Measuring Impact of CAMELS Model on Financial Performance of Indian Commercial Banks

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Abstract

The purpose of this study is to examine the effects of CAMELS components on the financial performance of Indian commercial banks. To fulfill the objectives of the study,secondary data were collectedfor the fiscal year 2016 to 2021 from four public sector and four private sector banks based on their market capitalization. To analyse the data two econometric models are constructed using return on assets (ROA) and return on equity (ROE) as proxies for commercial banks' financial performance as dependent variables and six CAMELS's key indicators (capital adequacy, asset quality, management efficiency, earning quality, liquidity, and sensitivity to market risk)as independent variables. To determine the extent to which the independent variables have an effect on the dependent variable, panel ordinal least square regression with their assumption has been used. The findings of the study revealed that the financial performance of Indian banking sector as evaluated by ROA and ROE is statistically and significantly affected by capital adequacy, liquidity and sensitivity to market risk, whereas asset quality, managerial efficiency and earning quality is found to have insignificant impact on the financial performance of Indian commercial banks. In order to perform better, it is suggested that the commercial banks should focus more on the variables that have a substantial impact on their financial performance.

Keywords: Random effect, ROA, ROE, liquidity, sensitivity to market risk, CAMELS.

Introduction

Since liberalization, the Indian banking sector has witnessed tremendouschanges. With the nationalization of all major banks in 1960 by the Government of India, the Public sector banks have dominated India's banking industry. But, with the liberalisation of banking regulation in the 1990s, both new and existing private sector banks have grown swiftly and largely over the past 31 years by using revolutionary technology, progressive innovations, monetary tools and appropriate strategies. Gupta (2014) asserts that the deployment and efficient use of resources, as well as the performance of various economic sectors, are key factors in the development of an economy. The banking industry, in particular facilitates monetary policies, develop capital, create money, and innovate. It is crucial to carefully assess and analyse how banks operate in order to maintain a sound financial system and a productive economy. Though the actions assessing bank performance are abundant, amongst these actions of administrative ordinance is the CAMELS rating system (Kiran, 2018). The CAMELS rating system, which was originally implemented in the U.S in 1979, is one of the measures of supervisory information (Dang, 2011). On the advice of the Padmanabhan Working Group Committee (1995), RBI adopted this model in 1996 (Kiran, 2018). With the passage of time, this model got improved. Initially, it was composed of five factors: capital adequacy, asset quality, management effectiveness, earnings, and liquidity. Sensitivity to market risk, or the "S" that makes it "CAMELS," was added to the framework in 1996 (John, 2020). Sound financial health and performance evaluation of a bank are important for depositors, shareholders, staff, and the overall economy of a country, since it determines a bank's capacity to compete in the market and plays a critical role in the sector's development. In response to this assertion, efforts have occasionally been made to assess each bank's financial performance and manage it appropriately (Mohiuddin, 2014). In keeping with this context, the current study uses the CAMELS Model to analyse the commercial banks in India and the impact of each component of CAMELS model on their financial performance.The current study shall prove helpful in expanding discussion of

the CAMELS model and will significantly add to the body of knowledge already available about the financial performance of Indian commercial banks. Additionally, the study will be useful for academics, researchers, and policy makers both on a national and international scale.

