
	Standard Deviation	3.7478	1.3407	1.4613	2.4165						

**Table 2: Total Scores and Overall Ranks of Private Banks**

S. No.	Banks	Scores					Overall Ranks				
		2005	2009	2013	2017	Avg	2005	2009	2013	2017	Avg. Rank
27	Axis Bank	5.877	3.490	3.017	5.342	4.432	8	18	16	10	14
28	Catholic Syrian Bank Ltd	-3.513	-7.198	-11.008	-10.340	-8.015	54	66	68	67	67
29	City Union Bank Limited	-2.210	-1.189	-3.877	.923	-1.588	45	34	43	26	38
30	Dcb Bank Limited	-9.532	-4.687	-3.743	.608	-4.339	66	60	41	28	58
31	Dhanlaxmi Bank	-7.430	-12.172	-9.287	-3.372	-8.065	63	68	67	44	68
32	Federal Bank	-2.615	3.212	-2.756	-2.082	-1.060	49	19	37	34	33
33	HDFC Bank	7.066	2.311	1.081	7.004	4.366	6	21	25	8	15
34	ICICI Bank	1.327	2.241	2.514	4.386	2.617	24	22	18	15	19
35	IndusInd Bank	1.865	-2.707	1.632	4.627	1.354	22	45	21	14	24
36	Jammu & Kashmir Bank	.349	.247	2.061	-3.571	-.228	31	29	19	45	30
37	Karnataka Bank Ltd	-1.060	-2.186	-4.275	-.302	-1.956	37	37	50	31	40
38	Karur Vysya Bank	1.287	-1.426	-4.780	.097	-1.206	25	35	52	30	34
39	Kotak Mahindra Bank Ltd	3.566	.683	1.032	3.457	2.185	16	27	26	18	21
40	Lakshmi Vilas Bank	-5.007	-6.067	-8.698	-4.651	-6.105	60	64	66	51	65
41	Nainital Bank	2.914	.774	-.496	-3.184	.002	18	26	30	42	27
42	RBL	-3.103	2.738	-2.754	1.583	-.384	53	20	36	24	31
43	South Indian Bank	-5.565	-2.676	-4.903	-2.981	-4.031	62	43	57	40	53
44	Tamilnad Mercantile Bank Ltd	2.598	-.007	-4.295	.905	-.200	19	31	51	27	28
45	Yes Bank Ltd.	-9.129	.069	.689	3.058	-1.328	65	30	27	21	35
	Average	-1.1744	-1.2921	-2.5708	0.0793						
	Standard Deviation	4.7930	4.0223	4.1541	4.2169						

**Table 3: Total Scores and Overall Ranks of Foreign Banks**

S. No.	Banks	Scores					Overall Ranks				
		2005	2009	2013	2017	Avg.	2005	2009	2013	2017	Avg. Rank
46	AB Bank Limited	10.982	6.940	3.822	12.831	8.644	5	6	15	5	6
47	Abu Dhabi Commercial Bank	-12.613	6.539	1.517	-2.365	-1.730	67	8	23	36	39
48	American Express Banking Corp	-2.349	-29.823	-19.802	11.848	-10.031	47	69	69	6	69
49	Bank of America N.A.	2.199	6.125	2.535	2.611	3.368	21	11	17	23	17
50	Bank of Bahrain & Kuwait B.S.	-8.105	.394	7.358	-.462	-.204	64	28	10	33	29
51	Bank of Ceylon	-1.343	11.223	15.246	17.439	10.641	41	5	5	2	3
52	Bank of Nova Scotia	-.608	5.614	7.997	2.685	3.922	34	14	9	22	16
53	Bank of Tokyo-Mitsubishi UFJ	.528	6.544	12.775	4.000	5.962	29	7	6	16	11
54	Barclays Bank PLC	24.471	.884	-.729	7.594	8.055	1	25	31	7	7
55	Bnp Paribas	-.490	5.796	.131	4.697	2.533	33	13	29	13	20
56	Citibank N.A.	12.050	5.172	5.294	14.153	9.167	3	15	13	4	4
57	Credit Agricole	-14.996	14.605	18.961	-.384	4.546	69	3	3	32	13
58	Ctbc Bank	6.903	12.799	1.087	5.044	6.458	7	4	24	11	9
59	Dbc Bank Ltd.	-1.838	5.053	1.579	-4.551	.061	44	16	22	50	26
60	Deutsche Bank AG	.044	6.354	10.056	4.897	6.419	32	9	8	12	10
61	Hongkong And Shanghai Banking	4.759	4.661	5.703	5.966	5.272	12	17	12	9	12
62	Jp Morgan Chase Bank N.A.	5.725	21.420	18.326	14.452	14.981	10	1	4	3	2
63	Mashreq Bank Psc	2.302	18.949	23.579	31.517	19.087	20	2	1	1	1
64	Mizuho Bank Ltd	4.326	6.178	21.399	3.255	8.790	15	10	2	19	5
65	Sbm Bank(Mauritius) Ltd	5.816	1.830	10.979	-5.489	3.284	9	23	7	55	18
66	Shinhan Bank	11.505	5.980	6.005	3.187	6.669	4	12	11	20	8
67	Societe Generale	-1.479	1.191	.611	.988	.328	42	24	28	25	25
68	Sonali Bank	13.847	-8.748	5.182	-2.395	1.971	2	67	14	37	22
69	Standard Chartered Bank	4.629	-2.705	2.006	3.764	1.924	13	44	20	17	23
	Average	2.7610	4.7073	6.7340	5.6368						
	Standard Deviation	8.4862	9.7641	9.0981	8.1886						

