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AN EMPIRICAL INVESTIGATION ON DETERMINANTS OF PROFITABILITY: A STUDY ON PUBLIC SECTOR BANKS IN INDIA

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ABSTRACT

Profitability is considered as one of the strong parameters to assess the financial strength and performance of a bank. The present study aims at investigation of statistically significant determinants of bank profitability. The investigation is carried out by employing Ordinary Least Square (OLS) Regression model. The empirical result shows that profit per employee, capital adequacy ratio and net interest margin ratio have significantly positive influence on bank profitability, while asset quality, size and cost of fund have negative influence. However, the influence of asset quality is resulted to be statistically significant. Having the above stated result, the present study concludes that enhancing labour productivity and improving asset quality are two the strong measures for arriving at desired level of bank profitability.

KEYWORDS:

Public Sector Banks, Profitability, Return on Assets

JEL classification: G21

INTRODUCTION

Banks and other financial institutions act as backbone of an economy. They are the main players of economic growth and development in respect of accumulating financial capital required for building a nation. The present global competitive environment exerts the domestic development agents, particularly, the financial institutions, to enhance their performance level for gaining competitive advantage. Ab-Rahim, Md-Nor, Ramlee & Ubaidillah (2012) also mentioned that financial institutions are forced to examine their performance as their survival depends upon their productive efficiencies. In this context, measurement of performance of different dimensions has gained importance. Moreover, the investigation of factors that drive the superior performance has always been as area of research to elevate the scope of accelerating performance. In this direction, the present study measures the profit earning ability, i.e., profitability of the banks, particularly, the Indian public sector commerical banks. Commercial banks constitute the most important channel for financial intermediation in India (Veghese, 1983). Moreover, profitability is considered as one of the strong parameters to assess the financial strength and performance of a bank. The study also contributes to the existing literatures by investigating the influence of bank specific factors on the profitability measures.

LITERATURE REVIEW

The banking sector has always been an area of consideration by the researchers for the theoretical and empirical research across the countries. Most of the studies are being mainly carried out on the role of banks in economic development through devising strong banking policy, banking regulation, bank efficiency and profitability, non-performing assets, role of information technology in offering banking service, customer satisfaction of bank services, corporate social responsibility and corporate governance of banks. In pursuant to the preceding studies, the present study is designed to investigate the determinants of bank profitability. Some of the empirical studies conducted exclusively on factors influencing profitability of banks are reviewed hereunder:

Pilloff & Rhoades (2002) discovered the positive relationship between size and profitability of the banks. Anuar, Choo, Khan & Khan (2011) proved that impact of bank size is significant which implies that as the size increases, ability of the bank to earn more in the market also increases and vice-versa. Moreover, the effect of net interest margin is positive and significantly contributes to profits. Aljbiri (2013) explored that all the selected factors, viz., portfolio composition, capital adequacy, deposits, size, GDP, CPI, establish positive relation with return on equity. Pooran (2014) discovered that capitalization of management efficiency has a positive effect, while credit risk has a negative effect on profitability. Frederic (2014) found that management efficiency, asset quality, interest income, capital adequacy and inflation influence the bank's performance significantly in Uganda. Rahaman & Akhter (2015) observed that bank-size and deposit have significant negative impact on the return on assets of Islamic banks, while equity is found to have positive significant impact. Further, loan and expense management are found to be insignificant in affecting the profitability of the banks. Menicucci & Paolucci (2016) found that capital adequacy ratio and size have positive impact on bank profitability in European banks whereas higher asset

quality results in lower profitability levels. Wahdan & Lethy (2017) empirically found that return on asset is explained by the capital adequacy and non-interest income, while return on equity is explained by the capital adequacy and net interest income. Al-abedallat (2017) found that there is a significant impact of independent variables *namely*, assets, direct credit facilities, deposits, owner's equity, branches, ATM on return on assets of banks operating in Jordan. Kawshala & Panditharathna (2017) revealed that size, capital ratio and deposit ratio have positive significant relationship while liquidity has negative and insignificant relationship with return on assets of Sri Lankan banks.

OBJECTIVE OF THE STUDY

The objective of the present study is to assess the degree of influence of select bank specific factors on profitability of Public Sector Banks in India during the period from 2005-06 to 2016-17.