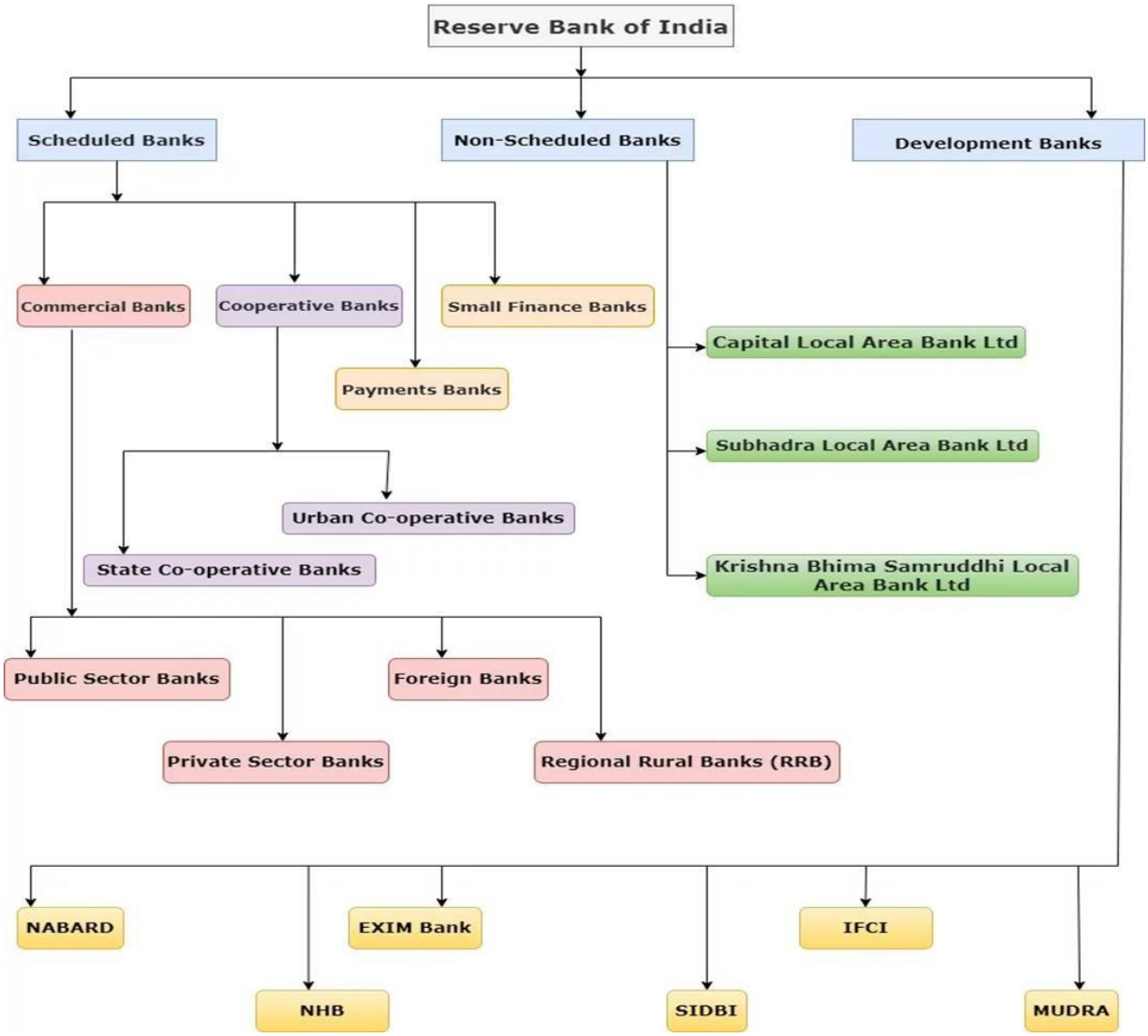

Figure 1: Reserve Bank of India

CAMEL Model:

CAMEL stands for Capital Adequacy, Asset Quality, Management Competence, Earning Quality, and Liquidity. This demonstrate measures the execution of the organization utilizing the over five parameters which makes a difference in dissecting the organizations execution from diverse point of sees. It may be a ratio-based demonstrate to examine the execution of the banks. Camel models makes a difference to rate the banks execution on a five-parameter scale. Figure 2 represents the CAMEL model

1. Capital Adequacy

It is critical to examine the capital structure of the banks since it is critical to hold certainty of all the financial specialists, and dodge the bank from being wiped out. It too bargains with the capacity of the bank to meet its extra monetary necessities. The taking after proportions are measured to discover the capital ampleness of the banks.

a. Capital adequacy proportion
b. debt value proportion
c. Equity to total assets proportion

2. Asset Quality:

This proportion makes a difference to examine the quality of resources of the banks i.e. what quality of credits are given to earn interest. Quality of credit implies less number of defaulters or non-performing assets. The major point of this proportion is to measure the Non-performing resources as compared to the whole assets. The following ratio are required to measure the resource quality of the banks.

