Relative Performance Analysis of Scheduled Commercial Banks in India : A CAMEL Model Approach

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Abstract

For sustaining a healthy financial system, it is mandatory to analyze banks frequently for recognition of their strengths and removal of potential vulnerabilities. Banks act as fuel for smooth and efficient functioning of a nation's financial system. The purpose of the present study was to evaluate and compare the financial, operational, and managerial health of selected largest scheduled commercial banks in India with different ownership structure, such as public (State Bank of India), private (ICICI Bank), and foreign banks (Standard Chartered Bank). To achieve this objective, panel data was collected from authentic websites for the period from 2001-2002 to 2010-2011 for banks judged with globally accepted ratio based CAMEL model parameters and average of sub-parameters. In addition to this, one-way ANOVA (parametric test) was applied to statistically measure whether mean variance existed among these banks' ratios and performance. The findings revealed that these banks performed satisfactorily overall after the adoption of reforms. However, SBI was positioned at the top followed by SCB and ICICI Bank in India. Surprisingly, the study observed that there was no difference statistically among these banks in terms of ratios and performance of sub-parameters namely, debt/equity ratio, gross non-performing assets/total assets, income interest/total assets, and liquid assets to total deposits during the research. The study concluded that there was stiff competition among these banks and significantly recommended for proposed banking structure in India. In addition to this, SCB was found to be significantly more efficient during the research period in terms of doing profitable banking business and converting deposits into higher earning advances followed by ICICI Bank and State Bank of India (SBI).

Key words : **CAMEL model, scheduled commercial banks, relative performance, post- liberalization, Reserve Bank of India**

JEL Classification : G2, G20, G21, G28, G210

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The growth and sustainability of an economy is considerably dependent upon the healthy financial system in which banks play a pivotal role. The banking sector in India has been the backbone of the Indian economy over the past few years. As financial intermediaries, banks play a crucial role in the operation of most economies (Demirgüç-Kunt & Huizinga, 1999). The Indian banking structure and performance have affected by both external and internal domestic factors. Moreover, it experienced worldwide major transformation in its operating environment. The reforms initiated since 1992 were intended to impart efficiency, productivity, profitability, and have encouraged strategic competition among banks. Indian banks have been working in a more

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open and globalized environment due to strong measures taken by the Reserve Bank of India based on the recommendations of the Narasimham Committee & Basel Committee on Banking Supervision. This process made the entry of new private sector banks possible & allowed foreign banks to increase their branches in India. Banks in India are required to follow the norms of capital adequacy, asset quality, prudential norms, disclosure requirements, acceleration of pace, reach of latest technology, provisioning of NPAs, streamlining procedures, complying with accounting standards, making financial statements transparent, as well as keeping themselves stable, making sure they are impervious to external shocks and are internally sound and sensible (Kumar, Harsha, Anand, & Dhruva, 2012).

In order to cope up with the complexity and mix of risk exposure to the banking system properly, responsibly, beneficially, and sustainably, it is of great importance to evaluate the overall performance of banks and its determinants. The performance evaluation of a commercial bank is usually related to how well it can use its assets, shareholder's equity, liabilities, and revenues. Moreover, measurement of position of banks has attracted the interest of academic researchers, bank managements, financial markets, and bank supervision.

State Bank of India was constituted on July 1, 1955 after the amalgamation of Imperial Bank of India and had assets of US $ 360 billion, 14119 branches, and a large network of branches abroad (Reserve Bank of India, 2002). The private sector bank - Industrial Credit and Investment Corporation of India (ICICI) was formed in 1955 with the initiative of World Bank, Government of India, and representatives of the Indian industry. However, it was originally promoted in 1994 by ICICI Ltd. On March 31, 2015, ICICI bank had total assets of US $ 103 billion, 4070 network of branches, and 13180 ATMs across India (Reserve Bank of India, 2002). The foreign sector bank, Standard Chartered Bank, established in India in 1858 from U.K., captured two million personal banking customers, 2500 top corporate base, and had presence in 43 cities with 101 branches, 279 ATMs, and 18000 employees in India (Reserve Bank of India, 2002) in the period from 2001-02 to 2010-11 with globally accepted CAMEL model dimensions.

The restructuring of public sector banks, emergence of new banks in the private sector, and increased competition from foreign banks have improved professionalism in the banking sector of India (Prasad & Ravinder, 2012). In addition to this, the Reserve Bank of India discussed the proposed structure of the banking sector in 2013. It said that large banks with different ownership identity that have large overseas presence will be recognized as international banks with their consolidated branches. After the acceptance of CAMEL model in India, many eminent scholars applied the model dimensions to measure individual and comparative position of nationalized banks, new private banks, domestic private banks, and regional rural banks. There is no single study in literature which evaluates and compares the overall position (financial, operational, and managerial) of these banks covering the period from 2001-02 to 2010-11. Therefore, we filled this glaring gap with this empirical study.

Review of Academic Literature

Cole and White (2012) judged the safety and soundness of commercial banks from 2004- 2009 with CAMELS approach and suggested that banks should make a separate strategy for residential and real estate loan portfolio. Fredrick (2012) used CAMEL components as proxy for the credit risk management in the U.S. economy. Similarly, Dang (2011) determined that CAMEL proved to be a useful supervisory tool in explaining the flexibility between on-site & off-site examination in the U.S. economy. Gilbert, Meyer, and Vaughan (2000) found that CAMELS & SEER did well in predicting downgrade of supervisory ratings of banks.

In India, Sensarma (2006) estimated efficiency, measured productivity of Indian banks (27 public, 25 domestic private, 22 foreign bank, and nine new domestic private banks) from 1986-2000 and found that banks had improved their performance, but foreign banks had been the worst performers. Kumar et al. (2012) observed that private sector banks performed the best from 2000 to 2011 in terms of soundness (efficiency, productivity,

profitability, stability, & a shock free environment) as compared to public sector banks on the basis of CAMEL dimensions. Prasad and Ravinder (2012) evaluated the performance of 20 nationalized banks through CAMEL element and found that Andhra Bank secured the top most position followed by Bank of Baroda and Punjab and Sind Bank. Ibrahim and Thangavelu (2014) observed that scheduled commercial (public, private, and foreign) banks in India improved working performance in terms of non-performing assets from 2007 to 2012. Singh and Kohli (2006) placed Bank of Punjab, HDFC Bank, and Jammu & Kashmir Bank at the top three positions among 20 old and new private banks on the basis of CAMEL model element.

