

Determinants of Profitability of Indian Commercial Banks

* *Ravi Kumar Jain*

** *Bhimaraya Metri*

*** *K. P. Venugopala Rao*

Abstract

This study examined the effect of determinants influencing the performance of 45 commercial banks in India, post the global financial crisis. The random effect model on balanced panel data for the period from 2010 - 2016 was performed to determine the impact of the macroeconomic and bank specific factors on the profitability of 45 Indian commercial banks (26 public sector banks and 19 private sector banks). The results suggested that the private sector banks performed better than the public sector banks. Findings of the model revealed that a significant part of the commercial banks' profitability was explained by bank specific factors like the NPAs, profit per employee, operating profit to total assets, and investment to total assets, while the capital adequacy ratio remained insignificant. The macroeconomic variables like GDP, IIP, and WPI were significant in explaining the profitability of the Indian commercial banks. This paper highlighted new facts in better understanding of the profitability of commercial banks in growing economies like India.

Keywords: random effect model, Indian commercial banks, profitability, CAMEL

JEL Classification : C23, C59, C87, G21

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Financial services sector play an important role in the economic health of a nation. Banks occupy an important position in this sector in bridging the two sections of the economy - the households and the enterprises by promoting savings and lending funds for investments, thus keeping the economy well oiled (Horváth, Seidler, & Weill, 2014 ; Tabash, 2016). An efficient banking system is important in attracting and deploying investments for an overall economic development (Bhanawat & Kothari, 2013). It contributes directly to the national income and its overall growth (Dash & Das, 2009). The commercial banks play a vital role in the economic resource allocation (Sharma & Kumar, 2013) and their rewards arise from operations of channelizing the funds from depositors to the entrepreneurs/ investors and the risks faced by them are broadly categorized as credit risk, liquidity risk, market risk, operational risk, and macroeconomic risk. Healthy performance of the banking sector is essential to run the engines of the economy and the failure of the sector could lead to severe financial crisis leading to the economic meltdown as witnessed in the USA in the year 2008. The financial crisis that originated in the United States due to the failure of large banks had severely hurt many economies beyond its

* *Director & Professor*, Symbiosis Institute of Business Management, Survey No 292, Mamisipalli, Nandigama Mandal, Ranga Reddy, Hyderabad - 509 217, Telangana. E-mail : director@sibmhyd.edu.in

** *Director*, Indian Institute of Management Tiruchirappalli, Pudukkottai Main Road, Chinna Sooriyur Village Tiruchirappalli - 620 024, Tamil Nadu. E-mail : metriba@gmail.com

*** *Deputy Director & Associate Professor*, Symbiosis Institute of Business Management, Survey No 292, Mamisipalli, Nandigama Mandal, Ranga Reddy, Hyderabad - 509217, Telangana. E-mail : dydirector@sibmhyd.edu.in

geographical borders, forcing many banks into bankruptcy and snatching away the livelihood of millions across the globe. Low solvency of banks was assumed to be the root cause of this crisis (Singh & Sharma, 2016) and this created the need for financial reforms and robust regulations in the banking sector. The Basel Committee on Banking Supervision (2010) laid emphasis on maintaining healthy solvency position, adequate capital, and reserves to avoid such a precarious situation in future.

The Indian Banking Scenario

A strong and financially sound banking system in developing countries provide the necessary financial services and ample funding options for investors, in turn, providing employment opportunities and growth in the economy (Mihalca, 2007). Based on the recommendations of Narasimham Committee (1992), the Reserve Bank of India (RBI) had initiated banking sector reforms to make the banking sector compatible with the liberalization move in the Indian economy (Bhaumik, Kutan, & Majumdar, 2018). The recommendations called for deregulation of interest rates, reduction of the cash reserve ratio (CRR), statutory liquidity ratio (SLR), liberal entry barriers, and revision in the provisioning norms to strengthen the banking system for a healthy growth. The new age private and foreign banks provided a wider choice to the customers and better customer experience. The competition also brought in consolidation in this sector, which was evidenced by the declining tendency in Herfindahl's concentration index and net-interest margin in the post-reforms period (Barman, 2007). The innovations in the financial sector catered to the needs of the growing businesses, but at the same time, put the lenders at risk of losses across asset classes, thus needing close attention from the monetary authorities (RBI, 2009).