a. Net NPAs to add up to Resource proportion
b. Net NPA to add up to Development proportion
c. Add up to speculation to add up to asset proportion

3. Management Competence:

This proportion measures the competence of administration to earn super returns and to include esteem to the shareholders. It measures the profit on the basis of per worker which makes a difference the administration their commitment to know towards the banks. Administration of a bank plays vital part in making numerous key choices. Subsequently it is critical to degree administration effectiveness. The following ratio are utilized to degree the administration competence.

a. Benefit per worker
b. Business per representative
c. Intrigued salary to add up to progresses proportion

4. Earning Quality:

Because it is vital to measure the profit of the bank made through the assets utilized it is additionally imperative to measure the quality of the profit this implies the consistency of profit over the a long time.
The proportions utilized to degree the gaining quality are

a. Return on resource proportion
b. Return on value proportion
c. Working benefit to total asset ratio

5. Liquidity:

overseeing liquidity may be a big task for the investors as they got to legitimately fence their hazard, earn better returns at the same time keep up liquidity to permit the financial specialists to pull back their ventures at whatever point required. Hence the banks must have a appropriate adjust between liquidity, chance and returns. The following ratio are utilized to degree the liquidity of the banks.

a. Cash to add up to resources
b. Credit to add up to deposits

Literature Review

Roopa and Shankar (2020) believed that public sector banks have the skills necessary to compete with private sector banks. Mayakkannan and Jayasankar (2020) observed that the public sector banks outperformed private sector banks, but private sector banks emerge more quickly than public sector banks. Kumar (2020), Panboli and Birda (2019),

Parikh (2018) found that as compared to private sector banks, public sector banks are less effective.John (2020) made an effort to evaluate the performance of a number of public sector banks, by putting the CAMELS model approach to use and identifying their flaws. He pointed out that India's public sector banks are not performing better as they are unable to manage their earnings efficiently and effectively. He recommended that appropriate actions are needed to improve the performance of these banks. Joshi and Sankaranarayanan (2018) posit that factors like profit per employee, debt/ equity, total asset to total deposit ratio, and net NPA to total advance ratios have an impact on how the selected banks behave. Kiran (2018) found that with the exception of the liquidity aspect, private sector banks outperformed public sector banks in all CAMEL model frameworks. Only one public sector bank, SBI, managed to get to the top five spots. The other public sector banks still need to improve their capital sufficiency, asset quality, managerial expertise, and earnings quality. The ability of the banks to create sustained profitability, according to the European Central Bank (2010), is the definition for describing bank performance. For a bank to be able to maintain continued operations and provide investors with a healthy return, profitability is crucial. Golin (2001) noted that profitability and earnings are the best metrics for assessing a bank's overall performance. Later, Jha and Hui (2012) argued that the analysis of financial ratios could provide investors with better investment options. The profitability of a commercial bank is measured using a variety of ratios.

So, Anggono (2017) and Kumar (2017) proposed two alternative measures such as ROA and ROE to represent a bank performance variable. While in a study by Ongore and Kusa (2013), ROA, ROE, and NIM are the key parameters determining a commercial bank's profitability. The performance of a bank in earlier studies can also be determined by using additional metrics like Tobin's Q and economic value added. Loans make up the majority of the assets in the majority of banks, and return on assets measures net profit against asset inputs. Return on assets gauges how efficiently a bank manages its assets to generate profits (Golin, 2001). Return on assets is a key metric of managerial efficiencyas it revealed how much profit a company generated for every dollar of its assets (Elyor, 2009). Bakar and Tahir (2009) used ROA as a dependent variable for bank performance. Return on equity compares equity investment to net profit (Golin, 2001). The ROE measures how well a bank used the money from its investors and shows the rate of return for the bank's shareholders (Elyor, 2009;Siddiqui and Shoaib, 2011).