Devanadhen (2013) studied the performance of 14 banks (public and private sector) under the CAMEL model from 2000 to 2011. It was found that private sector banks gave a very tough competition to public sector banks in terms of earning capacity, management efficiency, and asset quality. Makkar and Singh (2013) analyzed the comparative financial performance of Indian commercial banks (22 public sector banks and 15 private sector banks) for the period from 2006-2007 to 2010-2011 and concluded that on an average, there was no statistically significant difference in the financial performance of the sample banks. Maheshwari and Aggarwal (2013) analyzed the financial performance of State Bank of India over the period from 2002 to 2012 and the results indicated that the performance of SBI in the study period was excellent.

Demirgüç-Kunt and Huizinga (1999) empirically examined bank level data for 80 industrial and developing countries from 1988 to 1995 and proved that foreign banks had higher margins and profits as compared to domestic banks in developing countries, while the opposite was true in case of the developed countries. In Kenya, Ongore and Kusa (2013) evaluated the moderating effect (foreign vs. domestic) of ownership structure on bank performance (return on assets, return on earnings, and net interest margin) and summarized that the financial performance of commercial banks was mainly driven by board and management decisions. Jha and Hui (2012) observed that in Nepal, the public sector banks were significantly less efficient, but domestic private banks performed equally well regarding financial characteristics and ratios in the period from 2005 to 2010. In case of New Zealand, To and Tripe (2000) empirically proved that profitability of foreign banks, to a large extent, was influenced by three explanatory factors (such as parent bank's tier 1 capital, return on assets, and long-term presence as the dummy variable. Pasiouras and Kosmidou (2007) observed that the profitability of commercial banks in European Union, regardless of their ownership, was affected by both internal characteristics (return on assets, liquidity, capital adequacy, cost/income, and bank size) and changes in the overall banking environment (inflation, GPD, concentration) from 1995-2001 with a balanced pooled time series dataset of 584 (332 domestic and 218 foreign) commercial banks and 4088 observations. Jeon, Olivero, and Wu (2011) found that there was an increase in foreign bank penetration, enhanced competition, and positive link between foreign bank penetration and domestic banks in 17 Asian and Latin America countries during 1997-2000.

Claessens, Demirgüç-Kunt, and Huizinga (2001) investigated data-level accounting and macroeconomic variables of 7900 banks of 80 countries from 1988-1995 and found that foreign banks had higher profits as well as net interest margin as compared to domestic banks in developing countries, but opposite was the case for developed countries. Roman and Sargu (2013) highlighted the strengths and vulnerabilities of banks in Rome with CAMEL characteristics. Chen and Liao (2011) proved that foreign banks were more profitable when they operated in a host country whose banking was less competitive. Athanasoglou, Brissimis, and Delis (2005) explained that profitability of Greek banks from 1985-2001 was shaped by bank-specific factors (capital, credit risk, productivity, expenses management, and size), macroeconomic factors (inflation expectation and cyclical output), and control variables that were not the direct result of the banks' managerial decisions. Uppal and Khanna (2015) explored the primary reasons for the growth of NPAs in scheduled commercial banks of Punjab and also suggested measures for controlling the same. Arora and Singh (2015) compared public and private sector commercial banks on the basis of NPAs under the self-help groups' bank linkage programme. The study showed that there has been a continuous increase in non-performing assets in banks of both sectors associated with the

SHG programme. Shukla (2016) analyzed the performance of the banking industry in India on the basis of financial parameters. The findings highlighted that public and private sector banks were not very much different in terms of size and growth parameters.

Objectives of the Study

The purpose of the present study is to evaluate and compare the financial, operational, and managerial health of selected largest scheduled commercial banks in India with different ownership structure, such as public sector bank (State Bank of India), private sector bank (ICICI Bank), and foreign bank (Standard Chartered Bank).

Hypotheses of the Study

The hypotheses of parameters and sub-parameters of the study are as follows: The performance parameters (capital adequacy, assets quality, management efficiency, earning capacity, and liquidity position) of the sample banks (SBI, ICICI, and SCB) are examined by analyzing the statistical results of the sub-parameters.

(1) Capital Adequacy:

↳ **Ha1: (a)** There is a significant difference among the performance of SBI, ICICI Bank, and SCB in terms of the CRAR- capital adequacy ratio/risk weighted assets during the research period ; **(b)** There is a significant difference among the sample banks' performance in terms of the debt/equity ratio during the research period.

↳ **H01: (a)** There is no significant difference among the performance of SBI, ICICI Bank, and SCB in terms of the CRAR-capital adequacy ratio/risk weighted assets during the research period ; **(b)** There is no significant difference among the sample banks' performance in terms of the debt/equity ratio during the research period.

(2) Assets Quality:

↳ **Ha2: (a)** There is a significant difference among the performance of SBI, ICICI Bank, and SCB in terms of net non-performing assets during the research period ; **(b)** there is a significant difference among the sample banks' performance in terms of gross non-performing assets in India during the research period ; **(c)** there is a significant difference among the sample banks' performance in terms of government securities investments in India during the research period.

↳ **H02 : (a)** There is no significant difference among the performance of SBI, ICICI Bank, and SCB in terms of net non-performing assets during the research period ; **(b)** there is no significant difference among the sample banks' performance in terms of gross non-performing assets in India during the research period ; **(c)** there is no significant difference among the sample banks' performance in terms of government securities investments in India during the research period.

(3) Management Efficiency :

↳ **Ha3 : (a)** There is a significant difference among the performance of SBI, ICICI Bank , and SCB in terms of business per employee during the research period ; **(b)** there is a significant difference among the sample banks' performance in terms of profit per employee in India during the research period ; **(c)** there is a significant

difference among the sample banks' performance in terms of credit/deposits in India during the research period.

↳ **H03 : (a)** There is no significant difference among the performance of SBI, ICICI Bank , and SCB in terms of business per employee during the research period ; **(b)** there is no significant difference among the sample banks' performance in terms of profit per employee in India during the research period ; **(c)** there is no significant difference among the sample banks' performance in terms of credit/deposits in India during the research period.

