

# Financial Performance Analysis of Public and Private Sector Banks through Camel Model

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*Article Received: 26 February 2018*

*Article Accepted: 27 April 2018*

*Article Published: 05 June 2018*

## ABSTRACT

The present research has been conducted to investigate the financial performance of the selected public and private sector banks with the application of CAMEL model. The period of the study has been five years from 2013 to 2017. Data has been collected from published annual reports and financial statements. Independent sample t test has been used to analyze the differences in the calculated ratios of the banks. The findings highlighted that there is a significant difference in capital adequacy ratio, debt equity ratio, Gross NPA ratio, total advance to total deposit ratio, return on asset, and liquidity asset to total asset ratios of the banks under study.

Keywords: Financial, performance, CAMEL model, public, private, banks.

## 1. INTRODUCTION

The CAMEL rating is a supervisory rating system originally developed in the US to classify a bank's overall position. CAMEL model of rating was first developed in the 1970s by the three federal banking supervisors of the U.S (the Federal Reserve, the FDIC and the OCC) as part of the regulators' "Uniform Financial Institutions Rating System", to provide a convenient summary of bank condition at the time of its onsite examination. It is applied to every banks and credit union in the U.S. and also implemented outside the U.S. by various banking supervisory regulators. The uniform financial institution rating system commonly termed to the acronym CAMEL. The banks were judged on five different components under the acronym C-A-M-E-L:

C – Capital Adequacy

A – Asset Quality

M – Management Soundness

E – Earnings Capacity and

L – Liquidity

The banks received a score of '1' through '5' for each component of CAMEL and a final CAMEL rating representing the composite total of the component CAMEL scores as a measure of the bank's overall condition. The system of CAMEL was revised in 1996, when agencies added an additional parameter 'S' for assessing "sensitivity to market risk", thus making it 'CAMELS' that is in vogue today.

A total of eighteen ratios have been calculated in to evaluate the performance of a bank under CAMEL Model. The list of ratios has been highlighted in Table 1. But, in the current research, six ratios i.e. Capital adequacy ratio, debt equity ratio, Gross NPA ratio, total advance to total deposit ratio, return on asset, and liquidity asset to total asset ratio have been calculated.

Table 1: Summarized list of Ratios covered under CAMEL Model

<b>C</b>	<b>CAPITAL ADEQUACY</b>	1. Capital Adequacy Ratio 2. Debt Equity Ratio 3. Total Advance to Total Asset Ratio 4. Government Securities to Total Investments
<b>A</b>	<b>ASSET QUALITY</b>	5. Gross NPA Ratio 6. Net NPA Ratio
<b>M</b>	<b>MANAGEMENT SOUNDNESS</b>	7. Total Advance to Total Deposit Ratio 8. Business per Employee 9. Profit per Employee
<b>E</b>	<b>EARNINGS PROFITABILITY</b>	10. Dividend Payout Ratio 11. Return on Asset 12. Interest Income to Total Income Ratio 13. Other Income to Total Income Ratio
<b>L</b>	<b>LIQUIDITY</b>	14. Liquidity Asset to Total Asset Ratio 15. Government Securities to Total Asset Ratio 16. Approved Securities to Total Asset Ratio 17. Liquidity Asset to Demand Deposit Ratio 18. Liquidity Asset to Total Deposit Ratio

## 2. OBJECTIVES OF THE STUDY

1. To explicate the concept of CAMEL model.
2. To investigate the financial performance of the selected public and private sector banks for a period of five years from 2013 to 2017.

## 3. RESEARCH METHODOLOGY

- a) **Period of the Study:** The study covers a period of five years from 2013 to 2018.
- b) **Data Collection:** Data has been collected from published annual reports of the selected banks.
- c) **Sample Size:** The study has taken a total of seven public and private sector banks.
- d) **Public Sector Banks:** Allahabad Bank, Canara Bank, Bank of Baroda, and Bank of India
- e) **Private Sector Banks:** Axis Bank, HDFC Bank, and ICICI Bank
- f) **Statistical Tools:** The present study employed CAMEL model to examine the financial performance and independent sample t test has been used to analyze the differences in the calculated ratios of the selected banks.

#### 4. HYPOTHESES OF THE STUDY

Ho<sub>1</sub>: There is no significant difference in capital risk adequacy ratio of selected public and private sector banks.

Ha<sub>1</sub>: There is a significant difference among capital risk adequacy ratio of selected public and private sector banks.