Research methodology

The purpose of this study is to determine how the CAMELS component would affect the financial performance of selected banks in India from 2016 to 2021. On the basis of market capitalization, four banks from each category—12 public sector banks and 21 private sector banks—have been chosen as samples. Descriptive statistics, including minimum, maximum, mean, and standard deviation of the variables, as well as inferential statistics, were applied to examine the data once all relevant information had been gathered.

An examination of the correlation between the dependent and independent variables is then performed. In order to determine the extent of the independent variables' influence on the dependent variable, ordinary least square regression with their assumption has been used. SPSS and STATAwere used to analysed data that was gathered from various sources. The acquired data have been analysed using the ordinary least squares model in accordance with the type of data, which is panel data. Panel data, commonly referred to as longitudinal data, include both crosssectional and time series aspects. They appear when we measure the same group of individuals or items across time (Brooks, 2008).

Table 1.1: Variables, Codes and Measurement

Variables	*Codes*	*Measurements*	*Sources*
Dependent V			
Return on Asset	ROA	Net Profit after tax (PAT)/ Total Assets *100	Kumar, 2017.
Return on Equity	ROE	Profit after tax/ total average equity *100	Ramazan and Gulden, 2019.
Independent V			
Capital adequacy	Capital	[(Tier 1 + Tier 2)/ Risk weighted Asset]*100	Kumar & Malhotra, 2017; Balagurusamy, 2017
Asset quality	Asset	Net NPA/Total Assets*100	Panboli & Birda, 2019; Kiran, 2018
Management efficiency	Mgt	Total Income/ No. of Employees	Kiran, 2018
Earnings	Ear	Interest Income/Total (Average) Assets *100	Puspitasari *et al.*, 2021
Liquidity	Liq	Liquid Assets/Total Deposit*100	Gadhia, 2015
Sensitivity to market risk	Sen	Securities Other Than Government/ Total Asset	Balagurusamy, 2017

Accordingly, the following two equations are developed;

$$ROA_{it} = \beta0+\beta1*CAPITAL_{it} + \beta2*ASSET_{it} + \beta3*MGT_{it} + \beta4*EAR_{it} + \beta5*LIQ_{it} + \beta6*SEN_{it} + e_{it} \quad (1)$$

$$ROE_{it} = \beta0+\beta1*CAPITAL_{it} + 5\beta2*ASSET_{it} + 5\beta3*MGT_{it} + 5\beta4*EAR_{it} + \beta5*LIQ_{it} + \beta6*SEN_{it} + e_{it} \quad (2)$$

Where i indicates the bank, t is the time period/year, e is the mixture of series data and cross sectional data error term,0 is constant term and β is the explanatory variables' coefficient..

Results And Discussion

This section includes the descriptive analysis, the regression analysis, model testing, and explanations of the derived results.

Table 1.2 revealed 0.55 as the mean value of ROA and 1.24 as the standard deviation. The ratio's minimum and highest values are, 2.95 and 2.01respectively. The ROE statistic had a mean of 0.02 and a standard deviation of 0.16. The ratio has a range from .52 at its lowest point to.19 at its highest point. The capital adequacy mean value and standard deviation are 14.56 and 2.96, respectively. A bank's capital adequacy must be at least 9%. A mean value of 14.56% exceeds the minimum required level. The mean value of asset quality arrived at .32, and the standard deviation as 1.42. The ratio has a minimum value of 0.001 and a maximum value of 8.160. The mean and standard deviation for management effectiveness are found to be 14.27 and 3.82, respectively. The ratio has a minimum value of 7.51 and a maximum value of 23.73, respectively. The earnings

have a mean of.067 and a standard deviation of 0.027, with the least value being.001 and the greatest being 0.132. Liquidity has a mean of 0.12 and a standard deviation of 0.045, with a range of 0.071 to 0.250.

The mean and standard deviation for sensitivity to market risk are arrived at .797 and.035, respectively. The ratio's minimum and maximum values are .676 and .854 respectively.

