

DETERMINANTS OF BANK PERFORMANCE: EVIDENCE FROM THE INDIAN COMMERCIAL BANKS

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Abstract *Banking performance significantly impacts on economic growth. However, bank's performance can be affected by remarkable factors. The present study aims to identify the bank-specific factors that determine the performance of the Indian commercial banks. Return on Assets and Return on Equity are considering the indicators of bank performance. A fixed effect and random effect panel regression models have been applied to a dataset of 39 commercial banks for the post-crisis period 2009 to 2017. Based on panel data analysis, results reveal that Capital adequacy ratio has a significant effect on return on assets while the insignificant impact on return on equity. Intermediation cost to total assets and Nonperforming assets were negatively influencing the performance of the banks. Non-interest income and Net interest margin showed a positive effect on banks performance. Credit deposit ratio, Investment deposit ratio, Cost of funds were not significant determinants of Indian commercial banks performance.*

Keywords: *Bank Performance, Return on Assets, Return on Equity, Non-Interest Income, Net Interest Margin, Intermediation Cost, NPA*

JEL Classification: *C1, C5, C9, G2, M1, Z1*

INTRODUCTION

Reserve Bank of India (RBI) or Government of India is modified Banking sector reforms for the advancement of Indian banking performance. Banks are contributing resources for building nation's economy. Banking performance significantly impacts on economic growth. So banks require being profitable. However, bank's performance can be affected by remarkable factors. These factors are categorised into internal (bank specific) and external factors (macroeconomic). The internal factors are individual bank characteristics which affect the bank performance. These elements are controlled by the internal decisions of the management of the bank.

Recent studies dedicated to the analysis of bank performance, such as those of (Naifar, 2015) and (Nouaili, Abaoub, & Ochi, 2015) for Tunisian Bank performance. (Petria, Capraru, & Ihnatov, 2015) for the EU27 banking system. Commercial banks performance in Kenya (Ongore & Kusa, 2013). The Greek bank Profitability (Alexiou & Sofoklis, 2009). (Dietrich & Wanzenried, 2011) for banks in Switzerland. They were focusing on the internal and external factors which influence the bank's performance. This paper examines to determine the leading internal factors that are influencing the performance of the Indian commercial banks using a panel

data analysis on a sample of 39 Indian commercial banks over the period 2009 to 2017. This research is required for the management of banks to know why the performance of one bank is different from another. The bank performance variation analysed by the major factors which influence banks' performance. This research may be the need for banks to grasp the determinants which are contributing positively to the performance of the bank and simultaneously to know the factors that are adding negatively to the performance of the bank. Banks should tackle negatively influencing factors. Here bank performance indicators considered the return on assets, return on equity. Moreover, distinguishing internal factors are capital adequacy ratio, credit-deposit ratio, cost of funds, the ratio of non-interest income to total assets, and investment deposit ratio, ratio of intermediation cost to total assets, net interest margin, the ratio of net NPA to net advances.

Rest of the paper is organised around the following sections. Section 2 gives a review of the literature regarding the determinants of banks performance, while Section 3 presents the conceptual framework of the study. Section 4 deals with the database of the research, variable description and empirical model. And section 5 discusses the empirical results. Finally, the conclusions implications in section 6 and Limitations, Scope for further research in section 7.

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LITERATURE REVIEW

The existing literature was dealing with factors that influence the bank performance. There are some studies on the profitability of Indian banking sector. (Kedia, 2016) Studied Credit Deposit Ratio and Net Interest Income influence the net profitability of Indian Public Sector Banks in a significant move. (Misra, 2015) Examined GDP growth rate, Inflation rate factors are insignificant determinants of bank profitability in India, while bank-specific variables are the ratio of loans to total assets, net interest margin, and non-interest income significant determinants of both measures of bank performance (ROA, ROE). For the ROA measure, size of the bank and capital adequacy ratio significant determinants of the bank performance. The most important factors influencing ROA of public sector banks are spread, operating expenses, provisions & contingencies and non-interest income (Dutta, Gupta, & Rao, 2013). (Narwal & Pathneja, 2015) Private sector banks are more prolific than public sector banks. However, no difference exists in the profitability of two bank groups.