Ho<sub>2</sub>: There is no significant difference in debt equity ratio of selected public and private sector banks.

Ha<sub>2</sub>: There is a significant difference among debt equity ratio of selected public and private sector banks.

Ho<sub>3</sub>: There is no significant difference in gross NPA to total asset ratio of selected public and private sector banks.

Ha<sub>3</sub>: There is a significant difference among gross NPA to total asset ratio of selected public and private sector banks.

Ho<sub>4</sub>: There is no significant difference in total advance to total deposit ratio of selected public and private sector banks.

Ha<sub>4</sub>: There is a significant difference among total advance to total deposit ratio of selected public and private sector banks.

Ho<sub>5</sub>: There is no significant difference in return on asset (ROA) ratio of selected public and private sector banks.

Ha<sub>5</sub>: There is a significant difference among return on asset (ROA) ratio of selected public and private sector banks.

Ho<sub>6</sub>: There is no significant difference in liquid asset to total asset ratio of selected public and private sector banks.

Ha<sub>6</sub>: There is a significant difference among liquid asset to total asset ratio of selected public and private sector banks.

#### DATA ANALYSIS AND INTERPRETATION

##### 5. CAPITAL RISK ADEQUACY RATIO (CRAR)

*CRAR = Capital/ Total Risk Weighted Credit Exposure*: CRAR is a ratio of Capital Fund to Risk Weighted Assets. Reserve Bank of India prescribes banks to maintain a minimum Capital to risk-weighted Assets Ratio (CRAR) of 9% with regard to credit risk, market risk and operational risk on an ongoing basis, as against 8% prescribed in Basel documents. Total capital includes Tier-I capital and Tier-II capital. Tier-I capital includes paid up equity capital, free reserves, intangible assets etc. Tier-II capital includes long term unsecured loans, loss reserves, hybrid debt capital instruments etc. The higher the CRAR, the stronger is considered a bank, as it ensures high safety against bankruptcy. Table highlights the capital risk adequacy ratio of public and private sector banks from 2013 to 2017.

Table 2: Capital Risk Adequacy Ratio

Public Sector	2017	2016	2015	2014	2013
Allahabad Bank	11.03	12.83	12.96	13.62	13.11
Canara Bank	11.76	13.18	14.38	13.93	13.22
Bank of Baroda	13.30	14.67	14.52	14.36	14.05
Bank of India	11.02	11.95	12.17	12.94	13.01

<b>Mean</b>	<b>11.77</b>	<b>13.15</b>	<b>13.51</b>	<b>13.71</b>	<b>13.34</b>
<b>SD</b>	1.072	1.133	1.136	0.597	0.476
<b>Private Sector</b>					
	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	17	13.66	12.65	15.80	13.69
HDFC Bank	12.29	11.08	11.22	10.82	12.29
ICICI Bank	13.61	15.41	13.25	14.85	13.30
<b>Mean</b>	14.3	13.38	12.37	13.82	13.09
<b>SD</b>	2.712	2.424	1.041	2.643	0.725

Source: Annual Reports

Table 3: Independent Sample t Test

<b>Banks</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>T value</b>	<b>P value</b>	<b>Results</b>
<b>Public Sector</b>	4	13.096	0.7559	19.907	0.000	Ho: Rejected
<b>Private Sector</b>	3	13.392	0.5508			

Source: Output of SPSS\_20

Independent sample t Test has been applied to examine the difference in CRAR of the selected banks. Table 3 shows the values of mean, SD, t value and P value. The value of t is 19.907 and the p value corresponding to it is 0.000 which is less than 0.05. It means first null hypothesis stands rejected and hence there is a significant difference in capital fund to risk weighted assets of the banks under study.

## 6. DEBT EQUITY RATIO

This ratio indicates the degree of leverage of a bank. It indicates how much of the bank business is financed through debt and how much through equity. This is calculated as the proportion of total asset liability to net worth. 'Outside liability' includes total borrowing, deposits and other liabilities. 'Net worth' includes equity capital and reserve and surplus. Higher the ratio indicates less protection for the creditors and depositors in the banking system. It means the lower the ratio, the better it is. Table 4 highlights the debt equity ratios of the banks under study.