Table 1.2: Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
ROA	48	-2.950	2.010	.55583	1.243873
ROE	48	-.52	.19	.0252	.16345
C	48	9.200	22.300	14.56042	2.964221
A	48	.001	8.160	.32925	1.423085
M	48	7.510	23.730	14.27042	3.825341
E	48	.001	.132	.06796	.027915
L	48	.071	.250	.12690	.045376
S	48	.676	.854	.79713	.035181
Valid N (listwise)	48				

*Source: Data analysis

Inferential Statistics Results

Validation of Data for Statistical Analysis

The accuracy of the data must first be confirmed before moving on to data analysis, research model estimation, and hypothesis testing. This is accomplished by using a number of tests, including the multi collinearity, the autocorrelation, heteroskedasticity and Pearson's correlation of independent variables. Data is shown using the Panel Data technique.

Multi-Collinearity

This issue arises when there is a very strong correlation between the
explanatory factors. The Pearson correlation and variance inflation factor are used to examine the type of correlation that exists between the dependent and independent variables as well as to determine whether multicollinearity is caused by this correlation.

Table 1.3: Pearson Correlation for Independent Variables

	Capital	*Asset*	*Mgt*	*Ear*	*liquidity*	*Sen*
Capital	1					
Asset	-0.32783	1				
Mgt	-0.32128	-0.03616	1			
Ear	-0.11454	-0.20403	-0.18343	1		
liquidity	0.129471	0.038341	-0.12368	-0.02957	1	
Sen	0.344433	-0.14418	-0.34772	-0.09742	0.449173	1

**Source:* Data analysis

The table 1.3 demonstrates that all correlation coefficients between the independent variables are less than 0.8, which excludes the possibility of multicollinearity or at least

provides no evidence that it exists. The assumption of the independence of each independent variable determines how strong the general linear model is. In the absence of this, the general linear model is inapplicable and cannot be deemed suitable for the process of information estimation (Sifu & Mishal, 2003). By calculating the VIF value for each of the independent variables, the collinearity statistics test was performed to achieve that. The VIF value for each independent variable is less than (5), as shown in the table, indicating that there is no inherent correlation between the variables in the study models.

Table 1.4: Variance Inflation Factor Test

Variables	*VIF(Model 1)*	*VIF(Model 2)*
C	1.43	1.43
A	1.31	1.31
M	1.38	1.38
E	1.22	1.22
L	1.27	1.27
S	1.57	1.57

**Source:* Data analysis

Table 1.4 depicts thatthere is no problem of Multicollinearityin the data set as all the values of VIF are less than 5. These values indicate the absence of Multicollinearity.

Table 1.5: Autocorrelation (Durbin-Watson) Test

Durbin-Watson d-statistics	*Model 1*	*Model 2*
	1.96	2.27

**Source:*Data analysis

The Durbin Watson for Model 1 arrived 1.96 and for Model 2, it is 2.27. For both models Durbin Watson value is in accepted range i.e. 1.5 to 2.5. This indicates there is no autocorrelation problem.

Heteroskedasticity

Table 1.6: Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity (Model 1)

Variables: fitted values of ROA	*Model 1*	*Model 2*
chi2(1)	2.17	12.98
Prob> chi2	0.1405	.0003

**Source:*Data analysis

Regression Results

MODEL 1

Table 1.7: Hausman (1978) Specification Test

	Coef.
Chi-square test value	7.043
P-value	.317

**Source:* Data analysis

The result of Hausman test indicates a Chi2 of 7.04 with probability of 0.3169. According to Brooks (2008) if pvalue for the test is greater than 1%, it indicates that the random effects model is appropriate. So, for this model Random Effect model is appropriate with pvalue of .3169 which is greater than 0.001.