As of March 31, 2016, of the 48 commercial banks in total, 26 public sector banks and 14 private sector banks collectively accounted for around 90% of the total credit portfolio and deposits of all scheduled commercial banks in India (ICRA, 2016). The robust credit growth over the period was accompanied by a substantial amount of stress on their assets leading to a rise in restructured loan accounts, adversely affecting the profitability of the public sector banks in the year 2013 (CII, 2013). The Indian commercial banks had gross NPAs in the range of 7.7% as on March 2016, a jump of 89% over the previous year. This increase in the NPAs in 2016 can also be attributed to the regulatory norms on NPAs laid down by the RBI.

According to the RBI, the banking sector in India is sound, adequately capitalized, and well-regulated. They are resilient and are better equipped when compared to other countries of the world due to their high quality liquidity assets (HQLA) and statutory liquidity reserves (SLR), which was evident during the global financial turbulence in the year 2008. However, going by the current financial reports and the headline numbers, there is indication of stress in the assets, that too, at a time when India is positioned as the fastest growing economy in the world, if not addressed, may adversely affect the economy. In this backdrop, it will be of interest to all the stakeholders to recognize the factors that influence the operations and profitability of the Indian banking system.

The studies of profitability of banks in the Indian context remain limited to either the macro or micro factors influencing the performance of specific banks. The present study attempts to fill the research gap by providing empirical evidence on the influence of the micro and macro factors on the performance of Indian commercial banks.

Literature Review

The financial health of the firms can be measured in terms of productivity and performance which are interchangeably used (Pekuri, Haapasalo, & Herrala, 2011; Tangen, 2004). Performance may be measured in

terms of productivity and profitability, the measure of productivity is quantified by the output, cost, efficiency, and performance (Chatzoglou, Diamantidis, Vraimaki, Polychrou, & Chatzitheodorou, 2010). The profitability is determined by the returns. Various factors that determine the profitability of banks can be broadly classified as micro and macro factors (Athanasoglou, Brissimis, & Delis, 2008).

The micro (internal) factors are bank specific, which are controllable (Louzis, Vouldis, & Metaxas, 2012 ; Singh & Sharma, 2016) represented by determinants such as size of the bank, capital adequacy, asset quality, liquidity, leverage ratios, and the macro (external) variables are the macroeconomic factors such as inflation, GDP, and interest rates that have a systemic effect which has a significant effect on the firms' performance and prospects (Broadstock, Shu, & Xu, 2011 ; Pervan, Pelivan, & Arnerić, 2015).

The literature review on the studies conducted on the internal and external factors influencing the profitability of the banks revealed mixed results.

A study on bank profitability by Dietrich and Wanzenried (2011) suggested that the profitability of commercial banks in Switzerland for the period from 1999 to 2006 had a significant positive influence on the GDP growth rate, and similar results were found in the case of the European Union (Petria, Capraru, & Ihnatov, 2015). On the contrary, the macroeconomic variables such as inflation and interest rate were found to be insignificant in the study conducted on six Greek banks for the period of 2000 - 2007 (Alexiou & Sofoklis, 2009), which was also found in the case of Kenyan banks studied for the period of 2008-12 (Kiganda, 2014). Tan and Floros (2012) and Sufian and Habibullah (2009) in their study on the determinants of the profitability of the Chinese banking sector during the post-reform period of 2000 - 2005 suggested that liquidity, credit risk, and capitalization were the top three determinants that had a positive impact on the profits of the state-owned commercial banks, which was similar to the findings of Saeed and Zahid (2016) in the banks in the UK, and the credit risk had a positive association with profitability of the banks, indicating that the banks profited by taking credit risks; this is contrary to the study results obtained by Jara - Bertin, Moya, and Perales (2014) on the profitability of commercial banks in Latin America during 1995 - 2010, which suggested a negative relationship of credit risk and profitability, indicating that high-risk loans led to non-performing loans, thus affecting the profitability.

A study by Goddard, Molyneux, and Wilson (2004) on the profitability of European banks during the 1990s suggested that the relationship between the liquidity and profitability was positive. Mosses, Singh, and Prusty (2015) observed no significant relationship between banks' profitability and liquidity in their study on determinants of bank performances of commercial banks in Tanzania. In their book, Goddard et al. (2001) mentioned that diversification in European banks increased the size of a bank and in turn reduced the average cost in the competitive markets. A higher capital ratio increased the bargaining capacity of the large banks' capital, thereby impacting the bottom-line. The management efficiency can be measured by its operating efficiency; a lower operating expense affects the bottom line positively. Profitability and management efficiency had a high degree of correlation (Jamali & Asadi, 2012). Studies on profitability of Greek banks revealed that profit persisted to a moderate extent and bank-specific determinants affected bank profitability significantly (Athanasoglou, Brissimis, & Delis, 2008). Ownership concentration influenced the profitability (Nagaraju, 2014), and government ownership had a significant negative relationship with firm performance as found in the study of listed companies in Kenya (Ongore, 2011). Indian private banks dominated the public and foreign banks in terms of productivity and profitability; the ownership was significant to the profitability of the banks (Sanyal & Shankar, 2011). Foreign banks were more profitable than domestic banks globally (Chen & Liao, 2011; Sahota & Dhiman, 2017) and similar results were found in the study on 36 commercial banks in Pakistan (Azam & Siddiqui, 2012), which were contrary to the study results obtained by Yao, Han, and Feng (2008) on determinants of bank performances in China, which suggested that the state-owned banks had better profitability when compared to the private banks.