Table 4: Debt Equity Ratios

<b>Public Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Allahabad Bank	0.89	0.87	0.81	0.80	0.66
Canara Bank	1.32	1.10	1.18	1.33	0.92
Bank of Baroda	0.74	0.81	0.63	0.85	0.30
Bank of India	1.34	1.05	1.30	1.10	0.53

<b>Mean</b>	<b>1.07</b>	<b>0.95</b>	<b>0.98</b>	<b>1.02</b>	<b>0.60</b>
<b>SD</b>	0.3037	0.4392	0.5125	0.3998	0.4578
<b>Private Sector</b>					
	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	1.33	1.49	1.38	1.07	1.52
HDFC Bank	0.26	1.02	0.59	0.24	0.24
ICICI Bank	1.52	1.30	1.38	0.84	0.74
<b>Mean</b>	1.03	1.27	1.11	0.71	0.89
<b>SD</b>	0.6755	0.5208	0.4511	0.4905	0.6417

Source: Annual Reports

Table 5: Independent Sample t Test

<b>Banks</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>T value</b>	<b>P value</b>	<b>Results</b>
<b>Public Sector</b>	4	0.924	0.9857	-2.227	0.007	Ho: Rejected
<b>Private Sector</b>	3	1.002	0.8922			

Source: Output of SPSS\_20

Independent sample t Test has been applied to examine the difference in debt equity ratios of the selected banks. Table 5 shows the results of independent sample t test. The value of t is -2.227 and the p value corresponding to it is 0.007 which is less than 0.05. It means null hypothesis (second) stands rejected and hence there is a significant difference in debt equity ratios of the banks under study.

## 7. GROSS NPA TO TOTAL ASSET RATIO

Advances are classified into performing and non-performing advances (NPAs) as per RBI guidelines. NPAs are further classified into sub-standard, doubtful and loss assets based on the criteria stipulated by RBI. An asset, including a leased asset, becomes non-performing when it ceases to generate income for the bank. This ratio is used to check whether the bank's gross NPAs are increasing quarter on quarter or year on year. If it is, indicating that the bank is adding a fresh stock of bad loans. It would mean the bank is either not exercising enough caution when offering loans or is too lax in terms of following up with borrowers on timely repayments. Table 6 exhibits the gross NPA to total asset ratio of the selected banks from 2013 to 2017.

Table 6: Gross NPA to Total Asset Ratio

<b>Public Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Allahabad Bank	3.92	1.91	1.80	1.71	1.83
Canara Bank	3.71	2.12	1.38	0.86	0.83
Bank of Baroda	2.40	2.17	1.83	1.80	1.68
Bank of India	3.18	3.64	2.91	3.61	2.14
<b>Mean</b>	<b>3.30</b>	<b>2.46</b>	<b>1.98</b>	<b>1.99</b>	<b>1.62</b>

<b>SD</b>	0.677	0.794	0.635	0.985	0.856
<b>Private Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	0.12	1.18	1.28	1.39	1.24
HDFC Bank	2.35	2.36	3.05	3.28	4.64
ICICI Bank	3.18	4.40	5.86	8.69	8.78
Mean	1.88	2.64	3.39	4.45	4.88
SD	1.5208	1.65	1.0087	2.2274	2.8569

Source: Annual Reports

Table 7: Independent Sample t Test

Banks	N	Mean	SD	T value	P value	Results
<b>Public Sector</b>	4	2.27	0.5594	7.114	0.000	Ho: Rejected
<b>Private Sector</b>	3	3.448	0.7822			

Source: Output of SPSS\_20

Independent sample t Test has been applied to examine the difference in gross NPA to total asset ratio of the selected banks. Table 7 shows the results of independent sample t test. The value of t is 7.114 and the p value corresponding to it is 0.000 which is less than 0.05. It means null hypothesis stands rejected and hence there is a significant difference in gross NPA to total asset ratio of the banks under study.

## 8. TOTAL ADVANCE TO TOTAL DEPOSIT RATIO

Sound management is one of the most important factors behind financial institutions' performance. Indicators of quality of management are primarily applicable to individual institutions, and cannot be easily aggregated across the sector. Furthermore, it is difficult to judge its soundness just by looking at financial accounts of the banks. Nevertheless, total advance to total deposit, business per employee and profit per employee helps in gauging the management quality of the banking institutions. Total advance to total deposit ratio measures the efficiency and ability of the banks management in converting the deposits available with the banks (excluding other funds like equity capital, etc.) into high earning advances. Total deposits include demand deposits, saving deposits, term deposit and deposit of other bank. Total advances also include the receivables. Table 8 highlights the total advance to total deposit ratio of the selected banks under study.

