ROA Analysis of Public and Private Sector Banks in India: A Comparative Study

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Indian banking industry is mostly dominated by public sector banks. These banks which enjoy over 75% of the market share in India have been of late witnessing an increase in the level of bad assets which do not yield any return to them. On the other hand, private sector banks are doing very well on many fronts. Return on asset is an important profitability measures of bank's profitability. This article aims to examine the determinants of ROAs of both public sector and private banks operating India and seeks to make a comparison between those determinants. In the analysis, we found that the major determinants influencing ROA are spread, operating expenses, provisions & contingencies, net performing assts and Net interest income.

Key Words: - ROA, spread, NPA, net interest income, provisions & contingencies

INTRODUCTION

The period after 2007-08 has been very volatile for not only the Indian economy but also for the world economy. Lots of investors have lost their money as the stock prices have fallen flat all over the world during this period. Banking sector has always been one of the important sectors for investment. In the time of uncertainty, when some are arguing that the economies are in the process of recovery, others are opining that the world is set for another recession soon. Slowing growth along with higher interest rates can have a number of multiple implications for the operations of the banks. First of all, low rate of business growth restricts the capacity of banks to levy higher interest rates from borrowers. Deposit growth in the system declines in comparison to the credit growth which has an adverse effect on banks' ability to lower interest offered to depositors. Both these factors have a significant effect on the net interest income (NII) and net interest margin (NIM) of the banks. In addition to this, the loan servicing capacities of business community comes under pressure, which strains the asset quality of the banking system. When non-performing assets (NPAs) increases, banks are required to make higher provisioning, which ultimately affects their profitability.

Despite the challenges from both domestic and international developments, the performance of Indian banks remained robust during past few years. The resilience of the banking sector can be marked from the improvement in the capital base, asset quality and profitability. The profitability of scheduled commercial banks (SCBs) has shown improvement both in terms of return on assets (RoA) and return on equity (RoE). Simultaneously, both gross and net NPA ratios declined in comparison in past few years. Profitability of the banks can be examined with the help of number of parameters. One of such parameter is ROA. Return on assets is an indicator of how profitable a company is relative to its total assets. It gives an idea of the efficiency of the management in using its assets to generate earnings. The growth in net profit of commercial banks has slowed down, mainly due to steep increase in interest expenditure. Also, Net Interest Margin (NIM) declined marginally during 2011-12 as compared with the previous year. As a result of this, during the same time period, two major indicators of profitability, RoA and RoE have declined marginally compared with the previous year, mainly reflecting the slowdown in net profit caused by increased interest expenditure. As public sector banks still accounts for two-thirds of total assets of all scheduled commercial banks and private sector banks are posing stiff competition to the public sector banks, it becomes very relevant to make a comparison between the determinants of ROA for public and private sector banks in India. This paper makes an attempt to this direction.

LITERATURE REVIEW

A review of literature on profitability and performance of Indian banks has thrown ample light on banks' status in the present economic scenario. A few selected studies were reviewed, some of which are mentioned as under.

Narang et al (2011), Chaudhry (2012), and Uppal et al (2012) have examined Indian banking system in terms of their performance and profitability. Uppal (2010) and Ramaratnam et al (2011) examined certain key parameters to evaluate the performance of the Indian banks during the global financial turmoil. Chaudhary et al (2011) made a comparative study of public and private sector banks to evaluate their performance. Koundal (2012) measured the relative performance of Indian banks. Koeva (2003) provided empirical evidence on the impact of financial liberalization on the performance of Indian banks by examining the behaviour costs and profitability during the liberalization period. Ramudu and Rao (2006) attempted to analyze the profitability of the three major banks in India: SBI, ICICI, and HDFC for the period 2000-2005 and revealed the comparative efficiency of SBI, ICICI, and HDFC. However, Cheema and Agarwal (2002) in their study found that commercial banks operating in India are below the average level of efficiency. But Sathye (2001) have observed that the mean efficiency score of Indian banks compared well with the world mean efficiency score. He also observed that the efficiency of private sector banks as a group is paradoxically lower than that of public sector banks in India. Bauman (1996) identified three major issues associated with practical implementation of the valuation model: the prediction of future profitability, the length of appropriate forecast horizon, and the determination of the appropriate discount rate.