There are some investigations, other than Indian banking sector. (Naifar, 2015) Tunisian Bank performance explained by expenses management, ownership structure and bank loans. Consequently, reducing state ownership and expanding openness to foreign capital lead to better performance. (Petria, Capraru, & Ihnatov, 2015) NPA and Credit deposit ratio, management efficiency, the diversification of business, the market competition and the economic growth influence bank profitability in the EU27 banking system. Bank-specific factors impact on bank performance while macroeconomic factors have an insignificant contribution to the financial performance of commercial banks in Kenya (Ongore & Kusa, 2013). Macroeconomic factors, inflation and own consumption influence the bank performance. Moreover, bank-specific variables, such as capital or measures of cost-efficiency, also lead the bank Profitability (Alexiou & Sofoklis, 2009). (Demirgüç-Kunt & Huizinga, 1999) Studied that higher tax rates lead to a lower post-tax profit. Funding costs have a significant adverse impact on the return on assets (Dietrich & Wanzenried, 2011). Banks that maintain high capital-assets or liquidity ratios tend to show relatively low profitability (Goddard, Molyneux, Wilson, & Wilson, 2014). Credit risk, liquidity, total assets and disclosure of information relating to credit are the primary determinants of bank performance (Khalfaoui & Saada, 2015). Size, control and credit quality are the major variables can determine the bank performance (Nassreddine, Fatma, & Anis, 2013). Bank performance is positively associated with capitalisation, privatisation and quotation. While, bank size, concentration index and efficiency are negatively correlated with bank performance (Nouaili, Abaoub, & Ochi, 2015). There are other studies which have not covered the recent

period with a broad set of bank-specific factors influence the Indian commercial bank's performance.

CONCEPTUAL FRAMEWORK

From the review of the literature, the most used banking performance indicators are the return on assets (ROA) and return on equity (ROE). The probable determinants of Bank performance are capital adequacy ratio, credit-deposit ratio, cost of funds, the ratio of non-interest income to total assets, and investment deposit ratio, ratio of intermediation cost to total assets, net interest margin, ratio of net NPA to net advances.

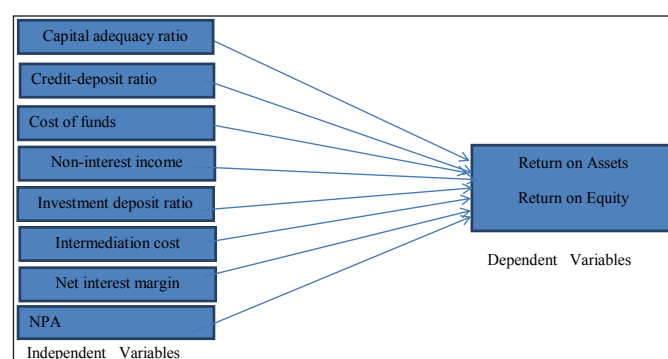


Fig. 1: Schematic Diagram Using Independent and Dependent Variables

METHODOLOGY

Data

This study considered balanced panel data of 39 Indian commercial banks for the period 2009 to 2017, out of these 21 are public sector banks and 18 are private sector banks, due to the availability of data for the studied period. Those banks were eliminated, which have commenced services or interrupted service in the middle of the period under study period. Data collected from RBI in the issue of trend and progress of banking in India.

Variables Description

The present study aims to identify the determinants influencing the performance of the Indian commercial banks. Bank performance indicators considered as a dependent variable and determinants of bank performance considered as independent variables.

ROA is a ratio of the net profit to the total assets. It measures the managerial efficiency of the banks to generate income

by utilising its assets. A higher ROA shows that the bank is more efficient in using its resources. ROE is another primary indicator of the performance of the banks. It is a ratio of net profit of the bank to its total equity shareholder’s funds. ROE measures the profitability by the shareholders of the bank on their total investment in the bank. Higher the ROE, the better the bank is concerning profit generation.

Following the financial crisis, financial regulators implemented strict regulation for financial institutions. They noticed that commercial banks reserve more capital for anticipating economic failure. Capital adequacy ratio is the ratio of a bank’s capital to risk-weighted assets and current liabilities. The Credit deposit ratio is the ratio of how much a bank lends out of the deposits it has mobilised. It shows how much a bank is utilising the core funds for lending. A

higher ratio means more dependence on deposits for credit. Investment deposit ratio is the ratio of total investment, including non-approved securities to total deposits.