(4) Earning Capacity :

↳ **Ha4 : (a)** There is a significant difference among the performance of SBI, ICICI Bank, and SCB in terms of returns on assets during the research period ; **(b)** there is a significant difference among the sample banks' performance in terms of interest income/total income in India during the research period ; **(c)** there is a significant difference among the sample banks' performance in terms of interest income/total assets in India during the research period.

↳ **H04 : (a)** There is no significant difference among the performance of SBI, ICICI Bank, and SCB in terms of returns on assets during the research period ; **(b)** there is no significant difference among the sample banks' performance in terms of interest income/total income in India during the research period ; **(c)** there is no significant difference among the sample banks' performance in terms of interest income/total assets in India during the research period.

(5) Liquidity Position:

↳ **Ha5 : (a)** There is a significant difference among the performance of SBI, ICICI Bank, and SCB in terms of liquid assets/total deposits during the research period ; **(b)** there is a significant difference among the sample banks' performance in terms of cash/total assets in India during the research period ; **(c)** there is a significant difference among the sample banks' performance in terms of government securities/total assets in India during the research period.

↳ **H05 : (a)** There is no significant difference among the performance of SBI, ICICI Bank, and SCB in terms of liquid assets/total deposits during the research period ; **(b)** there is no significant difference among the sample banks' performance in terms of cash/total assets in India during the research period ; **(c)** there is no significant difference among the sample banks' performance in terms of government securities/total assets in India during the research period.

Data and Methodology

The panel data period covers the time period from 2001- 2002 to 2010- 2011 collected from annual reports of (Report on Trends and Progress of Banking, Statistical Tables Related to Banks, Basic Statistical Returns of Scheduled Commercial Banks) banks published by Reserve Bank of India (RBI). To arrive at the conclusion in a scientific way, we tested the hypotheses of each parameter and sub-parameter of CAMEL model dimensions at 95% confidence level, and we applied the statistical method one-way Anova to check the mean variance of data. Banks from different ownership structures (public, private, and foreign) were selected keeping in view their role, involvement in Indian banking business, and the economy. Moreover, these banks were individually ranked on the basis of average 10 years of data calculated for each model sub-parameter and positioned at the group level as per average rank of each sub-parameter.

Camel Rating System

CAMEL is C- capital adequacy, A - assets quality, M - management efficiency, E- earning capacity, L- liquidity position. CAMEL was originally developed by the Uniform Financial Institution Rating System, USA and adopted by the Federal Financial Institution Examination Council on November 13, 1979 and then adopted by the National Credit Union Administration in October 1987. Reserve Bank of India (RBI) set up a working group under the chairmanship of Shri. S. Padmanabhan in 1995 to review the banking supervision system based on certain recommendations and suggestions. An internationally accepted ratio based rating model combining financial, management systems, and control elements was introduced for inspection cycle for domestic and foreign banks commencing from July 1998.

(i) Capital Adequacy (C) : It is the ratio measured by researchers in earlier studies such as CAR- Tier 1 Capital + Tier 2 Capital/RWA, leverage ratio - total outside liability to shareholders' funds, and net worth ratios - net worth to non-performing assets (Jha & Hui, 2012; Kumar et al., 2012 ; Sangmi & Nazir, 2010 ; Singh & Kohli, 2006), CAR (Dang, 2011 ; Prasad & Ravinder, 2012), total capital ratio, total equity/total assets (Roman & Sargu, 2013), and net equity to total assets (Gasbarro, Sadguna, & Zumvalt, 2002).

In this study, capital adequacy is calculated through (a) CRAR- total capital to total weighted assets, (b) Debt/equity comprises percentage of (capital + reserves/deposits + borrowings + other liabilities).

(ii) Assets Quality (A) : It is measured with net NPA to net advances and loan loss cover (Sangmi & Nazir, 2010), non-performing loans (Jha & Hui, 2012 ; Kumar et al., 2012 ; Singh & Kohli, 2006), NPL (non-performing loans/ total loans), allowance for loan loss ratio, provision for loan loss ratio (Dang, 2011), net non-performing assets/total assets, net non-performing assets/net advances, total investment/total assets, percentage change in NPAs (Prasad & Ravinder, 2012), impaired loans/gross loans, loan loss provision/net interest revenue, loan/asset (Roman & Sargu, 2013), non-performing assets/total assets (Gasbarro, Sadguna, & Zumvalt, 2002). However, in the present study, ratios used for computations of asset quality are: (a) net non-performing assets/net advances, (b) gross non-performing assets/ total assets, (c) Government securities/investment mean percentage of investment in government securities out of total investment.

(iii) Management Efficiency (M) : In literature, efficiency of management is assessed with expenditure to income ratio, credit-deposit ratio, asset utilization ratio, diversification ratio, earning per employee, expenditure per employee (Sangmi & Nazir, 2010), interest expenses to total loans (Jha & Hui, 2012), market value to equity capital, total advances to total deposits, business per employee, profit per employee (Kumar et al., 2012 ; Prasad & Ravinder, 2012; Singh & Kohli, 2006), total asset growth, loan growth rate, earning growth rate (Dang, 2011), operating expenses/average, interest expenses/deposits (Roman & Sargu, 2013). In the study, efficiency of management is measured with (a) business per employee, (b) profit per employee, (c) credit-deposit ratio.

(iv) Earning Capacity (E) : In previous studies, the researchers used different types of ratios to calculate the earning capacity such as net interest margin spread between interest revenue and interest costs (Jha & Hui, 2012), operating profits by average working fund, net profit to average asset, interest income to total income, non-interest income to total income (Kumar et al., 2012), net interest income, cost to income ratio, return on assets, return on equity (Dang, 2011 ; Singh & Kohli, 2006), operating profits/ average working funds, percentage change in net profit, net profit to average assets (Prasad & Ravinder, 2012), return on assets, return on equity, cost to income ratio (Roman & Sargu, 2013), operating profit to total assets (Gasbarro, Sadguna, & Zumvalt, 2002). In the study, earning capacity is analyzed with (a) return on assets - net profit after tax, (b) interest income to the total income,

(c) interest income to total assets explain interest income from total assets.