Reviews of work revealed that various reform measures introduced in India have indeed strengthened the Indian banking system in thwarting the new challenges ahead. Some banks achieved excellent performance with regard to index of interest earned to total assets ratio. Researchers have taken various parameters to evaluate banks' performance such as business per employee, profit per employee, total deposits, total advances, total investment, total assets, total income, total expenditure and net profits. However, some studies also observed that India is lagging in many aspects. It is still far away from the 100 per cent globalization.

Less use of technology along with high NPAs in Indian banks and poor human resource management are other concerns. Studies also suggested that suitable and stringent measures should be taken to get rid of NPA problem and an efficient management information system should be developed. It was also found that reform measures taken in India have largely benefited foreign and private sector banks. Public sector banks are still lagging behind in terms of various financial parameters and needs much improvement. Moreover, it was observed from some studies that ownership type has a significant effect on the some of performance indicators.

OBJECTIVES OF THE STUDY

Performance of banking sector has a very significant impact on the economic growth. Last three years were very significant as most of the economies have started recovering from the financial crisis. In India, performance of public sector banks has undergone significant improvement after the liberalization and privatization policy of 1991. The performance of the banks is said to be satisfactory if the ROA exceeds 1%. The average return on assets of the public sector banks is 0.88 for 2011-12 whereas as it was 0.96 in the year 2010-11. So, we can find a decline in the ROA of public sector banks. In case of private sector banks, the average ROA stood at 1.20 in 2011-12, which is a decline from the figure of 1.09 in 2010-11. The average ROA of public sector banks was lower that that of private sector banks during last two years. In the context of this, we can state the following as our objectives of the study:

1. To examine the determinants of ROA of public and private sector banks in India.

2. To compare the ROA determinants of public sector banks with that of private sector banks.

3. To suggest ways to improve ROA of banks further.

RESEARCH METHODOLOGY

The study focuses on public sector and private banks in India. Public sector banks include 19 nationalized banks, SBI and its associates and also one new public sector bank (IDBI Ltd.). Private sector banks include 22 banks of which 15 are old generation banks and 7 are new generation banks.

Key Variable: Dependent variable for the purpose of study is Return on Assets (RoA) of banks. Spread as a percentage of assets, Credit deposit ratio, investment deposit ratio, Capital adequacy ratio, operating expenses, provision for contingencies, net NPA as a percentage of net advances and non interest income of banks have been taken as independent variables.

1. Spread Ratio (SP) (Spread/Total Assets): Spread is the difference between interest earned and interest paid. The ratio is calculated as a percentage spread to total assets. The higher the ratio, the more will be the profitability.

2. Provisions and Contingencies (PC): (provision & contingencies/ total expenses) A portion of profits which is kept aside for contingent situations and expenditure is known as provision for contingencies, and it has a direct bearing on the profitability.

3. Non-Interest Income (NII): (Non interest income / total assets) Non interest income refers to the Income of a bank from its allied and non-banking activities. Banks should aim to increase their non interest income to enhance their return on assets.

4. Credit-Deposit (CD) Ratio (Total advances / Total deposits). Higher the CD ratio, higher is the utilization of depositor's money which helps banks to earn higher return on their assets.

5. Operating Expense (OE) Ratio (Operating Expenses/Total expenses): The ratio has a negative relationship with profitability, and a

high OE ratio highlights operational inefficiency of a bank.

6. Investment-Deposit (ID) Ratio (Investments / Deposits): The ratio indicates the efficiency of a bank to invest its deposits and surplus cash so as to generate profits.

