



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Comparative Study On Capital Management And Asset Quality Of Indian Public And Private Sector Banks Using CAMEL Model Approach

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Abstract

This study looks at the asset quality and capital status of the Indian banking system with regard to non-performing assets to selected public and private sector banks' advances during a five-year period, from 2016 to 2020–21. For the comparison analysis, secondary sources of data obtained from selected banks' annual reports were taken into account. Private sector banks outperformed public sector plans in terms of the capital adequacy ratio (CAR), debt equity ratio (DER), total advance to total asset ratio, and government security to total asset ratio. Public sector banks had higher net non-performing assets (NPA) to total asset ratios and total investment to total asset ratios, while private sector banks had higher net non-performing assets to net advance ratios.

Key words: Asset Quality, CAMEL Model Approach, Capital

Introduction

The foundation of the financial sector, which allows for the efficient use of the nation's financial resources, is provided by banks. The banking industry is expanding gradually and has seen a flow of capital. The rapidly evolving financial services sector in which banks operate compels them to expand their range of financial offerings in order to better meet the diverse needs of their clientele. Developed by US federal regulators in the early 1970s, the CAMEL framework is one of the most widely used tools for evaluating banking performance. Based on the CAMEL model approach, an attempt has been made in this study to compare the capital management and asset quality of banks in the public and private sectors. According to the report, public sector banks perform noticeably better.

Review of Literature

Mishra (2011) discovered that, out of the twelve banks chosen for the study, HDFC leads, followed by ICICI and Axis Bank. In fourth place, behind IDBI and Kotak Mahindra Bank, are Bank of Baroda and Punjab National Bank. Public sector banks such as SBI and UBI are not given much priority. It indicates that private sector banks were outperforming public sector banks in terms of performance. After four years of research, Kabir and Dey (2012) found that, using the CAMEL Model technique, IFIC was superior in some aspects while EXIM bank was better in others. According to Aspal and Malhotra (2013), United Bank of India is the lowest performance due to ineffective management, low capital adequacy, poor assets and earning quality, and high capital adequacy. The top two performing banks are Bank of Baroda and Andhra Bank. The Indian Central Bank is ranked bottom, followed by UCO Bank and the Maharashtra Bank. With data gathered from 2007 to 2011, the CAMEL model approach evaluated the performance of Indian public and private sector banks using tests like F, Anova, and arithmetic tests.

Using secondary data gathered from annual reports, periodicals, websites, etc. for the years 2009–2011, Chaudhary (2015) conducted a study to compare the appropriate performance of public and private sector banks. The study's findings showed that private sector banks outperformed public sector banks in every

category and were expanding more quickly. According to Talreja and Shivappa (2016), public sector banks did better in terms of liquidity and management capability over the chosen period of 2011–12 to 2014–15, whereas private sector banks did better in terms of capital adequacy, earning capability, and asset quality. They also said that bankers' primary responsibility these days is to boost shareholders' wealth and entice them to make more investments. Investors will take into account the total performance of any bank before investing on the basis of profitability, management efficiency, goodwill, growth rate and long-term sustainability *etc*. According to Sukanya (2019), Punjab National Bank had the lowest ranking while Kotak Mahindra fared better and was the top bank overall. When compared to public sector banks, private sector banks did better. Private banks hold the top five spots, with Bank of Baroda, a public sector bank, coming in third place alongside HDFC Bank. The study was conducted between 2012 and 2017 during a five-year period. According to Lambore et al. (2022), there is a statistically significant variance in the CAMEL ratios of all Indian private sector banks; consequently, there is a considerable variation in the overall performance of private sector banks. It was also determined that the banks with the lowest rankings needed to perform better. 16 public companies' financial performance

Research Gap

The study was conducted between 2016–17 and 2020–21, a span of five years. Based on capital adequacy and total assets, the top five public and private sector banks are selected for the study. The performance of public and private sector banks is severely hampered by the lack of comprehensive research on capital management and asset quality. To close this knowledge gap and enhance bank performance with regard to capital adequacy and asset quality, a study was conducted to identify and bridge the research gaps.

Objectives

1. To use the CAMEL model approach to estimate the various analysis ratios for capital management and asset quality parameters.
2. To evaluate the performance of certain banks in the public and private sectors using metrics for asset quality and capital adequacy.