### Performance within Public Sector Banks

In this section performance of public, private and foreign banks is compared within group. The ranks are assigned within category for the years 2005, 2009, 2013 and 2017. Further, the average performance of the four years is also computed and ranks are assigned to access the performance from 2005 to 2017 as ranks vary over the years and no consistency is there in ranks.

The performance of IDBI bank was at rank 1 in 2005 and remained in second or third position in 2009 and 2013 but suddenly declined to 22 rank in 2017 (Table 4). Oriental Bank of Commerce was at rank 2 in 2005 but could not retain this rank in later years. Corporation Bank was at rank 3 in 2005 and remained in first 6 ranks in later years. This bank shows consistency in its performance during the period under study. Indian Overseas Bank was at rank 4 in 2005 which declined to rank 24 in 2017. Andhra Bank has rank 5 in 2005 and remained in first thirteen ranks in later years.

State Bank of India made a good improvement in 2017. Its rank improved from 24 in 2005 and 2009 to rank 2 in 2017. Next bank is Central Bank of India which improved its rank from 26 in 2009 to rank 1 in 2017. Indian Bank also showed an improvement in 2017. Union Bank of India was at rank 5 in 2017 and remained in first twelve ranks.

The performance of State Bank of Patiala, State Bank of Mysore, Indian Overseas Bank, Dena Bank, IDBI Bank was lowest among public sector banks. It may be due to non performing assets, deposit mobilization, credit deployment etc.

The 12 year average composite scores are depicted in table 4 to table 6 along with ranks within group. Among the public sector banks, the first five best performers are Corporation Bank (rank1), IDBI Bank (rank 2), Oriental Bank of Commerce (rank3), Andhra Bank (rank4) and Indian Bank (rank5). The lowest five performers banks are- Punjab and Sind Bank (rank26), UCO Bank (rank25), State Bank of Mysore (rank24), State Bank of Patiala (rank23) and Bank of India (Table4).