7. Capital Adequacy Ratio (CAR) (Capital/Risk-weighted assets): In the adoption of risk management strategies by a bank, the ratio determines the cushion available to a bank against the credit risk, operational risk and market risk.

8. Non-Performing Asset (NPA) ratio (NPA/Total assets): The ratio bears a negative relationship with profitability as it indicates the credit risk of a bank.

Time Period: We have taken data for three years covering time period from 2009-10 to 2011-12.

Source of data: Secondary data have been collected from the annual reports and websites of respective banks, the website of Reserve Bank of India and Indian Banking Association.

Hypotheses of the study

The present study attempts to test a number of hypotheses which as below:

H1: There exists a positive relationship of ROA with spread as a % assets, cash deposit ratio, investment deposit ratio, CAR and Non-interest income and ROA.

H2: There exists a negative relationship of ROA with Provision for contingencies, operating expenses and net NPA as a % of net advances.

Statistical Tools: Backward multiple regression analysis was used to analyze the impact of determinants on the ROA of public sector banks.

RESULTS AND DISCUSSIONS

We framed a regression equation to see the impact of various predictors on the RoA for both public and private sector banks. The basic regression model is as below:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\beta_8X_8+\varepsilon$$

Where,

Y = Return on Assets (RoA)

X_1 = Spread Ratio (SP)

X_2 = Credit-Deposit (CD)

X_3 = Investment-Deposit Ratio (ID)

X_4 = Capital Adequacy Ratio (CAR)

X_5 = Operating Expense (OE)

X_6 = Provisions and Contingencies (PC)

X_7 = Non-Performing Asset Ratio (NPA)

X_8 = Non-Interest Income (NII)

First multivariate regression for public sector banks is run by including all the independent variables mentioned above, the results of which are shown below. From our first model (1) for the year 2009-10, we find that 88.3% of variation in the dependent variable was explained by all the eight variables taken together. Similarly, the models explained 81.7% (model-2) and 87.5% (model-3) of variation in RoA in 2010-11and 2011-12 respectively. All the three initial models were found to be significant at 1% level. However, we found many of the independent variables to be insignificant in the regression models for the time periods-2009-2012.

ROA = 0.455 + 0.573SP* - 0.007CD + 0.03ID + 0.012CAR - 0.019OE - 3.442PC **- 0.321NPA* + 75.56NII**   …(1)

    (4.603) (-1.209) (0.437) (0.421) (-1.388) (-2.721) (-5.496) (3.288)

$R^2 = 0.883$; Adj. $R^2 = 0.832$; F-stat. = 17.046

ROA = 1.246 + 0.368SP** - 0.012CD - 0.005ID + 0.036CAR - 0.031OE** -0.170PC -0.381NPA** + 69.897NII ** …(2)

(2.442) (-1.456) (-0.469) (0.83) (-2.295) (-0.135) (-3.893) (2.456)

$R^2 = 0.817$; Adj. $R^2 = 0.712$; F-stat. = 7.8

ROA = -0.144 + 0.771SP* + 0.003CD + 0.005ID - 0.019CAR - 0.070OE* -2.697PC - 0.103NPA*** + 110.141NII** …(3)

(4.988) (0.342) (0.402) (-0.338) (-5.237) (-1.471) (-1.823) (3.308)

$R^2 = 0.875$; Adj. $R^2 = 0.792$; F-stat. = 10.529

Then backward multiple regression was run to remove insignificant variables and get a fit model for explaining the variations in RoA. The results of the backward regression analysis for the three periods are shown in Table 1. Since neither of the predictor variables has a variance inflation factor greater than ten during all three periods in the final models, there are no apparent multicollinearity problems; in other words, there is no variable in the model that is measuring the same relationship as is measured by another variable or group of variables.