Scope of the Study

This study's objective is to analyze the various ratios and outcomes of India's banking sector. Ratios from the CAMEL model are used to study and assess the banks' performance. In order to improve the performance of the chosen public and private sector banks in the future, the study will assist in identifying the gaps and filling them with appropriate solutions.

Limitations

1. Only five Indian public and private sector banks were included in the study.
2. The study solely takes into account the selected Banks' annual reports and financial figures, which could have been filtered by window dressing.
3. The data from 2016–17 to 2020–21, a mere five years will be dedicated to this investigation.

Results and Discussion

A. Capital Management

1. Capital Adequacy Ratio (CAR): Another term used for the capital adequacy ratio is the capital risk adequacy ratio (CRAR). The capital fund to risk-weighted asset ratio is what it is. RBI encourages banks to regularly maintain a minimum CRAR of 9% for market, credit, and operating risk, as opposed to the 8% required by Basel standards. The CRAR comprises of Capital (Tier 1 Capital + Tier 2 Capital) / Risk Weighted Assets.

(Tier 1 Capital = (Paid Up Capital + Statutory Reserves + Disclosed Free Reserves) - (Equity Investments In Subsidiary + Intangible Assets + Current & B/F Losses)

(Tier 2 Capital = A) Undisclosed Reserves + B) General Loss Reserves + C) Hybrid Debt Capital Instruments

Null Hypothesis (Ho): The CARs of the chosen public and private sector banks do not significantly differ from one another.

Hypothesis Alternative (Ha): The CARs of the chosen public and private sector banks differ significantly from one another.

It is clear from the table 1 that there is significant difference among the selected private and public sector banks for CAR. It can be further interpreted from the table that CAR of private sector bank is higher than the public sector banks in last five years. The mean value of all the 5 private sector bank is 16.11, which is higher than the CAR value of 12.31 in private sector banks. Among private sector banks, ICICI bank had highest CAR (17.58) followed by Axis Bank (16.80) and HDFC bank (16.75), whereas among public sector banks, the significantly highest (13.22) CAR was found with SBI followed by BoB (13.21) over 5 years of study.

The capital adequacy ratio serves as a gauge for a bank's capacity to absorb losses from risk-weighted assets. It is a measurement of the combined risk-weighted assets' Tire-1 and Tire-II capital. The bank's capital adequacy indicates whether or not it has enough capital to cover unforeseen losses brought on by unforeseen circumstances. It shows the general state of the banks' finances as well as the management's capacity to provide the extra capital needed. It is clear that private banks are more capable of bearing risk arising from risk weighted assets. Similar results were reported by Aspal and Malhotra (2013), Agrawal *et al.* (2014), Sukanya (2019) and Lambore *et al.* (2022).

2. Debt Equity Ratio (DER): The debt-to-equity ratio shows how leveraged a bank is. It is the proportion of total shareholder funds (share capital plus reserves) to total debt (borrowings). It is the ratio of net worth to total asset liability. Total borrowings, deposits, and other liabilities are included in the liability, while equity capital, reserves, and surplus make up the net value. Greater DER values suggest that the banking sector offers less security to depositors and creditors.

Null Hypothesis (Ho): The debt-to-equity ratios of the chosen public and private sector banks do not significantly differ from one another.

Alternative Hypothesis (Ha): The debt-to-equity ratios of the chosen public and private sector banks differ significantly.

It is clear from the F test (Table 2) that there are notable differences in DERs between private and public sector banks in both within-group and inter-group scenarios. It is also evident from the group statistical analysis that public sector banks have a lower DER value than private sector banks.

In table 1 it is observed that a decreasing trend in debt equity ratio has been noticed in all the bank from 2016-17 to 2020-21, indicating the concern to provide greater protection for creditors and depositors over the year. Similar reports have been reported by Mishra (2011), Mishra *et.al* (2012), Chaudhary (2015) and Talreja and Shivappa (2016)

3. Total Advance to Total Asset Ratio: This is the proportion of total advances to total assets. It demonstrates the banks' ability to lend money, which eventually translates into increased profitability. The profit margin improves with increasing ratios. The receivables are part of the advances as well. The revaluation of every asset is not included in the total assets.

Null Hypothesis (Ho): The total advance to total assets ratio of the chosen public and private sector banks does not differ significantly

Alternative Hypothesis (Ha): The total advance to total assets ratios of the chosen public and private sector banks differs significantly.