**Table 4: Total Scores and Ranks within Public Banks**

S. No.	Banks	Scores					Ranks within Public Banks				
		2005	2009	2013	2017	Avg	2005	2009	2013	2017	Avg. Rank
1	State Bank of Bikaner & Jaipur	-.620	-2.965	-2.395	-5.294	-2.819	9	12	3	13	8
2	State Bank of Hyderabad	-2.833	-2.900	-4.062	-6.093	-3.972	19	11	11	19	13
3	State Bank of India	-4.826	-5.145	-3.856	-2.299	-4.031	24	24	8	2	16
4	State Bank of Mysore	-1.264	-3.896	-5.133	-10.363	-5.164	13	17	20	25	24
5	State Bank of Patiala	.570	-4.477	-5.701	-10.850	-5.115	7	20	22	26	23
6	State Bank of Travancore	-1.589	-3.075	-5.265	-5.993	-3.981	14	14	21	18	14
7	Allahabad Bank	-1.068	-2.489	-4.871	-5.000	-3.357	11	8	18	11	11
8	Andhra Bank	.958	-3.049	-3.885	-3.609	-2.396	5	13	9	7	4
9	Bank of Baroda	.455	-4.451	-4.109	-3.326	-2.858	8	19	12	6	9
10	Bank of India	-4.788	-3.593	-5.127	-5.854	-4.840	23	15	19	16	22
11	Bank of Maharashtra	-4.098	-4.276	-2.428	-5.936	-4.184	20	18	4	17	18
12	Canara Bank	-2.648	-4.510	-4.798	-5.496	-4.363	17	21	15	14	20
13	Central Bank of India	-2.549	-6.430	-6.552	.218	-3.828	16	26	24	1	12
14	Corporation Bank	3.368	-1.060	-3.107	-2.956	-.939	3	2	6	4	1
15	Dena Bank	-5.043	-2.476	-1.236	-7.859	-4.153	25	6	1	23	17
16	IDBI Bank Limited	5.020	-1.438	-2.266	-6.944	-1.407	1	3	2	22	2
17	Indian Bank	-2.236	-1.019	-4.237	-2.480	-2.493	15	1	14	3	5
18	Indian Overseas Bank	1.600	-3.615	-6.068	-8.005	-4.022	4	16	23	24	15
19	Oriental Bank of Commerce	4.385	-2.757	-2.859	-5.008	-1.560	2	9	5	12	3
20	Punjab And Sind Bank	-13.963	-4.961	-7.103	-4.372	-7.600	26	23	26	10	26
21	Punjab National Bank	-.749	-2.348	-3.174	-3.913	-2.546	10	4	7	8	6
22	Syndicate Bank	-4.285	-2.855	-4.211	-5.547	-4.224	21	10	13	15	19
23	UCO Bank	-4.684	-5.199	-4.858	-6.290	-5.258	22	25	17	20	25
24	Union Bank of India	-1.112	-2.379	-3.923	-3.094	-2.627	12	5	10	5	7
25	United Bank of India	-2.720	-4.580	-4.822	-6.359	-4.620	18	22	16	21	21
26	Vijaya Bank	.768	-2.482	-6.729	-4.067	-3.127	6	7	25	9	10
	Average	-1.6904	-3.4010	-4.3374	-5.2611						
	Standard Deviation	3.7478	1.3407	1.4613	2.4165						

#### Performance within Private Sector Banks

Axis Bank was having either rank 1 or rank 2 within the time period under study. This shows the consistency in the performance of the bank. HDFC Bank was at rank 1 in 2005 and 2017 and remained in first five ranks in other two selected periods. Next was ICICI Bank which improved its rank from 7 in 2005 to rank 2 in 2013 and rank 4 in 2017. Kotak Mahindra remained in first 7 ranks during the period under study. IndusInd Bank improved its rank from 15 in 2009 to rank 3 in 2017. Yes Bank also made an improvement in their performance by shifting from rank 18 in 2005 to rank 6 in 2017. These six private banks had positive composite scores and rest of the banks have mostly negative composite scores meaning thereby below average performance.

Table 5 provides the ranks within private sector banks. The 12 year average composite scores of private sector banks are provided in table 5. The best performers private sector banks on the basis of 12 year average composite scores are Axis Bank (rank1) followed by HDFC Bank (rank2), ICICI Bank (rank3), Kotak Mahindra Bank (4) and IndusInd Bank (rank5).

The poor performers private banks are- Dhanlaxmi Bank (rank19), Catholic Syrian Bank (rank18), Lakshmi Vilas Bank (rank 17), DCB Bank (rank16) and South Indian Bank (rank15).