HYPOTHESIS OF THE STUDY

H_o: There is no significant influence of select independent variables on the return on assets of Public Sector Banks in India during the period considered.

DATA AND METHODOLOGY

The present study is quantative in nature and basically based on secondary data. The requisite secondary data have been collected from annual reports of total 26 Public Sector Banks (PSBs) operating India for the study period of 12 years from 2005-06 to 2016-17. The scope of the study is confined to examining the influence of select independent variables, *namely*, Profit per Employee, Capital Adequacy Ratio, Asset Quality, Size, Cost of Fund and Net Interest Margin Ratio on dependent variable, i.e., Return on Assets of the banks. Analysis of the data has been carried out with the help of descriptive statistics such as mean, standard deviation, minimum and maximum and Ordinary Least Square Regression. Moreover, under the present study, Durbin-Watson statistics and VIF have also been employed to test auto-correlation and check the multicollinearity.

The regression model used to examine the influence of select independent variables on bank profitability as measured by Return of Assets (ROA) is given as follows:

$$ROA_{it} = \beta_0 + \beta_1 PPE_{it} + \beta_2 CAR_{it} + \beta_3 AQTY_{it} + \beta_4 SIZE_{it} + \beta_5 COF_{it} + \beta_6 NIMR_{it} + \varepsilon_{it}$$

Where, bank is denoted by i $(i = 1, \ldots, N)$, time is denoted by t $(t = 1, \ldots, T)$, β are the vectors of unknown parameters, ε_{it} denotes the error term.

Table 1: Operational Definition of the variables used in Regression Analysis

Sl. No.	Variables	Operational Definition
1	Profit Per Employee (PPE)	$\frac{Net\ Profit}{Total\ number\ of\ Employees}$
2	Capital Adequacy (CADY)	$\frac{(Tier\ One\ Capital + Tier\ Two\ Capital)}{Risk\ Weighted\ Assets} \times 100$
3	Asset Quality (AQTY)	$\frac{Net\ Non\ -Performing\ Assets}{Net\ Advances} \times 100$
4	Size (SIZE)	$Natural\ Logarithm\ of\ Total\ Assets$
5	Cost of Fund (COF)	$\frac{(Cost\ of\ Deposits + Cost\ of\ Borrowings)}{Average\ Loanable\ Fund} \times 100$
6	Net Interest Margin Ratio (NIMR)	$\frac{Net\ Interest\ Income}{Average\ Interest\ Earning\ Assets} \times 100$
7	Return on Asset (ROA)	$\frac{Net\ Profit}{Total\ Average\ Assets} \times 100$

Source: Compiled from Literatures

DATA ANALYSIS

Table 2: Descriptive Statistics

Variable	Mean	S.D.	Minimum	Maximum
ROA	0.62	0.63	-2.80	1.67
PPE	0.36	0.54	-2.80	2.60
CAR	12.24	1.18	9.00	15.38
AQTY	2.51	2.78	0.15	16.89
Size	14.17	0.88	12.16	17.11
COF	6.23	0.88	4.23	8.16
NIMR	2.47	0.54	0.45	3.90

Source: Based on data obtained from the Annual Reports of Public Sector Banks in India

Table 2 provides the descriptive statistics of variables considered under the study. It shows that the mean value of Return on Assets of Public Sector Banks in India is 0.62 percent with SD of 0.63 percent. The mean value of profit per employee of Public Sector Banks in India is INR 0.36 Million with minimum and maximum values of negative INR 2.80 Million and INR 2.60 Million respectively. Results indicate that the average capital adequacy ratio for the Public Sector Banks is 12.24 percent with minimum and maximum value of 9.00 percent and 15.38 percent. The average of Asset Quality ratio is 2.51 percent with minimum and maximum ratio of 0.15 percent and 16.89 percent respectively. The

average size of Public Sector Banks is 14.17 with minimum and maximum ratio of 12.16 and 17.11. The mean value of cost of fund of these banks is 6.23 percent with SD of 0.88 percent. Finally, the average Net Interest Margin ratio is 2.47 percent with minimum and maximum ratio of 0.45 percent and 3.90 percent respectively.