Objectives of the Study

Indian banking has withstood the turbulent period of the global financial crisis. Post the crisis, several reforms with the new Basel norms were introduced in the banking sector. An attempt is made to add to the body of research the profitability factors of Indian commercial banks post the global financial crisis using the random effect model, so that the decision makers may design strategies in a way that can benefit the financial institutions.

The objectives of this research are to study :

- (i) The influence of bank specific factors on its profitability.
- (ii) The impact of macroeconomic factors on banks' profitability.

Methodology

The study was conducted for the period of 2010 - 2016 to examine the determinants of the profitability of 45 commercial banks (public and private) in India. Three banks were excluded from the study as the data for these banks were insufficient. Data were collected from the secondary sources, the website of Reserve Bank of India, and the reports of the Economic Survey of India. Random effect model was employed on the balanced panel data for the purpose of the study. The random effect model assumes the variation across entities to be random and uncorrelated with the independent variables included in the model (Greene, 2008). Random effect estimates were applied on the premise that the differences arise across the parameters influencing the profitability of banks. The financial performance of the Indian commercial banks was evaluated based on the CAMEL framework, recommended by the Basel Committee on Banking Supervision of the Bank of International Settlements (BIS).

CAMEL rating criteria is a tool used for banking supervision and is also an indicator for managerial performance on financial and non-financial aspects (Salhuteru & Wattimena, 2015). This framework consists of the components on capital adequacy, asset quality, management efficiency, earnings ability, and liquidity ; and is a popular supervisory rating adopted globally. To evaluate the determinants of profitability, the independent variables and the dependent variables considered for the study are discussed below.

Determinants

(1) Bank Specific Factors : Various factors of the banks play a role in their profitability. The bank specific variables have been classified as per the CAMEL structure and the ratios pertaining to the components were selected for the study :

(i) Return on Equity (ROE) : The commonly used metric in the industry to measure profitability is the return on equity (ROE). Return on equity (ROE) is a financial ratio measuring the profitability of a firm. It is defined as net income on average total equity employed. It measures bank accounting profits per dollar of book equity capital. It is an outcome of operational decisions, financial decisions, and tax effect (Hawawini & Viallet, 2011; Sharma & Kumar, 2013). A business that has a high return on equity is a cash generating organization. ROE indicates the effective employment of owners' capital by the firms (Khrawish, 2011; Wen, 2010). It is taken as a dependent variable.

(ii) Capital Adequacy : Is a measure of a bank's capital, expressed as a percentage of a bank's risk weighted credit exposures. The adequacy of capital is judged on the basis of capital adequacy ratio (CAR). Capital adequacy ratio

(CAR) is a metric used to protect the depositors and promote stability and efficiency of banks. Availability of capital enables a bank to support the bank's business in case of adverse situation of liquidity crises that may arise due to heavy withdrawals made unexpectedly which may turn contagious (Athanasoglou et al., 2008 ; Diamond & Rajan, 2005). Capital adequacy indicates the financial stability of the bank to handle shocks (Lotto, 2018). It is taken as an independent variable in the model.

(iii) Asset Quality : Is a significant element that measures the strength of a bank and is directly linked with the capital adequacy. The weak asset quality affects the banks' credit cost due to the provisions made to cover the NPAs. As bankers are primarily into lending activities, loans are the major assets that generate primary income. Superior quality of the loan portfolio strengthens the balance sheet and puts the banks on a strong footing. Delinquent loans are the major area of concern that leads to substantial losses (Dang, 2011). Lower non - performing loans are an indication of efficient performance (Sangmi & Nazir, 2010). NPAs have a direct impact on the profitability of the banks (Joseph & Prakash, 2014). Net NPA to net advances (NNNA) is taken as an independent variable in this model.