Table 8: Total Advance to Total Deposit Ratio

<b>Public Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Allahabad Bank	0.072	0.070	0.071	0.068	0.069
Canara Bank	0.079	0.079	0.078	0.072	0.074
Bank of Baroda	0.069	0.075	0.075	0.073	0.074
Bank of India	0.076	0.078	0.071	0.073	0.075

<b>Mean</b>	<b>0.074</b>	<b>0.0755</b>	<b>0.0737</b>	<b>0.0715</b>	<b>0.073</b>
<b>SD</b>	0.2244	0.3011	0.1239	0.3155	0.2089
<b>Private Sector</b>					
	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	0.780	0.771	0.753	0.738	0.695
HDFC Bank	0.717	0.723	0.713	0.640	0.582
ICICI Bank	0.787	0.834	0.763	0.723	0.705
<b>Mean</b>	<b>0.7613</b>	<b>0.776</b>	<b>0.743</b>	<b>0.7003</b>	<b>0.661</b>
<b>SD</b>	0.5598	0.6824	0.9158	1.0112	0.7825

Source: Annual Reports

Table 9: Independent Sample t Test

<b>Banks</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>T value</b>	<b>P value</b>	<b>Results</b>
<b>Public Sector</b>	4	0.0735	0.9866	29.851	0.008	Ho: Rejected
<b>Private Sector</b>	3	0.7283	0.7359			

Source: Output of SPSS\_20

Independent sample t test has been applied to examine the differences in total advance to total deposit ratio of the selected banks. Table 9 shows the results of independent sample t test. The value of t is 29.851 and the p value corresponding to it is 0.008 which is less than 0.05. It means fourth null hypothesis stands rejected and hence there is a significant difference in total advance to total deposit ratio of the banks under study.

## 9. RETURN ON ASSET (ROA)

*Return on Assets = Net Profit / Total (Average) Assets \* 100*

ROA indicates the efficiency of the banks in utilizing their assets in generating profits. It is calculated by dividing the net profit by total assets. A higher ratio indicates the better income generating capacity of the assets and better efficiency of the management in future and vice versa. An adequate liquidity position refers to a situation, where a bank can obtain sufficient funds, either by increasing liabilities or by converting its assets quickly at a reasonable cost. Higher ratio indicates better utilization of investment in total assets. Here, average assets mean an average of assets at the beginning & at the end of the year. It is, therefore, generally assessed in terms of overall assets and liability management, as mismatching gives rise to liquidity risk. Table 10 highlights the ROA of public and private sector banks from 2013 to 2017.

Table 10: Return on Asset

<b>Public Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Allahabad Bank	1.02	1.11	1.16	0.90	1.32
Canara Bank	1.19	1.36	1.39	1.09	1.16
Bank of Baroda	1.24	1.33	1.21	1.09	0.89
Bank of India	0.72	0.82	0.70	1.49	1.25
<b>Mean</b>	<b>1.0425</b>	<b>1.155</b>	<b>1.115</b>	<b>1.1425</b>	<b>1.155</b>

<b>SD</b>	0.9875	0.8807	0.9044	0.9558	0.9676
<b>Private Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	1.90	1.77	1.58	1.53	1.28
HDFC Bank	1.70	1.50	1.35	1.13	0.98
ICICI Bank	1.63	1.57	1.46	1.14	0.58
Mean	1.7433	1.6133	1.4633	1.2666	0.9466
SD	0.3698	0.2207	0.4281	0.3380	0.7975

Source: Annual Reports

Table 11: Independent Sample t Test

Banks	N	Mean	SD	T value	P value	Results
<b>Public Sector</b>	4	1.122	1.0236	13.339	0.002	Ho: Rejected
<b>Private Sector</b>	3	1.4066	0.9705			

Source: Output of SPSS\_20

Independent sample t test has been applied to examine the differences in ROA of the selected banks. Table 11 shows the results of independent sample t test. The value of t is 13.339 and the p value corresponding to it is 0.002 which is less than 0.05. It means fifth null hypothesis stands rejected and hence there is a significant difference in ROA of the banks under study.