(v) Liquidity Position (L) : Eminent scholars at the national and international level used various ratios to measure the short term obligation of banks such as credit to deposit ratio (Jha & Hui, 2012; Singh & Kohli, 2006), liquid assets to total asset, liquid assets to total deposits (Kumar et al., 2012), customer deposit to total assets, total loan to customer deposits (Dang, 2011 ; Gasbarro, Sadguna, & Zumvalt, 2002 ; Prasad & Ravinder, 2012), liquid assets/deposits and short term funding, net loss/deposits & short term funding (Roman & Sargu, 2013). In this paper, position of liquidity is assessed with (a) liquid assets/total deposits, (b) cash/ total assets, (c) Government securities/ total assets.

Results and Discussion

(1) Capital Adequacy : A bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability (Athanasoglou, Brissimis, & Delis, 2005). An examination of the Table 1 reveals that SBI-State Bank India, ICICI-Industrial Credit and Investment Corporation of India, and SCB-Standard Chartered Bank maintained a ratio of capital adequacy as per the norms of RBI. However, maximum percentage of capital adequacy was registered by SBI : 14.25% in 2009-10, ICICI : 19.41% in 2010 -11, and Standard Chartered Bank : 12.41% in 2010-11. Higher capital adequacy means that the bank is strong, but a very high CAR indicates that the bank has not utilized the full potential of its capital and is conservative in nature. In the study, CRAR also assesses debt/equity ratio which explains banks' financial leverage and there is no rule of thumb for the banks for D/E ratio or proportion of outside liability to net worth, but a higher ratio indicates less protection to creditors. It can also be inferred that there is a continuous increase in financing from external sources by SBI and SCB from 2001-02 to 2007-08, 2004-05 to 2010-11, and 2003-04 to 2008-09 as shown in the Table 1. However, variation is seen for SBI from 2008 to 2011 and ICICI & SCB during initial years - from 2001-02 to 2003-04.

The Table 2 shows the individual and group bank ranks. During the research period, SBI occupied (average data of sub-parameter) the first place in terms of financing banking operations from inside sources/protection to creditors and maintained sound capital adequacy ratio followed by ICICI Bank and SCB. Similarly, SBI is

Table 1. Capital Adequacy Ratio

Years/Sub-parameters of Capital Adequacy Ratio	(i) (CRAR- Tier1+Tier 2 Capital/RWA) (%)			(ii) Debt/Equity Ratio (%)		
Year	SBI	ICICI	SCB	SBI	ICICI	SCB
2001-02	12.79	11.57	9.60	.045	.071	.066
2002-03	13.35	11.57	9.28	.045	.067	.087
2003-04	13.50	11.10	10.56	.048	.073	.105
2004-05	13.53	10.36	10.87	.052	.072	.086
2005-06	12.45	11.78	10.46	.055	.083	.949
2006-07	11.88	11.44	9.93	.059	.098	.105
2007-08	12.34	11.69	10.44	.058	.077	.134
2008-09	13.54	13.96	10.59	.073	.132	.128
2009-10	14.25	15.53	11.56	.064	.151	.120
2010-11	13.39	19.41	12.41	.067	.165	.150

Source: Reserve Bank of India (2001-11 a, b)

Table 2. Calculation of Individual and Group Rank

	Name of the Bank	Average		Rank			Sub-Parameters of Capital Adequacy	SBI	ICICI	SCB
		CRAR	*D/E*	*CRAR*	*D/E*		Capital Adequacy (Tier1+Tier2)	1	2	3
Individual	SBI	13.1	0.05	1	1	**Group**	***D/E Ratio***	1	2	3
Rank	ICICI	12.8	0.09	2	2	**Rank**	**Average**	1	2	3
	SCB	10.5	0.18	3	3		**Rank**	1	2	3

Table 3. Results of ANOVA Test

CRAR	Sum of Squares	*df*	Mean Square	*F*	Sig.
CRAR (i) Capital Adequacy					
Between Groups	38.62	2	19.31	6.44	.005
Within Groups	80.9	27	2.99		
Total	119.52	29			
(ii) Debt/Equity Ratio					
Between Groups	.097	2	.048	1.994	.156
Within Groups	.654	27	.024		
Total	.751	29			

positioned same at the group level (average rank of sub-parameter).

The Table 3 describes the results of CRAR and its sub-parameters at 95% confidence level with one-way ANOVA. There is a significant difference in terms of CRAR performance among SBI, ICICI Bank, and SCB in India. Hence, the null hypothesis of CRAR - H01 (a) is rejected as the tabulated value 0.005 is less than the significant value 0.05 and the calculated *F* value is 6.44. However, there is no significant difference in the debt/equity ratio of these banks as the tabulated value 0.156 is more than the *p* value 0.05 and *F* value is 1.994. Hence, the null hypothesis of D/E ratio - H01 (b) is accepted.

(2) Assets Quality : Poor asset quality or high non-performing loans to total assets are related to poor bank performance, and banks with high asset quality and low non-performing loans are more profitable than others (Ongore & Kusa, 2013). The Table 4 shows that SBI reduced its net non-performing assets to net advances from 6.03% to 1.60% and gross non-performing assets/total assets from 5.03% to 1.60% continuously from 2001-02 to 2009-10. Similarly, ICICI reduced net non-performing/net advances from 5.48% to 0.70% and gross non-performing assets/total assets from 4.82% to 0.90% during 2002-03 to 2006-07. It registered variation in remaining years. In addition, SCB, on an average, achieved the international norm of net non-performing assets/net advances and gross non-performing assets as 1.00% in 2008-09, 0.40% in 2002-03, 0.31% in 2003-04, and 0.52% in 2004-05. Hence, the sample banks made effective use of the Securitisation and Reconstruction of Financial Assets & Enforcement of Security Interest Act, 2002 (SARFAESI).

The Table 5 shows that during the study, the percentage of investment proportion in government securities out of total investment showed good average result to ensure safety returns, principle with lower risk exposure, and safe feeling to creditors by SBI, ICICI, and SCB (0.81, 0.67, and 0.74, respectively). Banks with higher allocation to investment securities of all kinds are significantly less likely to fail (Cole & White, 2012). From the Table 5, it can be seen that SCB secured the top position in terms of managing quality of assets with lowest possible risk and investment proportion in government securities followed by ICICI and SBI.

The Table 6 describes the hypotheses tested results of asset quality and its sub-parameters at 95% confidence level with one-way ANOVA.