Non-interest income is generating income from fees other than lending. Net interest margin is the difference between the interest income received by the bank and the interest paid by a bank to lenders. The ratio of Intermediation Cost to Total Assets is the Ratio of Operating expenses to total assets. It is one of the indicators of a measure of the performance of banks. Cost of funds is the interest rate paid by banks for utilising the customer’s money. Net NPA to net advances ratio is the credit risk. It is a measure of the asset quality of the banks. An asset becomes non-performing when it ceases to generate income for the bank. The table summarises the variables used in this study.

Table 1: Variables Description

Symbol	Variables	Proxy
Dependent		
ROA	Return on assets	Net Profit /Average Total Assets
ROE	Return on equity	Net Profit /Average Total Equity
Independent		
CAR	Capital adequacy ratio	Capital / Risk Weighted Assets
CDR	Credit - Deposit Ratio	Loans/Customer Deposits
IDR	Investment - Deposit Ratio	Total Investments/Total Deposits
NPA	Ratio of net NPA to net advances	Non-Performing Loans /Gross Loans
NII	Ratio of non-interest income to total assets	Other Income/Total Assets
ICT	Ratio of intermediation cost to total assets	Operating Expenses/Total Assets
COF	Cost of funds	(IPD+IPB)/(Deposits +Borrowings)
NIM	Net Interest Margin	Net Interest Income/Total Assets

IPD=Interest Paid on Deposits IPB= Interest Paid on Borrowings

Econometric Model

The determinants of commercial bank’s performance to be analysed with the help of a panel data regression model. The Panel data combines time series and cross-section data. Panel data regression models are estimated with any one of the following methods.

- 1) Pooled Regression 2) Fixed Effect 3) Random Effect

A pooled regression model is neglecting the time series and cross-section nature of data. So Pooled regression model, excluded from the present study. A fixed effect and random effect model have been used to determine the factors which are influencing the performance of the Indian banks.

To examine the determinants of Indian commercial bank performance with following panel data regression models.

$$Y = A + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + \mu$$

Where, B1, B2, B3, B4, B5, B6, B7, B8 are the coefficients of independent variables and μ is the error term.

$$Y = \text{Return on assets} / \text{Return on equity}$$

$$X_1 = \text{Capital adequacy ratio}$$

$$X_2 = \text{Credit - Deposit Ratio}$$

$$X_3 = \text{Cost of funds}$$

$$X_4 = \text{Ratio of intermediation cost to total assets}$$

$$X_5 = \text{Investment - Deposit Ratio}$$

$$X_6 = \text{Ratio of non-interest income to total assets}$$

$$X_7 = \text{Net Interest MarginRatio}$$

$$X_8 = \text{Ratio of net NPA to net advances}$$

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 reports the descriptive statistics of the bank performance indicators and bank specific factors that determine the banks performance.

Table 2: Descriptive Statistics of Dependent and Independent Variables

Variables	Observations	Mean	Std. Deviation
Return on assets	351	.7881	.73526
Return on equity	351	10.4674	10.37247
Capital adequacy ratio	351	13.5271	3.70957
Credit - Deposit Ratio	351	74.4823	8.78074
Investment - Deposit Ratio	351	33.8587	7.49301
Ratio of net NPA to net advances	351	2.1462	2.38273
Ratio of non-interest income to total assets	351	1.1284	.44230
Ratio of intermediation cost to total assets	351	1.8642	.55633
Cost of funds	351	6.6256	.91270
Net Interest Margin	351	2.6479	.68405

Source: Author calculations

Estimate Model

Hausman test has been used to select the appropriate estimation method between fixed effect and random effect method. It applied to both dependent variables (ROA, ROE). Table 3 gives the Hausman test results.

Table 3: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.	Decision
Cross-section random(ROA)	7.716238	8	0.4617	Random effect
Cross-section random(ROE)	25.516365	8	0.0013	Fixed effect

Source: Author calculations d.f=degrees of freedom

For ROA, the null hypothesis is accepted, which indicates random effect method is appropriate. For ROE, the null hypothesis is rejected, which means the fixed-effect method is suitable.

This study intends to determine the bank-specific factors influencing the performance of the Indian commercial banks.

The results of the estimation of the models are represented in table 4 and 5.

Table 4: Random Effect Panel Regression Results for Return on Assets

Variable	Coefficient	t-Statistic	Prob.
C	-0.347456	-1.545795	0.1231
Capital adequacy ratio	0.017577	3.254777	0.0012
Credit deposit ratio	0.000451	0.188896	0.8503
Cost of funds	0.034930	1.712859	0.0876
Intermediation cost	-0.667518	-14.47320	0.0000
Investment deposit ratio	-0.000116	-0.043392	0.9654
Non-interest income	0.658289	13.03739	0.0000
Net interest margin	0.550427	14.00999	0.0000
Nonperforming assets	-0.148699	-18.81716	0.0000

Observations = 351, Adjusted R² = 0.808225, F-statistic = 185.3825, Significant at 5% level.