From the statistical analysis (Table 2 and Table 3), it is obvious that there was significant difference for total advance to total assets of the selected public and private sector banks and therefore null hypothesis is rejected and alternate hypothesis is accepted. From the group statistics it is evident that the mean of ratios was higher (0.629) for private banks than that of public sector banks (0.552).

In table 1, the average of the ratios for five years from 2016 to 2021, it is found that the highest ratio (0.591) was pertaining to Federal Bank followed by IndusInd, Axis, HDFC and ICICI banks. Among public sector banks BoB was having the highest advance to asset ratio (0.591) followed by UBI, PNB SBI and CBI. It indicates that private sector banks have better lending policy than the public sector banks, which will enhance the profitability of the banks. However, risk is involved whenever there is less chance of recovery. Similar reports have been reported by Aspal and Malhotra (2013), Agrawal *et al.* (2014), Sukanya (2019) and Lambore *et al.* (2022).

4. Government Securities to Total Investment: Government securities to total investment ratio is an important indicator which shows the risk bearing ability of the bank. It provides availability of alternate investment opportunities to the banks. Government security is considered most safe debt instrument which in turn carries the lowest return since government securities are free from risk. The higher the ratio of government securities to total investment, the lower the risk is involved in bank's investment.

It was found to be inconsistent ratio for both private and public banks over the study period. In some years it was higher and in some years it was lower. The reason for this inconsistency may be due to varying policy of the banks. Banks might want to get more profit.

Null Hypothesis (Ho): The Govt. Securities to total investment ratios of the chosen public and private sector banks do not differ significantly.

Hypothesis Alternative (Ha): The Government Securities to Total Investment ratios of the chosen public and private sector banks differ significantly.

From the statistical analysis (Table 2 and Table 3), it is quite vivid that there is significant difference for government securities to total investment ratios of the selected public and private sector banks therefore the null hypothesis is rejected and alternate hypothesis is accepted. Based on the group statistics it is evident that government securities to total investment ratios are higher (0.7631) in private banks compared to public banks (0.6634).

From the table 1, it is clear that the private banks are more cautious about the government securities and therefore the average ratio is higher in case of private banks. Since the public sector banks belong to the government itself, they don't bother much about keeping higher amount of government securities. From the mean table 1, it is also evident that among the public sector banks the highest government securities to total investment ratio is associated with PNB (0.812) followed by State Bank of India (0.777), CBI (0.775) UBI (0.747) and BOB (0.206). Among private banks the highest ratio was found in IndusInd bank (0.837) followed by HDFC (0.795), Federal bank (0.740), Axis bank (0.724) and ICICI bank (0.719). Similar findings have been reported by Aspal and Malhotra (2013), Agrawal *et al.* (2014), Sukanya (2019) and Lambore *et al.* (2022).

B. ASSET QUALITY

1. Net Non-Performing Assets (NPA) to Total Assets: It explains the non-performing asset management process and lending policy. In accordance with standards of the Reserve Bank of India, all advances are divided into performing and non-performing categories. According to the standards established by the Reserve Bank of India, non-performing assets are further divided into sub-standard, questionable, and lost assets. When an asset and leased assets, cease making money for the bank, it is considered non-performing.

Null Hypothesis (Ho): Net Non-Performing Assets (NPA) to Total Assets ratios of the selected Public and private sector banks do not differ significantly.

Alternate Hypothesis (Ha): The Net Non-Performing Assets (NPA) to Total Assets ratios of the selected Public and private sector banks differ significantly.

Net NPA reflects the performance of banks. A high level of NPA suggest high probability of a large number of credit default that affect the profitability and net worth of banks and also wear down the value of the assets. Loans and advances represent largest assets of most of the banks. It controls the quality of bank loan portfolio. The higher the ratio, the higher the credit risk.

There was significant difference among the public and private sector banks for net NPA to total asset ratio. Based on group statistics analysis (Table 3), it is evident that the net NPA to total asset ratio was higher in public sector bank (0.00959) than that of private sector banks (0.000161).

In table 1 from the mean value of five years (2016-17 to 2020-21), it is observed that the highest average net NPA to total asset ratio was associated with SBI (3.14) followed by CBI, UBI, BOB and PNB. Among private sector banks the highest ratio (1.21) was found in HDFC followed by Axis Bank, ICICI bank, Federal bank, and IndusInd bank.