Table 1.8: Regression results

ROA	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
Capital	.284	.043	6.56	0	.199	.369	***
Asset	-.041	.065	-0.63	.527	-.17	.087	
Mgt	-.039	.032	-1.22	.221	-.101	.023	
Ear	2.77	3.285	0.84	.399	-3.669	9.209	
liquidity	-4.382	2.348	-1.87	.062	-8.984	.22	*
Sen	7.443	3.703	2.01	.044	.186	14.7	**
Constant	-8.582	3.266	-2.63	.009	-14.984	-2.181	***

Mean dependent var	0.556	SD dependent var	1.244
Overall r-squared	0.774	Number of obs	48
Chi-square	51.036	Prob> chi2	0.000
R-squared within	0.275	R-squared between	0.881

*** *p<.01*, ** *p<.05*, * *p<.1*
**Source:* Data analysis

For checking whether panel least squares is appropriate for the data
or Random effect model, we applied BreuschPagan (BP) test wherein the hypothesis are set as:

Null hypothesis: POLS is appropriate than REM.
Alternate hypothesis: POLS is not appropriate than REM.
Decision rule: if pvalue is greater than .05 then accept the null
hypothesis and go for POLS. If pvalue is less than .05 then reject the null hypothesis and go for REM.

Table 1.9:Breusch and Pagan Lagrangian Multiplier Test for Random Effects

	Coef.
chibar2(01)	0.60
Prob> chibar2	0.2194

**Source:* Data analysis

Here pvalue is 1 which is more than .05 which signifies that POLS is
appropriate for the model

Table 1.10: Linear Regression

ROA	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
Capital	.302	.035	8.65	0	.231	.372	***
Asset	-.069	.069	-0.99	.326	-.209	.071	
Mgt	-.004	.027	-0.15	.883	-.058	.05	
Ear	3.201	3.412	0.94	.354	-3.689	10.09	
liquidity	-8.641	2.147	-4.02	0	-12.977	-4.306	***
Sen	12.23	3.067	3.99	0	6.036	18.425	***
Constant	-12.626	2.572	-4.91	0	-17.821	-7.432	***

Mean dependent var	0.556	SD dependent var	1.244
R-squared	0.803	Number of obs	48
F-test	27.921	Prob> F	0.000
Akaike crit. (AIC)	92.086	Bayesian crit. (BIC)	105.184

*** p<.01, ** p<.05, * p<.1
**Source:* Data analysis

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**Source:* Data analysis

ROAit= 12.626 + .3015CPAit .0689ASQit .00393MGEit + 3.200EARit – 8.6414LIQit + 12.23SENit + eit

MODEL 2

Table 1.11: Hausman (1978) Specification Test

	Coef.
Chi-square test value	13.721
P-value	.033

**Source:* Data analysis

The result of Hausman test indicates a Chi2 of 13.72 with probability of 0.0329. According to Brooks (2008) if pvalue for the test is greater than 1%, it indicates that the random effects model is appropriate. So for this model Random Effect model is appropriate with pvalue of 0.0329 which is greater than 0.001.

Table 1.12: Regression Results

Roe	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
Capital	.037	.005	6.78	0	.026	.047	***
Asset	-.021	.011	-1.91	.056	-.042	.001	*
Mgt	.006	.004	1.46	.143	-.002	.014	
Ear	.392	.53	0.74	.46	-.647	1.432	
liquidity	-.994	.334	-2.98	.003	-1.649	-.34	***
Sen	1.594	.477	3.34	.001	.659	2.528	***
Constant	-1.76	.4	-4.40	0	-2.544	-.976	***

Mean dependent var	0.025	SD dependent var	0.163
Overall r-squared	0.725	Number of obs	48
Chi-square	107.930	Prob> chi2	0.000
R-squared within	0.170	R-squared between	0.965

*** p<.01, ** p<.05, * p<.1
**Source:* Data analysis

For checking whether panel least squares is appropriate for the data
or Random effect model, we applied BreuschPagan (BP) test wherein the hypothesis are set as:
Null hypothesis: POLS is appropriate than REM.
Alternate hypothesis: POLS is not appropriate than REM.
Decision rule: if pvalue is greater than .05 then accept the null
hypothesis and go for POLS. If pvalue is less than .05 then reject the null hypothesis and go for REM.

Here pvalue is 1 which is more than .05 which signifies that POLS is
appropriate for the model.