**Table 5: Total Scores and Ranks within Private Banks**

S. No.	Banks	Scores					Ranks within Private Banks				
		2005	2009	2013	2017	Avg	2005	2009	2013	2017	Avg
27	Axis Bank	5.877	3.490	3.017	5.342	4.432	2	1	1	2	1
28	Catholic Syrian Bank Ltd	-3.513	-7.198	-11.008	-10.340	-8.015	14	18	19	19	18
29	City Union Bank Limited	-2.210	-1.189	-3.877	.923	-1.588	11	11	12	8	13
30	Dcb Bank Limited	-9.532	-4.687	-3.743	.608	-4.339	19	16	11	10	16
31	Dhanlaxmi Bank	-7.430	-12.172	-9.287	-3.372	-8.065	17	19	18	16	19
32	Federal Bank	-2.615	3.212	-2.756	-2.082	-1.060	12	2	10	13	10
33	Hdfc Bank	7.066	2.311	1.081	7.004	4.366	1	4	5	1	2
34	Icici Bank	1.327	2.241	2.514	4.386	2.617	7	5	2	4	3
35	IndusInd Bank	1.865	-2.707	1.632	4.627	1.354	6	15	4	3	5
36	Jammu & Kashmir Bank	.349	.247	2.061	-3.571	-.228	9	8	3	17	8
37	Karnataka Bank Ltd	-1.060	-2.186	-4.275	-.302	-1.956	10	13	13	12	14
38	Karur Vysya Bank	1.287	-1.426	-4.780	.097	-1.206	8	12	15	11	11
39	Kotak Mahindra Bank Ltd	3.566	.683	1.032	3.457	2.185	3	7	6	5	4
40	Lakshmi Vilas Bank	-5.007	-6.067	-8.698	-4.651	-6.105	15	17	17	18	17
41	Nainital Bank	2.914	.774	-.496	-3.184	.002	4	6	8	15	6
42	RBL	-3.103	2.738	-2.754	1.583	-.384	13	3	9	7	9
43	South Indian Bank	-5.565	-2.676	-4.903	-2.981	-4.031	16	14	16	14	15
44	Tamilnad Mercantile Bank Ltd	2.598	-.007	-4.295	.905	-.200	5	10	14	9	7
45	Yes Bank Ltd.	-9.129	.069	.689	3.058	-1.328	18	9	7	6	12
	Average	-1.1744	-1.2921	-2.5708	0.0793						
	Standard Deviation	4.7930	4.0223	4.1541	4.2169						

**Performance within Foreign Sector Banks**

Most of the foreign banks have positive composite scores in the selected four time periods under study. The best performing banks appears to be Mashreq Bank, JP Morgan, Bank of Cylon, CitiBank, Credit Agricole and AB Bank. Most of the other foreign banks have positive composite scores resulting in better performance than public and private sector banks.

Table 5 provides the ranks within foreign banks. The 12 year average composite scores of foreign sector banks are provided in table 6. The best performers' among foreign sector banks on the basis of 12 year average composite scores are Mashreq Bank (rank1), J P Morgan Chase Bank (rank2), Bank of Cylon (rank3), Citi Bank (rank4) and Mizuho Bank (rank5)

The poor performers foreign banks are- American Express Banking Corp (rank24), ABU DHABI Commercial Bank (rank23), Bank of Bahrain & Kuwait B.S. (rank 22), DBS Ltd. (rank21) and Societe Generale (rank20).

**Table 6: Total Scores and Ranks within Foreign Banks**

S. No.	Banks	Scores					Ranks within Foreign Banks				
		2005	2009	2013	2017	Avg	2005	2009	2013	2017	Avg
46	Ab Bank Limited	10.982	6.940	3.822	12.831	8.644	5	6	15	5	6
47	Abu Dhabi Commercial Bank	-12.613	6.539	1.517	-2.365	-1.730	23	8	19	21	23
48	American Express Banking Corp	-2.349	-29.823	-19.802	11.848	-10.031	21	24	24	6	24
49	Bank of America N.A.	2.199	6.125	2.535	2.611	3.368	13	11	16	17	15
50	Bank of Bahrain & Kuwait B.S.	-8.105	.394	7.358	-.462	-.204	22	21	10	20	22
51	Bank of Ceylon	-1.343	11.223	15.246	17.439	10.641	18	5	5	2	3
52	Bank of Nova Scotia	-.608	5.614	7.997	2.685	3.922	17	14	9	16	14
53	Bank of Tokyo-Mitsubishi Ufj	.528	6.544	12.775	4.000	5.962	14	7	6	12	11
54	Barclays Bank Plc	24.471	.884	-.729	7.594	8.055	1	20	23	7	7
55	Bnp Paribas	-.490	5.796	.131	4.697	2.533	16	13	22	11	17