Source: Author calculations

Table 5: Fixed Effect Panel Regression Results for Return on Equity

Variable	Coefficient	t-Statistic	Prob.
C	1.322241	0.185187	0.8532
Capital adequacy ratio	0.168678	1.555290	0.1209
Credit deposit ratio	0.026211	0.425061	0.6711
Cost of funds	-0.225279	-0.488106	0.6258
Intermediation cost	-8.277014	-5.676759	0.0000
Investment deposit ratio	0.065707	1.071614	0.2847
Non-interest income	10.44245	8.184652	0.0000
Net interest margin	5.318587	5.654065	0.0000
Nonperforming assets	-2.915177	-20.29960	0.0000

Observations = 351, Adjusted R² = 0.797540, F-statistic = 30.97250, Significant at 5% level.

Source: Author calculations

ROA and ROE were considered the indicators of bank performance to analyse the determinants of bank performance for the Indian banking sector. Table 4 shows the results of the regression model explaining the determinants of ROA for the Indian commercial banks. Table 5 shows the regression model describing the determinants of return on equity for the Indian banks. Capital adequacy ratio has a significant effect on return on assets positively. However, this impact is shallow (0.0017). This result confirms with those obtained by (Goddard, Molyneux, Wilson, & Wilson, 2014) and (Alexiou & Sofoklis, 2009). (Demirgüç-Kunt & Huizinga, 1999). CAR is insignificant on return on equity. The capital

adequacy ratio has not a statistically significant impact on shareholder returns (Petria, Capraru, & Ihnatov, 2015).

Credit deposit ratio is the ratio of loans to customer deposits. It is not statistically significant on both dependent variables. Investment deposit ratio is insignificant with both dependent variables. It has a positive relationship with ROE, simultaneously negative relationship with ROA. Cost of funds has no significant effect on ROA and ROE. Moreover, it has a positive relationship with ROA while a negative one with ROE.

Intermediation cost to total assets has a negative relationship with both dependent variables. It is significant with ROA, ROE. Its effect on ROE is much stronger than ROA (-8.27, -0.66). Intermediation cost is negatively influencing the performance of the banks. Nonperforming assets have an adverse and significant effect on bank performance. NPA has a more substantial impact on ROE than ROA. The results regarding the impact of non-performing assets on bank performance support the findings of (Misra, 2015) and (Petria, Capraru, & Ihnatov, 2015).

Non-interest income has a positive and significant effect on bank performance. Also, it impacts on return on equity is very high compared to the return on assets (10.44, .658). Net interest margin has a positive and significant effect on bank performance. NIM is having a substantial impact on ROE and moderate impact on ROA. These results are similar to the findings of (Misra, 2015).

CONCLUSION AND IMPLICATIONS

After examining the determinants of bank's performance, this empirical study revealed that Non-interest income and Net interest margin, Intermediation cost to total assets and NPA have a significant impact on bank performance; these factors influence both on ROA, ROE while Capital adequacy ratio has a significant effect on ROA, insignificant on ROE. Credit deposit ratio, Investment deposit ratio, Cost of funds were not significant determinants of Indian commercial banks performance. Intermediation cost to total assets and NPA have a negative influence on the performance of the Indian commercial banks. This research helpful for bankers in their decision making to enhance the bank performance.

The implications of these findings for the bank management and decision makers to reduce its operating expenses, the ratio of the intermediation cost to total assets should be held low to ensure sound performance. Moreover, Banks should be controlling NPA and better supervision for bad loans. The study reveals that there is a negative relationship between NPA and banks performance. Thus, the credit system of the banks should be stringent, and the debt collection policy of the banks should be strong enough to reduce the bad debts.

LIMITATIONS AND SCOPE FOR FURTHER RESEARCH

The present study also has some limitations; the investigation has not covered macroeconomic factors such as GDP growth and Inflation rate. And the data employed for the empirical analysis based on the secondary data.

As a future direction of research, macro factors could be considered as determinants of bank performance. And the foreign banks may be involved in the sample of the future studies. Moreover, future studies on this topic should attempt to mixed research methods that utilize both quantitative and qualitative research studies.

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