Table 4. Assets Quality

Years/Sub parameters of Assets Quality	(i) *NNPA/NA* (%)			(ii) *GNPA/TA* (%)			(iii) Governments Securities/ Investment (%)		
Year	**SBI**	**ICICI**	**SCB**	**SBI**	**ICICI**	**SCB**	**SBI**	**ICICI**	**SCB**
2001-02	6.03	2.19	1.53	5.03	2.07	3.41	0.78	0.49	0.57
2002-03	5.64	5.48	0.40	4.45	4.82	1.59	0.80	0.63	0.57
2003-04	4.50	5.21	0.31	3.59	4.71	1.46	0.85	0.72	0.64
2004-05	3.45	2.21	0.52	3.11	2.43	1.40	0.84	0.70	0.69
2005-06	2.70	1.71	1.10	2.70	1.70	1.50	0.87	0.68	0.74
2006-07	1.90	0.70	1.60	1.90	0.90	1.50	0.81	0.71	0.78
2007-08	1.60	1.00	1.40	1.80	1.20	1.40	0.79	0.74	0.81
2008-09	1.80	1.60	1.00	1.80	1.90	1.00	0.74	0.94	0.90
2009-10	1.81	2.10	1.40	1.60	2.50	1.10	0.82	0.61	0.90
2010-11	1.93	2.80	1.82	1.71	2.80	1.70	0.80	0.56	0.80

Source: Reserve Bank of India (2001-11a, b)

Table 5. Calculation of Individual and Group Rank

	Name of the Banks	Average			Rank				Sub-Parameters of Assets Quality	SBI	ICICI	SCB
									NNPA	3	2	1
		NNPA/NA	***GNPA/TA***	***GS/I***	***NNPA***	***GNPA/TA***	***GS/I***		***GNPA***	3	2	1
Individual	**SBI**	3.1	2.7	0.81	3	3	3	**Group**	***GS***	3	1	2
Rank	**ICICI**	2.5	2.5	0.67	2	2	1	**Rank**	**Average**	3	1.6	1.3
	SCB	1.6	1.6	0.74	1	1	2		**Rank**	3	2	1

Table 6. Results of the ANOVA Test

ASSETS QUALITY	Sum of Squares	*df*	Mean Square	*F*	Sig.
(i) NNPA/NA					
Between Groups	21.516	2	10.758	5.602	.009
Within Groups	51.851	27	1.92		
Total	73.367	29			
(ii) GNPA/TA					
Between Groups	7.426	2	3.713		
Within Groups	33.666	27	1.247	2.978	.068
Total	41.92	29			
(iii) GOVERNMENT/INVESTMENT					
Between Groups	.088	2	.044	4.352	.023
Within Groups	.273	27	.010		
Total	.361	29			

The Table 6 shows that there is a statistically significant difference among SBI, ICICI Bank, and SCB's performance ratios - net non-performing assets/net advances and government securities /investments as the tabulated values 0.009 and 0.023 are less than the p- value of 0.05. The calculated *F* values are 5.602 and 4.352. On the basis of the statistical results, the null hypothesis of NNPA - H02 (a) and the null hypothesis of government securities - H02 (c) are rejected. The sub-parameter hypothesis of GNPA - H02 (b) is accepted, which means that there is statistically significant difference among SBI, ICICI Bank, and SCB's pattern of investment in government securities & bad loans performance (after deductions of provisions) as the tabulated value 0.068 is greater than the *p* value 0.05 with calculated *F* value being 2.978. The results of this empirical paper are consistent with the findings of Ibrahim and Thangavelu (2014) as the composition of non-performing assets of SBI, ICICI Bank, and SCB significantly improved due to the working performance of these banks in the area of NPAs.

(3) Management Efficiency : The performance of management capacity is usually qualitative and can be understood through the subjective evaluation of management systems, organization culture, and control mechanisms (Sangmi & Nazir, 2010). The Table 7 depicts that State Bank of India registered a continuous increase in its banking business per employee in lakhs (from 136.5 lakhs to 636.0 lakhs) and profits per employee in lakhs (from 0.70 lakhs to 4.46 lakhs) for the period from 2001-2002 to 2010-2011. ICICI Bank, in the initial years of the study, showed its banking business per employee to be 815.2 lakhs and profit per employee to be 10.45 lakhs in 2001-02, but marked consistent variation at both the sub-parameters (business per employee & profit per employee) throughout the time period of the study. SCB in India registered continuous growth in banking business per employee from 840.5 lakhs to 924.2 lakhs (2003-04 to 2007- 08), profit per employee from 11.5 lakhs to 26.3 lakhs (2005-06 to 2010-11), and recorded maximum per employee business : 1083.4 lakhs and profit : 26.3 lakhs in 2010-11.

SBI saw a steep downfall in credit out of deposits percentage from 0.57% to 0.44% in 2002-03, which continuously increased from 0.44% to 0.77% during 2002-03 to 2008-09. In the initial years, 2001-02 and 2003 - 04, ICICI Bank witnessed a steep increase in percentage of credit/total deposits from 0.42% to 1.46 % and showed variation in utilization of credit out of total deposits collected during the study period.

The Table 7 describes that SCB performed far better than ICICI and SBI in terms of earning high profit per employee in lakhs and utilization of credit out of deposits throughout the research period. Foreign banks have

Table 7.Management Efficiency

Years/Sub-parameters of Management Efficiency	(i) Business Per Employee (in lakhs)			(ii) Profit Per Employee (in lakhs)			(iii) Credit/Deposit Ratio (%)		
Year	SBI	ICICI	SCB	SBI	ICICI	SCB	SBI	ICICI	SCB
2001-02	136.5	815.2	617.7	0.70	10.45	11.20	0.57	0.42	1.01
2002-03	173.0	486.4	800.8	1.16	5.33	20.3	0.44	1.46	1.77
2003-04	190.7	1120	840.5	1.48	11.0	25.1	0.46	1.10	0.72
2004-05	210.5	1010	780.1	1.77	12.0	13.4	0.49	0.91	0.80
2005-06	243.0	880	786.3	2.08	11.0	11.50	0.55	0.91	0.88
2006-07	299.2	905	837.2	2.17	10.0	14.5	0.68	0.88	0.84
2007-08	357.0	1027	924.2	2.37	9.0	19.6	0.74	0.84	0.80
2008-09	456.0	1008	817.3	3.73	10.0	20.2	0.77	0.92	0.90
2009-10	556.0	1154	971.4	4.74	11.0	23.8	0.73	0.99	0.89
2010-11	636.0	765	1083.4	4.46	9.0	26.3	0.78	0.89	0.86

Source: Reserve Bank of India-Statistical Tables Relating to Banks, Profile of Banks (2001-11).