## 10. LIQUID ASSET TO TOTAL ASSET

*Liquid Assets to Total Assets = Liquid Assets / Total Assets \* 100*

Liquid assets include cash in hand, money at call & short notice, balance with the RBI, balance with other banks (both in India and abroad), and money at call and short notice. Total asset include the revaluations of all the assets. The proportion of liquid asset to total asset indicates the overall liquidity position of the bank. This ratio indicates the overall liquidity position of the bank.

The liquid assets to total assets ratio is an important liquidity management tool to examine the extent liquid assets can support its asset base. Most of the financial organization holds little cash, preferring to put liquid assets to productive use. This approach can yield a liquid asset to total assets ratio at very low or near to zero.

While asset productivity is important, in a liquidity crisis, a low liquid asset to total assets ratio can be hazardous for the financial health and survival of the bank. Table 12 documents the liquid asset to total asset ratios of the selected banks under study.

Table 12: Liquid Asset to Total Asset



<b>Public Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Allahabad Bank	0.063	0.061	0.062	0.059	0.060
Canara Bank	0.067	0.067	0.066	0.062	0.064
Bank of Baroda	0.060	0.064	0.064	0.063	0.063
Bank of India	0.064	0.065	0.061	0.061	0.063
<b>Mean</b>	<b>0.063</b>	<b>0.064</b>	<b>0.633</b>	<b>0.613</b>	<b>0.625</b>
<b>SD</b>	0.024	0.039	0.047	0.067	0.035
<b>Private Sector</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
Axis Bank	0.578	0.594	0.587	0.578	0.552
HDFC Bank	0.650	0.636	0.633	0.581	0.523
ICICI Bank	0.584	0.609	0.578	0.564	0.551
Mean	0.604	0.613	0.599	0.574	0.542
SD	0.039	0.212	0.295	0.091	0.164

Source: Annual Reports

Table 13: Independent Sample t Test

<b>Banks</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>T value</b>	<b>P value</b>	<b>Results</b>
<b>Public Sector</b>	4	0.3996	1.1172	-4.208	0.005	Ho: Rejected
<b>Private Sector</b>	3	0.5864	1.0059			

Source: Output of SPSS\_20

Independent sample t test has been applied to examine the difference in liquid assets to total assets ratio of the selected banks. Table 13 exhibits the results of independent sample t test. The value of t is -4.208 and the p value corresponding to it is 0.005 which is less than 0.05. It means sixth null hypothesis stands rejected and hence there is a significant difference in liquid assets to total assets ratio of the banks under study.

Table 14: Summary of Hypotheses Tested

<b>No.</b>	<b>Hypotheses</b>	<b>Results</b>
<b>Ho<sub>1</sub></b>	There is no significant difference in capital risk adequacy ratio of selected public and private sector banks.	Rejected
<b>Ho<sub>2</sub></b>	There is no significant difference in debt equity ratio of selected public and private sector banks.	Rejected
<b>Ho<sub>3</sub></b>	There is no significant difference in gross NPA to total asset ratio of selected public and private sector banks.	Rejected
<b>Ho<sub>4</sub></b>	There is no significant difference in total advance to total deposit ratio of	Rejected

	selected public and private sector banks.	
<b>H<sub>05</sub></b>	There is no significant difference in return on asset (ROA) ratio of selected public and private sector banks.	Rejected
<b>H<sub>06</sub></b>	There is no significant difference in liquid asset to total asset ratio of selected public and private sector banks.	Rejected

Source: Based on Hypotheses Tested

## 11. CONCLUSION

CAMEL model of rating was first developed in 1970s in USA. Earlier it was only used in USA but later on it has been implemented around the world. Presently, a modified CAMEL model is widely used to judge the performance of companies. Under this model, eighteen ratios have been calculated under five heads. But, in the current research, capital adequacy ratio, debt equity ratio, Gross NPA ratio, total advance to total deposit ratio, return on asset, and liquidity asset to total asset ratio have been calculated. The period of the study is five years from 2013 to 2017. Allahabad Bank, Canara Bank, Bank of Baroda, and Bank of India are the public sector banks whereas Axis Bank, HDFC Bank, and ICICI Bank are the private sector banks that have been selected in the study. Data has been collected from published annual reports and financial statements and thereafter independent sample t test has been used to analyze the differences in the calculated ratios of the banks. The findings highlighted that there is a significant difference in capital adequacy ratio, debt equity ratio, Gross NPA ratio, total advance to total deposit ratio, return on asset, and liquidity asset to total asset ratios of the banks under study. It has been revealed that the performance of private sector banks is better in all aspects than public sector banks.

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