It can be concluded that public sector banks have not done well enough in recovering their advances, which has resulted in higher values of net NPA. Among private sector banks, HDFC is not well enough in recovering the loans. It also indicates that SBI, CBI, HDFC and Axis Banks are getting into high-risk zone due to high non-performing assets. It would also mean that these banks are either not doing proper exercise with caution to offer loans or they are too liberal in terms of follow up with borrowers on regular basis. Rest of the banks have better lending policy and are better in efficiency and effectiveness of recovering the advances. Similar results have been reported by Aspal and Malhotra (2013), Agrawal *et al.* (2014), Sukanya (2019) and Lambore *et al.* (2022).

2. Net NPA (Non-Performing Asset) to Net Advance: It is the proportion of Net NPA to Net Advances. Net NPA reflects the performance of banks. A higher value of NPAs indicates high probability of credit defaults that affect the profitability and net worth of banks. It also wears down the value of the net assets. The loans and the advances are usually considered as the largest asset of many of the banks and it monitors the quality of banks loan portfolio. The higher values of ratio indicated the higher the credit risk involved in banking system.

Null Hypothesis (Ho): The Net NPA to Net Advance ratios of the selected Public and private sector banks differ significantly.

Alternate Hypothesis (Ha): The Net NPA to Net Advance ratio of the selected Public and private sector banks do not differ significantly.

From table 2 and table 3, the statistics of analysis of variance, it is noticed that there is significant difference between the groups and within the groups of public and private sector banks. Therefore, the Null Hypothesis is rejected and alternate hypothesis is accepted. From the group statistics for Net NPA to Net Advance ratio, the average value of all the public sector banks over five years is greater than the 5 year average of the private sector banks. The highest ratio (8.486) was obtained in Central Bank of India (CBI) followed by PNB (7.424), UBI (6.090) BoB (3.952) and SBI (3.236). Among public sector banks the highest Net NPA to Net Advance ratio was found in ICICI Bank (3.186) followed by Axis Bank (2.166), Federal Bank (1.39), IndusInd Bank (0.742) and least in HDFC Bank (0.376). It can be concluded that HDFC Bank and IndusInd Bank among private sector banks have better lending policy, whereas among public sector bank SBI and Bank of Baroda have better lending policy and management of non-performing assets than the rest of the banks. Those banks which have higher Net NPA to Net Advance ratios indicate the poor management and careless lending policy. Similar reports were given by Mishra (2011), Mishra et.al (2012), Chaudhary (2015) and Talreja and Shivappa (2016)

3. Total Investment to Total Assets: It is the proportion of total investment to total assets.

Null Hypothesis (Ho): There is no significant difference for Total Investment to Total Asset ratios of the selected Public and private sector banks

Alternate Hypothesis (Ha): There is significant difference for Total Investment to Total Asset ratios of the selected Public and private sector banks.

From the statistics of analysis of variance in the table 2, for total investment to total asset ratios of various public and private sector banks, there was significant differences noticed. Based on group statistics in table 3, the average total investment to total assets ratio was higher in public sector banks compared to private sector banks. Based on the average of last five years, the total investment to total assets ratio was found highest (0.357) in Central Bank of India (CBI) followed by Punjab National Bank (PNB), State Bank of India (SBI), Union Bank of India (UBI) and Bank of Baroda (BoB) *i.e.*, 0.277, 0.27, 0.269, 0.222, respectively. Among private sector banks the highest total investment to total assets ratio was found in HDFC Bank (0.244) followed by ICICI bank (0.224), Axis bank (0.210), Federal bank (0.210) and IndusInd bank (0.206). Public sector banks are more into investments rather than focusing on advancing the money for return. These banks are using conservative policy and are afraid of non-performing assets may be due to lack of proper recovery policy of the advances. On the other hand, the private sector banks are more into advancing the money for future growth of business rather than investing. Therefore, these banks have aggressive policy to lend the money for future growth of business. They have better lending policy as well as recovery policy of the loans. Similar reports have been mentioned by Mishra (2011), Mishra et.al (2012), Chaudhary (2015) and Talreja and Shivappa (2016)

Conclusion: As a catalyst for regulation, the banking industry is the backbone of the economy. Sustaining the performance of banks requires strict adherence to economic activity. For the purpose of assisting underprivileged borrowers or other development initiatives, it offers leverage in cash-related assets. Non-performing assets increase along with defaults, lowering the profitability and quality of assets in the financial system's monetary statement. We can infer that public sector banks manage capital more effectively than private sector banks. Both commercial (Private) and public sector banks need to make improvements when it comes to management of non-performing assets.