Table 8. Calculation of Individual and Group Rank of the Sample Banks

	Name of the Bank	Average			Rank				Sub-Parameter of Management Efficiency	SBI	ICICI	SCB
		BPE	*PPE*	*C/D*	*BPE*	*PPE*	*C/D*		Business per Employee	3	1	2
									Profit Per Employee	3	2	1
Individual	SBI	325.7	2.46	0.62	3	3	3	Group	Credit/Deposit Ratio	3	2	1
Rank	ICICI	917.0	9.8	0.93	1	2	2	Rank	Average	3	1.6	1.3
	SCB	845.8	18.5	0.94	2	1	1		Rank	3	2	1

Table 9. Results of ANOVA Test

MANAGEMENT EFFICIENCY	Sum of Squares	*df*	Mean Square	*F*	Sig.
(i) BUSINESS PER EMPLOYEE					
Between Groups	2083848.708	2	1041924.35	37.347	
Within Groups	753250.940	27	27898.183		0
Total	2837.99.648	29			
(ii) PROFIT PER EMPLOYEE					
Between Groups	1306.214	2	653.107		
Within Groups	333.433	27	12.349	52.886	0
Total	1639.647	29			
(iii) CREDIT/DEPOSIT RATIO					
Between Groups	.655	2	.332	5.836	0.008
Within Groups	1.538	27	.057		
Total	2.202	29			

higher margins and profits as compared to domestic banks in developing countries, while the opposite holds in case of developed countries (Demirgüç-Kunt & Huizinga, 1999).

The Table 9 depicts that the tabulated value of BPE is 0.000, PPE is .000, and credit-deposit ratio is 0.008, which is less than the significance value 0.05. The calculated *F* values of these sub-parameters are 37.34, 52.88, and 5.83, respectively. From the Table 9, we can infer the results of management efficiency and its sub-parameters at 95% confidence level with one-way ANOVA.

It can be inferred from the Table 9 that there is a statistically significant difference among SBI, ICICI Bank, and SCB in terms of business per employee in lakhs, profit per employee in lakhs, & percentage of credit out of deposits. So, on the basis of the empirical results, the null hypotheses are rejected - null hypothesis of BPE : H03 (a), null hypothesis of PPE : H03 (b), and null hypothesis of C/D ratio : H03(c).

(4) Earning Capacity : The earning of a bank reflects its growth capacity, financial health, quality of earnings, and basically, profitability. The Table 10 shows that SBI earned continuous returns on total assets from 0.50% to 0.99 % in the period from 2001-02 to 2005-06 and earned highest percentage of assets returns in 2008-09 ; however, the returns on total assets showed variation during the research period. Similarly, ICICI Bank earned maximum net profit of 1.35% in 2010-11, there was a decline in profits from 0.82% to 0.67% in 2002-03, increase to 1.13 % from 0.67% in 2001-02 to 2003-04, and this type of trend was observed throughout the research period. SCB produced maximum returns on assets among SBI and ICICI as 3.14% in 2001-02, 3.13% in 2008-09, 3.03% in 2010-11, and there was a decline to 2.17% in 2002-03, increase to 2.92% in 2003-04, decline to 1.30% in 2005-06, and increase

Table 10. Earning Capacity

Years/Sub-Parameters of Earning Capacity	(i) Return on Assets-Net Profit After Tax/Total Assets (%)			(ii) Interest Income/ Total Income (%)			(iii) Interest Income/ Total Assets (%)		
Year	**SBI**	**ICICI**	**SCB**	**SBI**	**ICICI**	**SCB**	**SBI**	**ICICI**	**SCB**
2001-02	0.50	0.82	3.14	0.86	0.84	0.78	8.28	6.29	9.13
2002-03	0.70	0.67	2.17	0.87	0.78	0.76	8.56	2.07	8.12
2003-04	0.86	1.13	2.92	0.84	0.74	0.80	8.27	8.77	7.80
2004-05	0.94	0.89	1.74	0.80	0.74	0.78	7.47	7.19	7.35
2005-06	0.99	1.30	1.30	0.81	0.73	0.82	7.05	5.61	6.69
2006-07	0.89	1.09	2.49	0.82	0.77	0.74	7.25	5.48	6.34
2007-08	0.84	1.21	3.06	0.87	0.79	0.75	7.45	7.72	7.17
2008-09	1.01	0.98	3.13	0.84	0.77	0.67	7.60	8.27	7.37
2009-10	1.04	1.13	2.87	0.83	0.80	0.64	7.57	7.98	6.61
2010-11	0.88	1.35	3.03	0.82	0.77	0.66	7.04	6.92	6.07

Source: Reserve Bank of India (2001-11a, b)

Table 11. Calculation of Individual and Group Rank

	Name of the Banks	Average			Rank				Sub-Parameters of Earning Capability	SBI	ICICI	SCB
									ROA	3	2	1
		ROA	***IT/TI***	***IT/TA***	***ROA***	***IT/TI***	***IT/TA***		***IT/TI***	1	2	3
Individual	**SBI**	0.86	0.83	7.6	3	1	1	**Group**	***IT/TA***	1	3	2
Rank	**ICICI**	1.05	0.77	6.6	2	2	3	**Rank**	**Average**	1.6	2.3	2
	SCB	2.5	0.74	7.2	1	3	2		**Rank**	1	3	2