Table 1 above shows that 83 per cent of variation in ROA is explained by the factors viz., SP, PC, NPA, and NII during 2009-10 and 85 per cent of variation by all independent variables. The coefficients of SP,

Table 1: Final Models for Explaining ROA of Public and Private Sector Banks during 2009-10, 2010-11 and 2011-12						
Independent Variables	2009-10		2010-11		2011-12	
	Public sector banks	Public sector banks	Public sector banks	Public sector banks	Public sector banks	Public sector banks
Spread as % of Assets (SP)	0.413* (5.899)	0.385* (4.615)	0.419* (3.886)	0.588* (6.868)	0.730* (6.705)	0.378* (5.255)
CD Ratio (CD)	X	X	X	X	X	0.007*** (2.173)
ID Ratio (ID)	X	X	X	X	X	X
CAR Basel 1(CAR)	X	X	X	X	X	X
Operating Expenses as a % to total expenses (OE)	X	X	-0.029* (-2.940)	-3.36* (-4.408)	-0.071* (-6.193)	X
Provision for Contingencies as a % of total expenditure (PC)	-2.475** (-2.468)	X	X	X	-2.322*** (-1.919)	X
Net NPA as % to Net Advances (NPA)	-0.349* (-7.102)	-0.185** (-2.703)	-0.400* (-5.0888)	X	-0.103*** (-2.070)	-0.326** (-2.630)
Non Interest Income as a % of total assets (NII)	54.719* (3.287)	X	45.962** (2.371)	28.493** (2.609)	111.598* (4.839)	X
R^2	0.858	0.712	0.776	0.853	0.873	0.939
Adj. R^2	0.832	0.660	0.726	0.809	0.831	0.922
F-stat.	33.262*	13.600*	15.555*	19.330*	20.605*	56.164*
Darwin-Watson stat.	2.156	1.903	2.808	2.431	1.846	1.984

*Significance at 1% level; ** Significance at 5% level; *** Significance at 10% level*

PC, NPA and NII were found to be statistically significant and theoretically sound. F-statistic in the model (33.262) is significant at 1 % level indicating that our model is fit. Though during 2010-11, adjusted R2 explains 72 per cent of the variation in ROA by SP and NPA and 77 per cent by independent variables, but model is significant for explaining banks' profitability. During 2011-12, 83 per cent of variation in ROA is explained by SP, OE and NII. Coefficients such as SP and OE during this period were found to be statistically highly significant. We found that NII has the most positive impact on ROA of public sector banks. It is statistically significant at 1% level. Spread as a percentage of assets is another variable with positive impact on ROA and found to be statistically significant at 1% of significant for all the three years. PC and NPA had the negative impact on the ROA. Both PC and NPA were found to be statistically significant at 10% level in 2011-12. Durbin-Watson test is done to find if there is the problem of autocorrelation in the model/s. During all three years, the Durbin-Watson statistic shows absence of autocorrelation.

For private sector banks also, we first run multivariate regression including all the independent variables mentioned above, the results of which are shown in Table 1. From our first model (4) for the year 2009-10, we find that 79.5% of variation in the dependent variable was explained by all the eight variables taken together. Model-1 was not found to be significant to serve our purpose. Model-5 explained 91.5% of variation in RoA in 2010-11 and found to be significant at 5%. Model -6 explained 95 per cent of variation in RoA. We found many of the independent variables to be insignificant in the regression models for the time periods-2009-2012.

$$ROA = 0.345 + 0.306SP - 0.001CD + 0.002ID - 0.008CAR - 0.525OE + 2.943PC -0.179NPA + 7.675NII \qquad \ldots(4)$$

(1.865) (-0.067) (0.73) (-0.422) (-0.169) (1.070) (-1.750) (0.154)

$R^2 = 0.795$; Adj. $R^2 = 0.466$; F-stat. $= 2.421$

$$ROA = -0.390 + 0.609SP** + 0.015CD + 0.008ID + 0.000CAR - 5.199OE** -0.308PC -0.592NPA + 23.002NII \qquad \ldots(5)$$