56	Citibank N.A.	12.050	5.172	5.294	14.153	9.167	3	15	13	4	4
57	Credit Agricole	-14.996	14.605	18.961	-.384	4.546	24	3	3	19	13
58	Ctbc Bank	6.903	12.799	1.087	5.044	6.458	6	4	20	9	9
59	Dbs Bank Ltd.	-1.838	5.053	1.579	-4.551	.061	20	16	18	23	21
60	Deutsche Bank Ag	.044	6.354	10.056	4.897	6.419	15	9	8	10	10
61	Hongkong and Shanghai Banking	4.759	4.661	5.703	5.966	5.272	9	17	12	8	12
62	Jp Morgan Chase Bank N.A.	5.725	21.420	18.326	14.452	14.981	8	1	4	3	2
63	Mashreq Bank PSC	2.302	18.949	23.579	31.517	19.087	12	2	1	1	1
64	Mizuho Bank Ltd	4.326	6.178	21.399	3.255	8.790	11	10	2	14	5
65	Sbm Bank(Mauritius) Ltd	5.816	1.830	10.979	-5.489	3.284	7	18	7	24	16
66	Shinhan Bank	11.505	5.980	6.005	3.187	6.669	4	12	11	15	8
67	Societe Generale	-1.479	1.191	.611	.988	.328	19	19	21	18	20
68	Sonali Bank	13.847	-8.748	5.182	-2.395	1.971	2	23	14	22	18
69	Standard Chartered Bank	4.629	-2.705	2.006	3.764	1.924	10	22	17	13	19
	Average	2.7610	4.7073	6.7340	5.6368						
	Standard Deviation	8.4862	9.7641	9.0981	8.1886						

ANOVA is applied on the 12 year average composite scores. The mean composite score of foreign banks was the highest (5.005) followed by private sector banks (-1.239) and public sector banks (-3.672). Both public and private sector banks have lower composite score than the overall average score. This shows foreign banks performance is better than public and private sector banks. But variation is highest in foreign banks. Public sector banks shows more consistency in their performance Table7).

**Table 7: Mean and Standard Deviation of Composite Scores**

Group	Mean	Std. Deviation
Foreign	5.005	5.780
Private	-1.239	3.617
Public	-3.672	1.421
<b>Total</b>	.016	5.471

ANOVA analysis is based on the assumption of equality of variance in all the groups under study. For this Levene's test is applied.

**H<sub>0</sub>:** There is equal variance in public, private and foreign banks.

**H<sub>1</sub>:** Variance is not same in the group of banks.

Since p value is 0.001 which is less than the critical value 0.05. this provides a sufficient evidence to reject the null hypothesis. Hence in the present study Games- Howell inequality variance test is applied.

**Table 8: Levene's Test of Equality of Error Variances<sup>a</sup>**

Dependent Variable: Average Composite Score

F	df1	df2	Sig.
8.341	2	66	.001

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

In ANOVA the null and alternate hypothesis are

**H<sub>0</sub>:** The average composite score (performance) of public, private and foreign banks is same.

**H<sub>1</sub>:** The average composite score (performance) is different in at least two groups.

The F value is 30.704 with degree of freedom of 2, 66 (Table 9). The p value is 0.000 which is less than the critical value 0.05. hence null hypothesis is rejected. This shows at least two banks' performance differ significantly. For this multi comparison test is applied.

**Table 9: Tests of Between-Subjects Effects**  
Dependent Variable: Average Composite Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Group	980.998	2	490.499	30.704	.000
Error	1054.370	66	15.975		
Corrected Total	2035.368	68			

Post-hoc test suggests performance of the entire three bank groups differ significantly. Since mean score is highest in foreign banks, their performance was the best in comparison to private and public sector banks. Private and public sector mean composite score also differ significantly. This suggests that private sector banks performed better than public sector banks.

**Table 10: Multiple Comparisons (Games-Howell)**  
Dependent Variable: Average Composite Score

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Foreign	Private	6.244 <sup>*</sup>	1.442	.000	2.731	9.758
	Public	8.677 <sup>*</sup>	1.212	.000	5.662	11.693
Private	Foreign	-6.244 <sup>*</sup>	1.442	.000	-9.758	-2.731
	Public	2.433 <sup>*</sup>	.875	.028	.235	4.631
Public	Foreign	-8.677 <sup>*</sup>	1.212	.000	-11.693	-5.662
	Private	-2.433 <sup>*</sup>	.875	.028	-4.631	-.235

Based on observed means.  
The error term is Mean Square(Error) = 15.975.  
\*The mean difference is significant at the .05 level.

The above analysis reveals that there is a significant difference in the performance of foreign banks in comparison to public and private banks. The performance of public and private banks also differs on these 23 financial ratios.

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