(iv) Management Efficiency : It is a qualitative issue and is subjective in nature. Management efficiency enables the banks to generate substantial profits and expand their footprint with improved market share (Athanasoglou et al., 2008). Assessment of the management systems, human resources, control systems, facilities, and risk taking capacity of the firm reveals its efficiency. Operational efficiency can be measured to determine the management quality. A quantitative metric, profit per employee (PPE) has been employed as a proxy for management efficiency.

(v) Earnings Quality : It is a metric used to determine the profitability of the banks and the effective employment of its assets (Roman & Sargu, 2013). It is represented by the financial ratio - operating profit to total assets (OPTA).

(vi) Liquidity : It shows the banks' ability to meet their long and short term obligations on time. Insufficient liquid assets may lead banks to bankruptcy in case of immediate need to discharge their obligations. For the banks to gain public assurance, sufficient liquidity has to be maintained to meet the payment obligations of the depositors (Chinoda, 2014). Adequate liquidity and its effective monitoring have significant positive implications on the profitability and performance of the banks (Dang, 2011; Varghese, 2016). Illiquid conditions of the banks may lead to issues in generating funds. Investment to total assets (ITA) represents this parameter and is taken as an independent variable in the model.

(2) Macroeconomic Factors : Businesses are affected by the macro economic conditions like the economic policy, gross domestic product (GDP), inflation, IIP, and others. The external factors can influence the investing decisions ; thereby affecting the investment portfolio and asset quality. For instance, a favourable economic environment generates employment and a healthy GDP, thereby creating the demand for loans. During the economic boom, the demand for credit is high compared to recession (Athanasoglou et al., 2008). A study by Ray (2013) on relationship of macroeconomic factors on the stock prices in India revealed no causal relationship.

(i) Gross Domestic Product (GDP) : It measures the value of all goods and services produced in a given year, expressed in base-year prices. GDP growth rate explains the bank profitability (Masood & Ashraf, 2012). Studies by Issah and Antwi (2017) ; Beckmann (2007) ; Albertazzi and Gambacorta (2009) ; and Martinho, Oliveira, and

Oliveira (2017) suggested that GDP, unemployment rate, and interest rate differentials explained the profitability of businesses. GDP is taken as an independent variable in the model.

(ii) Industrial Production : It is an economic tool that measures the overall economic activity in a country. Index of industrial production (IIP) is considered as an independent variable in the model on the assumption that the IIP influences the profitability of the banks.

(iii) Inflation : It is a sustained increase in the general price level of goods and services in an economy over a period of time (Simiyu & Ngile, 2015). Studies suggested a positive impact between inflation and profitability (Kosmidou, Pasiouras, Doumpou, & Zopounidis, 2006). WPI is taken as an independent variable in the model.

Analysis and Results

Descriptive statistics related to the macroeconomic factors and bank specific factors analyzing their effect on profitability of the banks are presented in the Table 1 and Table 2. It indicates that the Indian commercial banks earned an average of 11% ROE, which is fairly healthy, while the range is large with the public sector banks positioning themselves at the bottom, needing attention. The median indicates that half of the Indian commercial banks have made anywhere above 13% on the equity. The negative return of the banks was due to the underperformance, largely by the public sector banks during 2015-16, which may be attributed to the introduction of new reforms in provisioning of loans.

The ratio of the mean and the median is approximately 1 for all the variables, indicating normality of the data. The WPI and OPTA are approximately symmetrical, IIP is moderately skewed, and the bank specific variables are largely skewed to the left of the average. The macroeconomic variables, that is, GDP, IIP, and WPI are platykurtic, while the bank specific variables are leptokurtic in nature, indicating the possibility of extreme values and large variance in the bank specific variables.

From the results given in Table 3, it can be inferred that the capital adequacy ratio has insignificant impact on ROE. However, it is necessary for the banks to maintain the CAR as per the new Basel norms to protect the stakeholders.

Table 1. Descriptive Statistics

	Macro (External Factors)		
	GDP	IIP	WPI
Mean	1.00E+08	3.228571	5.020000
Median	99466360	2.800000	5.980000
Maximum	1.37E+08	8.200000	9.560000
Minimum	63500570	-0.100000	-2.490000
Std. Dev.	24386556	2.556211	3.958456
Skewness	0.018271	0.726618	-0.660875
Kurtosis	1.753764	2.603048	2.317387
Sum	3.15E+10	1017.000	1581.300
Sum Sq. Dev.	1.87E+17	2051.743	4920.183
Observations	315	315	315