Table 1.14: Linear regression

roe	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
Capital	.037	.006	6.25	0	.025	.049	***
Asset	-.021	.012	-1.68	.1	-.045	.004	
Mgt	.006	.004	1.62	.113	-.001	.014	
Ear	.392	.714	0.55	.586	-1.049	1.834	
liquidity	-.994	.356	-2.80	.008	-1.713	-.276	***
Sen	1.594	.84	1.90	.065	-.103	3.291	*
Constant	-1.76	.673	-2.62	.012	-3.118	-.402	**

Mean dependent var	0.025	SD dependent var	0.163
R-squared	0.725	Number of obs	48
F-test	13.139	Prob> F	0.000
Akaike crit. (AIC)	-86.590	Bayesian crit. (BIC)	-73.491

*** p<.01, ** p<.05, * p<.1
**Source:* Data analysis

$$ROE_{it} = -1.76 + .3675*CPA_{it} - .2061*ASQ_{it} + .00603*MGE_{it} + .3921*EAR_{it} - .994*LIQ_{it} + 1.5936*SEN_{it} + e_{it}$$

Conclusion

To sum up, it is culminated that the present study looks into how CAMELS components affect the financial performance of commercial banks in India. The outcomes support the impact of the CAMELS criteria on these commercial banks' performance. The financial performance (ROA and ROE) is regarded as a dependent variable, while the CAMELS model parameters include Capital sufficiency, Asset quality, Management efficiency, Liquidity, and Sensitivity to Market Risk. Eight commercial banks make up the study's sample, of which four are from the public and four are from the private sectors. Sixyear financial statistics (from 2016 to 2021) from their annual reports, which are available on their official websites are gathered. Capital adequacy as measured by CRAR has significant effect on financial performance of public and private sector banks, which is measured by ROA and ROE. Asset quality which is measured by net NPAs to total assets has insignificant effect on performance of public and private sector bank measured by ROA and ROE. Business per employee which is a proxy of management efficiency, significantly affected both by ROA and ROE.

Earnings as measured by interest income to total asset have an insignificant impact on both ROA and ROE, whereas liquidity has significant impact.Sensitivity to market risk has significant impact on ROA and insignificant impact on performance of public and private sector bank, when measured by ROE.

References

1. Mayakkannan, R., &Jayasankar, C. (2020). A Study on Performance Evaluation of Selected Public and Private Sector Banks Through Camel Model in India. Purakala (UGC Care Journal),31 (25), 202– 206.
2. DR. Chetana R. Marvadi (2018): "Identifying determinants of Bank Efficiency using CAMEL Model: A Study of selected Indian Banks", International Journal of Research and Analytical Reviews, Vol.5, Issue 3 September (2018), E-ISSN 2348-1269, P- ISSN 2349-5138.
3. Ramya, S., Narmadha, N. K. B., Lekha, S., Nandhitha Bagyam, V. R., & Keerthana, A. (2017). Analysis of financial performance of state bank of India using camels approach. IJAR, 3(2), 449-452.
4. Mrs. Jyoti Talreja, and Dr. Shivappa International Journal in Management and Social Science ISSN: 2321-1784 Vol.04 June (2016).
5. Rostami, M. (2015). Determination of CAMELS model on bank's performance. International journal of multidisciplinary research and development, e-ISSN, 2349-4182.
6. Kaur et al (2015). Financial Performance Analysis of Selected Public Sector Banks: A Camel Model Approach. International Journal of Applied Business and Economic Research, 13, 4327-4348.
7. Ruchi Gupta (2014): "An Analysis of Indian Public Sector Banks Using Camel Approach", Journal of Business and management, Vol.16, Issue 1, pp. 94-102, January (2014), e-ISSN: 2278-487X, p-ISSN: 2319-7668.
8. Nandi, J. K. (2013). Comparative performance analysis of select public and private sector banks in India: An application of CAMEL model. Journal of Institute of Public Enterprise, 36, 3/4, 1-28.
9. Kumar, M. A., Harsha, G. S., Anand, S., & Dhruva, N. R. (2012). Analyzing soundness in Indian banking: A CAMEL approach. Research Journal of Management Science, ISSN, 2319, 1171.