Table 12. Results of ANOVA Test

EARNING CAPACITY	Sum of Squares	*df*	Mean Square	*F*	Sig.
(i) RETURN ON ASSETS					
Between Groups	17.803	2	8.901		0
Within Groups	4.401	27	.163	54.605	
Total	22.204	29			
(ii) INTEREST INCOME/TOTAL INCOME					
Between Groups	.050	2	.025	13.590	0
Within Groups	.050	27	.002		
Total	.100	29			
(iii) INTEREST INCOME/TOTAL ASSETS					
Between Groups	5.44	2	2.722	1.675	.206
Within Groups	43.863	27	1.625		
Total	49.306	29			

to 3.06% in 2007-08. The Table 10 also depicts maximum percentage of interest income/total income earned by SBI (0.87% in 2002-08), ICICI Bank (0.84% in 2001-02), SCB (0.82% in 2005-06), and showed minor variation throughout research, registered minimum interest income by SBI (0.80% in 2004-05), ICICI Bank (0.73% in 2005-06), and SCB (0.64% in 2009-10). These sample banks in India earned maximum percentage of interest income out of total assets : SBI (8.56% in 2002-03), ICICI Bank (8.77% in 2003-04), and SCB (9.13% in 2001-02). However, a steep downfall in terms of interest income was shown by ICICI Bank from 6.29% to 2.07% in 2002-03, sharp increase to 8.77% in 2003-04, and SCB registered minimum interest income from total assets : 6.07% in 2010-11.Investment in assets increases revenues generation, and increases financial performance of banks (Fredrick, 2012). Earnings have a strong relationship with financial performance ; earnings as proxied by return on assets determines the ability of a bank to increase capital (through retained earnings), absorb loan losses, support future growth of assets, and provide returns to investors.

The Table 11 summarizes the results that management of public sector bank - SBI is more efficient than the management of foreign bank, SCB and private bank, ICICI Bank in terms of lending and raising funds in a profitable investment portfolio.

The Table 12 statistically proves that there is a significant difference among State Bank of India, ICICI Bank, and SCB in terms of percentage of returns on assets and interest income/total income perspective. The tabulated value of ROA is 0.000 and II/TI is 0.000, which is less than the significance value 0.05. The calculated *F* values are 54.60 and 13.59. On the basis of this result, the null hypothesis of returns on assets : H04 (a) and null hypothesis of interest income/total income - H04 (b) are rejected. However, there is no statistical significant difference among sample banks in terms of sub- parameter (interest income/total assets) performance as the tabulated value is 0.206, which is more than the significance value of 0.05. The calculated *F* value is 1.675. On the basis of the result, the null hypothesis of interest income/total assets: H04 (c) is accepted.

(5) Liquidity Position : The liquidity position refers to the existence of cash or near cash form. This ratio indicates the ability of a bank to discharge liability as and when it matures. The Table 13 shows that SBI recorded downfall in percentage of liquid assets/total deposits from 0.25% to 0.05% in the period from 2001-02 to 2005-06. There is a continuous increase in percentage of liquid assets/total deposits from 0.98% to 0.12% during 2006-07 to

Table 13. Liquidity Position

Years/Sub-Parameters of Liquidity Position	(i) Liquid Assets/ Total Deposits (%)			(ii) Cash/Total Assets (%)			(iii) Govt .Securities/ Total Assets (%)		
Year	SBI	ICICI	SCB	SBI	ICICI	SCB	SBI	ICICI	SCB
2001-02	0.25	0.21	0.08	0.27	0.51	0.15	30.5	20.6	25.1
2002-03	0.20	0.34	0.13	0.30	0.23	0.13	33.6	21.8	21.3
2003-04	0.14	0.12	0.06	0.30	0.31	0.88	38.3	23.9	22.3
2004-05	0.12	0.09	0.07	0.31	0.35	0.24	38.6	23.8	20.3
2005-06	0.05	0.09	0.06	0.31	0.33	0.27	37.3	20.5	20.3
2006-07	0.98	0.06	0.16	0.42	0.48	0.14	27.3	20.3	19.2
2007-08	0.10	0.09	0.11	0.44	0.59	0.13	20.8	19.6	16.4
2008-09	0.11	0.12	0.14	0.44	0.71	0.22	19.5	26.3	15.7
2009-10	0.11	0.10	0.06	0.44	0.75	0.22	23.5	16.7	14.3
2010-11	0.12	0.13	0.10	0.64	0.91	0.22	21.7	18.816.8	

Source: Reserve Bank of India (2001-11a, b).

Table 14. Calculation of Individual and Group Rank

	Name of the Banks	Average			Rank			Group Rank	Sub-Parameters of Liquidity Position	SBI	ICICI	SCB
									LA/TD	1	2	3
		LA/TD	*CA/TA*	*GS/TA*	*LA/TD*	*CA/TA*	*GS/TA*		*CA/TA*	2	1	3
Individual	**SBI**	0.21	0.38	29.1	1	2	1	**Group**	*GS/TA*	1	2	3
Rank	**ICICI**	0.13	0.51	21.2	2	1	2	**Rank**	**Average**	1.3	1.6	3
	SCB	0.09	0.26	19.1	3	3	3		**Rank**	1	2	3

Table 15. Results of ANOVA Test

LIQUIDITY POSITION	Sum of Squares	*df*	Mean of Square	*F*	Sig.
(i) LIQUID ASSETS					
Between Groups	.075	2	.037		
Within Groups	.741	27	.027	1.359	0.274
Total	.816	29			
(ii) CASH/TOTAL ASSETS					
Between Groups	.329	2	.048		
Within Groups	1.009	27	.024	4.397	.022
Total	1.338	29			
(iii) GOVT.SEC/TOTAL ASSETS					
Between Groups	551.414	2	275.71	10.837	0
Within Groups	686.941	27	25.442		
Total	1238.36	29			

2010-11. Similarly, SBI registered continuous but minor increase in percentage of cash/total assets from 0.27% from 2001-2002 to 0.64% in 2010-2011. During the study period, ICICI Bank showed variation in terms of liquid to total deposits from 2001-2002 to 2010-2011. However, its percentage of cash/total assets increased continuously from 0.33% in 2006-07 to 0.91% in 2010-11. The year 2002-03 saw a sharp increase to 0.34% and then a steep decline to 0.12%, 0.09%, and 0.06% in the period from 2003-04 to 2006-07. Standard Chartered Bank recorded the lowest percentage of liquid assets to total deposits : 0.06% in year 2003-04, 2005-06, & 2009-10, and maximum percentage of 0.14% in the year 2008-09, and registered variation in holding liquid assets out of total assets throughout the research period.

The movement of investment in most safe and liquid assets was highest for SBI (0.64 in 2010 -11), ICICI Bank (0.91 in 2010-11), and SCB (0.88 in 2003-04). The banks had minimum percentage of cash out of total assets during 2001 - 02 (0.27%) in case of SBI, 0.23% in 2002-03 in case of ICICI Bank, and 0.13% in 2002-03 & 2007-08 in case of SCB. In this ever changing scenario, for every bank to meet its clients' demands in the form of cash must invest an adequate percentage of assets in cash as well as in the liquid form of assets. Bank managers who invest their liquid assets can generate income and boost their performance (Ongore & Kusa,2013).