Source: Compiled from the reports of RBI

Table 2. Descriptive Statistics

Bank Specific Factors						
	CAR	NNNA	PPE	OPTA	ITA	ROE
Mean	13.38946	1.844603	1.131511	1.900842	27.05195	11.32438
Median	12.83000	1.310000	0.600000	1.860537	26.64953	13.09951
Maximum	56.41000	11.89000	94.30000	3.921486	43.36450	26.88000
Minimum	7.510000	0.000000	-2.100000	-0.675763	16.33763	-34.00724
Std. Dev.	3.478550	1.777325	7.048406	0.685562	4.195474	9.715908
Skewness	6.872263	2.012511	12.40021	-0.151847	0.677364	-1.809666
Kurtosis	79.40179	8.428323	156.2572	3.612678	3.968900	7.814057
Sum	4217.680	581.0500	356.4260	598.7653	8521.364	3567.180
Sum Sq. Dev.	3799.497	991.8900	15599.53	147.5784	5527.030	29641.24
Observations	315	315	315	315	315	315

Source: Compiled from the reports of RBI

Table 3. Model Estimation Summary**Dependent Variable: ROE**

Method: Panel EGLS (Cross-section random effects)

Sample: 315

Cross-sections included: 45

Total panel (balanced)

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t - Statistic	Prob.
C	29.14263	6.593599	4.419836	0.0000
GDP	-1.17E-06	4.25E-07	-2.758500	0.0062
IIP	-0.422131	0.151585	-2.784772	0.0057
WPI	0.577863	0.148544	3.890171	0.0001
CAR	-0.076209	0.090415	-0.842878	0.4001
NNNA	-2.238662	0.234715	-9.537788	0.0000
PPE	5.654106	0.881457	6.414500	0.0000
OPTA	5.558248	0.679503	8.179877	0.0000
ITA	-0.266110	0.085469	-3.113525	0.0021

Source: Compiled from the reports of RBI

The impact of non-performing loans is negative and is a significant explanatory variable at the 5% level with ROE. This indicates that the increase in NPLs results in decline in profitability for the banks.

Management efficiency measured by profit per employee is significant in explaining the profitability of the banks. It suggests that the profit earned per employee influences the profitability of the banks. It is worth noting that in spite of a few uneconomical branches in the rural areas, most of the public sector banks operate their branches pan India. The profit per employee has a positive relationship with profitability, indicating the efficiency of the industry in managing their human resources. It can also be inferred that the employee's contribution to the

business is significant. The earning quality which is measured by the operating profit to total assets has significant explanatory value, which concurs with the findings of Athma, Rao, and Ibrahim (2018).

Liquidity has shown a negative and significant impact on the profitability of the banks in explaining the profits. The liquidity of the banks negatively impacts the profitability of the banks due to the fulfillment of the mandate of investing in liquid funds that may not be profitable. The results of the study of the macroeconomic variables on the performances of commercial banks in India suggest that the GDP, IIP, and WPI have a significant explanatory value, which concurs with the findings of Ben Ameur and Mhiri (2013).

Conclusion and Implications

Based on the results, we conclude that the bank specific explanatory variables like the management efficiency, asset quality, earnings quality, and liquidity are able to explain significant part of profitability in Indian commercial banks. Banks should pay attention towards employing funds in more profitable instruments while maintaining investments to total assets. Attention has to be paid towards the non-performing assets and advances. Due diligence may be adopted to reduce the NPAs.

The results of the macroeconomic variables such as GDP at current market prices, WPI, and IIP suggest a significant influence on the profitability of the Indian commercial banks. This also indicates a need for active participation of the government in designing policies that are favourable for the economy which will have a positive impact on the banking sector. The banking sector may look at keeping their workforce motivated for positive results and work towards reducing delinquencies.

Limitations of the Study and Scope for Further Research

This study assesses the profitability of the Indian commercial banks by taking the financial ratios based on the CAMEL framework using the secondary data. Qualitative factors were not considered for the analysis. The findings of this study may be of interest to the stakeholders and future researchers. Further studies in the area of performance of private sector banks vis-à-vis the public sector banks in the new age technology may provide valuable inputs for policy makers.

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About the Authors

Dr. Ravi Kumar Jain is the Director at SIBM Hyderabad. Dr. Jain brings in over 20 years of experience in family business management, teaching, training, research, and academic administration. He is an avid researcher with over 100 publications to his credit.

Dr. Bhimaraya Metri is Director at IIM Tiruchirappalli. Dr. Metri has more than 25 years of experience in teaching, training, research, and consulting and over 100 research articles to his credit. He has also co-authored six books.

K. P. Venugopala Rao is Associate Professor of accounting and finance at Symbiosis Institute of Business Management, Hyderabad. Dr. Rao's areas of interest are accounting and capital markets. He has contributed to the body of knowledge in the form of research publications.