(2.877) (0.951) (0.871) (.019) (-3.374) (-0.137) (-1.070) (0.889)

$R^2 = 0.915$; Adj. $R^2 = 0.779$; F-stat. $= 6.741$

$$ROA = 0.109 + 0.422SP** + 0.005CD + 0.005ID - 0.014CAR - 0.924OE -0.080PC - 0.336NPA*** + 11.582NII \qquad \ldots(6)$$

(3.545) (0.823) (0.523) (-0.574) (-1.186) (-0.066) (-1.966) (0.741)

$R^2 = 0.954$; Adj. $R^2 = 0.893$; F-stat. $= 15.565$

We therefore run backward multiple regressions to remove insignificant variables and get fit models for explaining the variations in RoA. The results of the backward regression analysis for the three periods are shown in Table 1. Here also we did not find the multicollinearity problems. Table 1 above shows that 66 per cent of variation in ROA is explained by the factors viz., SP and NPA during 2009-10 and 71 per cent of variation by all independent variables. The coefficients of SP and NPA were found to be statistically significant and theoretically sound. F-statistic in the model (13.600) is significant at 1 % level indicating that our model is fit. Model for the period 2010-11 is better as it explained 80 per cent of the variation in ROA by SP, OE and NII and 85 per cent by independent variables, and therefore the model is significant for explaining banks' profitability. We got a better model for the period 2011-12 as it explained 92 per cent of variation in ROA by SP, CD and NPA. During all three years, the Durbin-Watson statistic shows absence of autocorrelation.

In case of private sector banks, the impact of NII was not as significant as it was in case of public sector banks. Spread was found to be equally significant variable. Impact of PC was not found on ROA in case of private sector banks.

Comparison of RoA determinants between private sector and public sector banks Table 2: Test of Hypotheses																	
Variable and Hypothesis	Expected relationship with ROA		Results of the study						Significance Level						Reasons for Differences	
			2010		2011		2012		2010		2011		2012			
	Pub	Pvt	Pub	Pvt	Pub	Pvt	Pub	Pvt	Pub	Pvt	Pub	Pvt	Pub	Pvt	Pub	Pvt
SP	+	+	+	+	+	+	+	+	1%	1%	1%	1%	1%	1%	NA	NA
CD	+	+	E	E	E	E	E	+	X	X	X	X	X	5%	NA	NA
IC	+	+	E	E	E	E	E	E	X	X	X	X	X	X	NA	NA
CAR	+	+	E	E	E	E	E	E	X	X	X	X	X	X	NA	NA
OE	(-)	(-)	E	E	(-)	(-)	(-)	E	X	X	1%	1%	1%	X	NA	NA
PC	(-)	(-)	(-)	E	E	E	(-)	E	5%	X	X	X	10%	X	NA	NA
NPA	(-)	(-)	(-)	(-)	(-)	E	(-)	(-)	1%	5%	1%	X	10%	5%	NA	NA
NII	+	+	+	E	+	+	+	E	1%	X	5%	5%	1%	X	NA	NA

RESULT ANALYSIS AND CONCLUSION

When we compare the results of public sector with that of private sector, we find the variables, like SP, OE, PC, NPA, NII were found to be the significant determinants of ROA of public sector banks. Of them, spread and NII had positive influence and all other had negative impact. So, in order to improve their ROA, public sector banks should focus on reducing their Operating expenses, Provision and Contingencies and NPAs. Positive spread and NII give us the impression that public sector banks have done very well on maintaining their spread margins as well as non interest incomes. The result analysis of private sector banks show that variables like SP, CD, OE, NPA and NII had significant influence on the ROA. Of them, SP, CD and NII had positive influence and others like CD, OE and NPA as expected had negative influence. Only significant difference which emerged from the above analysis, CD was found to have no influence on the ROA of public sector banks whereas CD affected ROA positively in case of private sector banks.

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