Table 1: Capital management and Asset quality Ratios of CAMEL Components of various public and private sector banks.

Capital and Asset Quality Ratios	Public Sector Banks (Average of 5 years during 2016-17 to 2020-21)						Private Sector Banks (Average of 5 years during 2016-17 to 2020-21)					
	SBI	PNB	BOB	UBI	CBI	AVG.	ICICI	HDFC	AXIS	FEDERAL	INDUSIND	AVG.
1.Capital Adequacy Ratio	13.22	11.81	13.216	12.088	11.236	12.314	17.58	16.758	16.802	14.04	15.384	16.113
2. Debt Equity Ratio	0.612	0.921	1.165	1.511	0.331	0.908	1.352	0.911	1.964	0.693	1.488	1.282
3. Total Advance to Total Asset Ratio	0.552	0.569	0.591	0.590	0.461	0.552	0.597	0.615	0.625	0.665	0.643	0.629
4. Govt Security to Total Asset Ratio	0.777	0.812	0.206	0.747	0.775	0.663	0.719	0.795	0.724	0.740	0.837	0.763
5. Net NPA to total Assets Ratio	3.14	0.23	0.26	0.34	0.83	0.960	0.27	1.21	0.86	0.25	0.25	0.568
6. Net NPA to Net Advance eRatio	3.236	7.424	3.952	6.09	8.486	5.838	3.186	0.376	2.166	1.39	0.742	1.572
7. Total Investment to Total Assets Ratio	0.27	0.27656	0.22197	0.26859	0.35732	0.279	0.2239	0.24429	0.21068	0.21017	0.20641	0.219

Table 2: One way ANOVA for Capital management and Asset quality Components of CAMEL Model of selected public and private sector banks during 2016-17 to 2020-21

One way ANOVA for Capital management and Asset quality Parameters						
1. Capital adequacy Ratio	Particulars	Sum of Squares	df	Mean Square	F	Sig.
	Between Groups	235.252	9	26.139	12.089	.000
	Within Groups	86.485	40	2.162		
	Total	321.738	49			
2. Debt Equity Ratio	Between Groups	10.986	9	1.221	13.143	.000
	Within Groups	3.715	40	0.093		
	Total	14.701	49			
3. Total Advance to Total Asset Ratio	Between Groups	0.145	9	0.016	18.318	0.000
	Within Groups	0.035	40	0.001		
	Total	0.181	49			
4. Government Securities to Total Investment Ratio	Between Groups	1.494	9	0.166	23.167	.000
	Within Groups	0.287	40	0.007		
	Total	1.781	49			
5. Net NAP to Total Assets	Between Groups	0.002	9	0.002	27.723	.000
	Within Groups	0.001	40	0.001		
	Total	0.001	49			
6. Net NPA to Net Advance	Between Groups	352.584	9	39.176	19.571	.000
	Within Groups	80.071	40	2.002		
	Total	432.655	49			
7. Total Investment to Total Assets	Between Groups	0.097	9	0.011	15.711	0.000
	Within Groups	0.028	40	0.001		
	Total	.125	49			

Table 3: Group Statistics for Capital management and Asset quality Ratios of public and private sector banks

Group Statistics for Capital management and Asset quality Ratios of public and private sector banks				
1. Capital Adequacy Ratios				
Types of Banks	N	Mean	Std. Deviation	Std. Error Mean
Public Banks	25	12.314	1.5902	.3180
Private Banks	25	16.113	1.8332	.3666
2. Debt Equity Ratios				
Public Banks	25	0.908	0.4986	0.09973
Private Banks	25	1.282	0.5395	0.1079
3. Total Advance to Total Asset Ratio				
Public Banks	25	0.552	0.0552	0.0110
Private Banks	25	0.629	0.0374	0.0074
4. Government Securities to Total Investment Ratio				
Public Banks	25	.663	.2366	.0473
Private Banks	25	.763	.1140	.0228
5. Net NAP to Total Assets				
Public Banks	25	0.960	0.0342	0.00007

Private Banks	25	0.568	0.0161	0.00003
6. Net NPA to Net Advance				
Public Banks	25	5.836	2.5645	.5129
Private Banks	25	1.572	1.4048	.2809
7. Total Investment to Total Assets				
Public Banks	25	0.279	0.0536	0.0107
Private Banks	25	0.219	0.0214	0.0042

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