Table 3 shows the results of multiple regression for the PSBs operating in India with respect to Return on Assets as dependent variable and result of Collinearity Statistics. Before analyzing data, it is necessary to detect if there is any multicollinearity between the chosen variables. The variance inflation factor (VIF) is performed to support the validity of the regression results. In case of VIF, if the result is below 10, suggest no multicollinearity (Gujarati, 2004). The result of VIF as depicted in the table is reasonably good. The values of VIF of independent variables range from 1.251 to 2.538 suggesting the absence of multicollinearity among the variables.

Further, it is observed that the value of R^2 of the regression model is 86 percent, which indicates 86 percent of the change in the dependent variable, viz., Return on Assets is explained by the independent variables considered in this model.

In order to test auto-correlation, Durbin-Watson statistics has been employed where the value is 1.804, which means there is no autocorrelation among the variables incorporated in the model. In other words, there is no serious evidence of autocorrelation in the data.

Based on the value of F= 315.067 with p value of 0.000 as presented in the table indicates that the variation or changes in dependent variable is significantly explained by the independent variables at 1% level of significance.

The value of beta coefficient of profit per employee clearly shows that there is a positive relationship between the return on assets and profit per employee of PSBs where the value of *t*-test is 9.427, which is significant at 1% level of significance. Thus, it may be inferred that there is a statistically significant positive influence of profit per employee on return on assets.

Table 3: Result of Regression Analysis and Collinearity Statistics

ROA Model	Unstandardized Coefficients		Standardized Coefficients	t	*p*	VIF
	B	Std. Error	Beta			
(Constant)	-0.037	0.349	--	-0.107	*0.915*	-
PPE	0.333	0.035	0.290	9.427*	*0.000*	2.074
CAR	0.060	0.013	0.113	4.630*	*0.000*	1.303
AQTY	-0.128	0.008	-0.567	-16.665*	*0.000*	2.538
Size	-0.014	0.017	-0.019	-0.816	*0.415*	1.251
COF	-0.027	0.018	-0.038	-1.515	*0.131*	1.398
NIMR	0.201	0.030	0.174	6.617*	*0.000*	1.512
R Square = 0.861 Adjusted R Square = 0.858 Durbin-Watson = 1.804 F = 315.067* p = 0.000						

Note: *Significant at 1 % level of significance

Source: Computed

Moreover, the value of beta coefficient is also positive in case of capital adequacy ratio where the value of *t* is 4.630. The value of p indicates that there is significantly positive influence of the variable on ROA of the PSBs. The results suggest that the banks with larger capital structure are able to expand their business operations by making stronger their ability to assume risk and attract funds at low cost. The outcome is in line with the findings of some previous studies such as Athanasoglou, Delis & Staikouras (2005), Davydenko, (2010), Ommeren (2011) and Ani, Ugwunta, Ezeudu & Ugwuanyi (2012). Asset Quality of PSBs has negative influence on ROA, which is reflected by negative value of beta coefficient, which is significant at 1% level of significance. The value of beta coefficient indicates that there is a negative influence of size on ROA of PSBs in India. The value of *t* (-0.816) is insignificant. The result indicates that large sized banks enjoy lesser extent of profitability and it might be due to greater amount of cost elevated along with the increase in size of business. The result is consistent with the works of Staikouras & Wood (2004) and Ani, Ugwunta, Ezeudu & Ugwuanyi (2012).

Further, the result of regression analysis depicts that cost of fund of PSBs has negative influence on the ROA. The value of beta coefficient of the variable is negative, where the value of *t* (-1.515) is also not statistically significant. Thus, it may be inferred that the greater amount of cost of fund reduce the profit earning ability of the banks. It is observed from the positive beta coefficient of the Net Interest Margin Ratio that there is a positive influence of the said variable on ROA of PSBs, which is significant at 1% level of significance.

CONCLUDING REMARKS

Based on the results of empirical analysis, it is observed that profit per employee, capital adequacy ratio and net interest margin ratio have significantly positive influence on return on assets, while asset quality has significantly positive influence on dependent variable. Further, influence of size of the public sector banks in India is found to be negative with respect to the dependent variable. However, it is statistically insignificant. From this result, it can be interpreted that the large sized banks' management are less efficient to utilize the resources productively. Moreover, cost of fund variable has resulted negative and insignificant relation with ROA. It is derived from the beta values that labour productivity as measured by profit per employee has highest positive influence on the profitability, while it is lowest as well as negative with respect to asset quality. Thus, enhancing labour

productivity and improving asset quality are the two strong measures for arriving at desired level of bank profitability.

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