The Table 14 shows the sub-parameter average performance of State Bank of India, ICICI Bank, Standard Chartered Bank, and places them according to first, second, and third ranks.

As can be inferred from the Table 15, there is no statistically significant difference in the performance of SBI, ICICI Bank, and SCB in India in fulfilling deposits obligations with available liquid assets as the tabulated value is 0.274, which is more than the significance level of 0.05. The calculated *F* value is 1.35. Hence, the null hypothesis

Table 16. Hypotheses Results of Empirical Research - CAMEL (Parameters and Sub-Parameters)

Parameters	Sub-Parameters	Alternative Hypotheses Ha	Null Hypotheses H0
1. C- Capital	(a) Capital Adequacy Ratio-CAR/RWA	Accepted	Rejected
Adequacy	(b) Debt/Equity Ratio	Rejected	Accepted
2.A-Assets	(a) NNPA/NA-Net Non-Performing Assets/Net Advances	Accepted	Rejected
Quality	(b) GNPA/TA- Gross Non-Performing Assets/Total Assets	Rejected	Accepted
	(c) GS/I-Government Securities/Investment	Accepted	Rejected
3. M- Management	(a) BPE- Business Per Employee	Accepted	Rejected
Efficiency	(b) PPE-Profit Per Employee	Accepted	Rejected
	(c) C/D Ratio-Credit/Deposit	Accepted	Rejected
	(a) ROA-Return on Assets	Accepted	Rejected
4. E- Earning	(b) II/TI-Interest Income/Total Income	Accepted	Rejected
Capacity	(c) II/TA-Interest Income/Total Assets	Rejected	Accepted
5. L- Liquidity	(a) LA/TD-Liquid Assets/Total Deposits	Rejected	Accepted
Position	(b) Cash/Total Assets	Accepted	Rejected
	(c) Government Securities/Total Assets	Accepted	Rejected

Table 17. Composite Rank

Bank Name	C	A	M	E	L	Average	Rank
SBI	1	3	3	1	1	1.8	1
ICICI	2	2	2	3	2	2.2	3
SCB	3	1	1	2	3	2	2

Table 18. CAMEL Rating System, Range, and Interpretation

Rating Scale	Rating Range	Rating Analysis	Exposure Limits	Rating Interpretation
1.	1.0-1.4	Outstanding	1st Limit	Easily measurable differences.
2.	1.6-2.4	Superior	2nd Limit	Measurably better than the average bank.
3.	2.6-3.4	Average	3rd Limit	Meets all of the major standards.
4.	3.6-4.4	Underperforming	Not Recommended	Unsatisfactory condition that will threaten its existence.
5.	4.6-5.0	Doubtful	Not Recommended	The bank's financial health is sub-standard.

Source: Adapted from Dang (2011)

of liquid assets/total deposits : H05 (a) is accepted. However, there is a statistically significant difference in the sample banks' performance in percentage of cash/total assets and government securities/total assets as the tabulated value is 0.02 and 0.000, which is less than the significance value 0.05. Hence, the hypotheses of cash/total assets : H05 (b) and hypothesis of government securities/total assets H05 (c) are rejected.

The Table 16 depicts the consolidated results of the hypotheses testing of the empirical research of CAMEL model and its parameters and sub parameters.

The Table 17 depicts that overall, SBI secured the first rank at the composite level, which means outstanding average performance and easily measurable differences, followed by SCB, which recorded a superior performance during the study period followed by ICICI Bank, placed at the third position, which means that it is a

well-run good bank and is just meeting all the major standards.

The Table 18 gives the rating scale, range, analysis, and interpretation as exposure limits. If the rating range of the sample banks falls in the rating scale from 1 -3, it means that the past performance of the bank in a particular location and during a period of time easily measured differences, fared well than an average bank, and overall, met the prescribed norms as well as standards. However, if the investigated bank falls in the range between 3.6-4.4 to 4.6-5.0, it means that the bank's performance was unsatisfactory and its financial health was under threat. This category of banks have to improve their overall position from time to time. In this research, the sample overall parameters position (CAMEL) range of ratings fall between 1.8-2.00. The exposure limits of the sample banks (SBI, ICICI Bank, and SCB) clearly depict that the overall position (capital adequacy, assets quality, management efficiency, earning capacity, and liquidity position) of SBI, ICICI Bank, and SCB was outstanding/superior (easily measurable difference and far better than average performance) during the period of the study.

Conclusion and Implications

It is positively expected that the findings of the study would be of interest to future researchers, regulators, and policy makers. The study shows that management efficiency of SBI, ICICI, and SCB in India is influenced by their ownership structure. There is stiff competition among sample banks as these banks perform similar in terms of debt/equity ratio- capital + reserves/deposits + borrowings + other liabilities, gross non-performing assets/total assets, interest income/total assets, and liquid assets/total deposits). Public sector bank in India, that is, SBI outperformed, maintained balance capital adequacy with risks to absorb possible losses, financed its banking operations from inside/protection to creditors, and had the ability to pay its short term obligations as and when they become due during the period of the study. SCB (foreign bank), during the time period of the study, performed best in sustaining the quality of assets, doing profitable banking operations, and showed effectiveness in utilization of credit out of total deposit collection. ICICI Bank (private bank) performed measurably better than the average in terms of employing all model dimensions. The study summarizes that the largest public, private, and foreign banks in India, that is, SBI, ICICI Bank, and SCB, respectively had a satisfactory performance according to CAMEL model parameters and sub-parameters.

Limitations of the Study and Scope for Further Research

This study assessed the overall position (adequacy of capital, status of asset quality, extent of management efficiency, growth of earnings, and appropriate position of liquidity) of selected large sample banks (SBI, ICICI Bank, and SCB) on the basis of ownership (public, private, and foreign) with published secondary data. However, no primary data, macroeconomic data, and qualitative factors were considered for the analysis. It is expected that the findings of the study would be of interest to future researchers, regulators, and policy makers. Future researchers can conduct various studies on bank performance with this globally accepted CAMEL framework on the basis of single, comparative ownership with both internal and external factors.

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