A STUDY OF IMPACT OF LEVERAGE ON THE PROFITABILITY OF PUBLIC SECTOR BANKS (PSBS) IN INDIA

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ABSTRACT

The main aim of this research study is to examine the impact of financial leverage on profitability of 21 recapitalized Public Sector Banks (PSBs) in India over the period 2008 to 2017. The data collected from the annual reports and report of the controller and auditor general of India on recapitalization of Public Sector Banks (PSBs) has been tested using random effects and fixed effects assessment approaches. The findings reveal that leverage exerts a significant negative effect on PSBs profitability. This also provides empirical support to the pecking order theory. The outcomes of the study further establish that bank size positively and significantly enhances profitability. Thus, the findings reveal that financial leverage is not favorable to PSBs profit growth in India.

Keywords: Leverage, Profitability, Random Effects, Fixed Effects, Bank Size.

INTRODUCTION

Banks are financial institutions that provide loans, accept deposits and deliver varied services to customers. A strong and resilient banking system is the foundation for sustainable economic growth, banks being the center of the credit intermediation process. Banks offer critical services to customers, small and medium-sized enterprises, large corporate and government organisations who depend on them for their business, both at domestic and international level. As they are critical in the growth of the economy, thus, banks are stringently regulated and these regulations are designed to protect interest of the society as a whole.

The Indian banking framework consists of commercial and cooperative banks with commercial banks accounting for the majority of banking assets. The commercial banks include twenty-one public sector banks, twenty-six private sector banks, forty-three foreign banks and fifty-six regional rural banks. The structure of commercial banks primarily constitutes scheduled commercial banks (SCBs), the banks that are included in the second schedule of the Reserve Bank of India Act, 1934. SCBs include the following:

1. Public sector banks (PSBs) including State Bank of India and its associates and other nationalised banks
2. Private sector banks
3. Foreign banks
4. Regional Rural Banks

Public Sector Banks (PSBs) are banks with majority stake held by the Government of India (GOI). PSBs constitute the single largest component of the Indian banking system, accounting for over seventy per cent of the deposits received in and advances made by SCBs. Besides, PSBs, as part of their mandate, extend credit to diverse sectors of the economy including the priority sector comprising the agriculture sector, weaker sections, self-help groups, government sponsored programmes and Medium, Small and Micro Enterprises sector (MSME

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sector) etc. Public Sector Banks play a vital role not only through credit creation, but also in facilitating credit to all important segments of the economy at reasonable cost.

The legitimate requirement in the Banking Companies Act, 1970/1980 and State Bank of India Act, 1955, provides that the Central Government shall, at all times, hold not less than fifty-one per cent of the paid-up capital consisting of voting equity shares of each Public Sector Banks. To enable PSBs to raise capital from the market at a future date, the Cabinet Committee on Economic Affairs (CCEA) decided (December 2010) to raise the GOI holding in all PSBs to fifty-eight per cent.

Subsequently, the committee decided in December 2014 to allow PSBs to raise capital from public markets through Follow-on Public Offer (FPO) or Qualified Institutional Placement (QIP) by diluting GOI holding up to fifty-two per cent in a phased manner based on a number of parameters like: capital needed, stock performance, liquidity, market conditions and certain other conditions with specific consent of the finance minister.

The capital structure of a Public Sector Banks comprises of different sources of financing which are incurred to finance the asset side of the banks' balance sheet. The sources comprise of the following:

Shareholders' Funds

Constitute of equity capital including both common stock and preference stock, accumulated reserves and surplus balance and retained earnings from previous years. These are the bank's *'own'* source of funds for financing investments depicted on the asset side. The equity capital of the bank is also considered the net worth, representing the margin by which assets outweigh outside liabilities. Since, the risk associated with equity is always greater therefore the cost of equity funds through dividends and capital appreciation is always higher.

Borrowings are funds made available to the bank through inter-bank lending, repurchase agreements, money market instruments and issuance of bonds. These liabilities are more inclined towards deposit funds, volatility, market liquidity and credit-worthiness of the respective bank. Borrowings could be secured or un-secured in nature.

Deposits constitute the major funding source for the bank which are the foremost contractual liabilities, available at the cheapest cost.

The funds generated through different liabilities are utilized to finance its investments and advances which constitute its assets. The bank assets are exposed to multiple risks (credit risk on fund-based and non-fund-based credit, market risk on investments and off-balance sheet derivatives, liquidity risk in the banking and trading books and operational risks) which may lead to future losses. Poor quality of assets may lead to create burden in the bank's balance sheet.

Also, deposits and market borrowings of the bank are obligations, which if not paid on time, can make banks to become insolvent. Thus, bank's owned funds (the equity capital and subordinated debt) are vital, as can absorb the losses without leading to bank failure (Abbadi & Abu-Rub, 2012).

Capital is thus very crucial element for banks which employ high leverage compared to other businesses. From a regulatory perspective, PSBs should have adequate capital funds to absorb large losses, so that depositor funds are not adversely impacted. The higher the bank capital, the higher the degree of safety to depositor's funds. Thus, banking regulations require banks to meet rigorous reserve ratios, so as to control bank insolvency and provide safety and soundness to investors and customers (Sufian, 2012).

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Thus, the objective of this research paper is to find out the effect of this capital restructuring on the profitability of the PSBs in India. Consequently, this study seeks to add to the existing literature by critically investigating the influence of leverage on profitability of PSBs in India. Secondly, in addition to return on assets which is widely studied, the research introduces net interest margin as a supplementary profitability proxy to ensure the correctness of the results. The remaining research paper is structured as follows: In Section 2, literature pertaining to the study is elaborated. Section 3 explains the data and approach. The empirical analysis is outlined in Section 4 followed by conclusion in Section 5 (Shubita & Alsawalhah, 2012).

LITERATURE REVIEW

Modigliani & Miller (1958) first introduced a theory known as *'Capital Structure Irrelevance Theory*'. The theory argued that under a perfect competition market, it is not important, how a firm manages its accounts, therefore, a firm's capital structure does not affect its performance. But there are certain limitations to this theory, as it does not consider the effect of taxes, transaction cost, inflation, bankruptcy risk etc. Thus, Modigliani and Miller developed MM approach accounting with taxes and showed the effect of tax payments on the value of the firm after using debt financing and presenting debt financing interest as tax deductible. Therefore, presenting the case of hybrid capital structure, and showing increase in leverage ratio will lead to reduction in weighted average cost of capital (WACC), as debt is cheaper than equity due to tax shield. Therefore, the firm is in advantage with using debt funds (Salike & Ao, 2018).

The exhibited that in financial markets, if both investors and firms are taxed, then the equilibrium worth of levered firms will be equal to worth of the unlevered firms. So, optimum capital structure decisions are irrelevant for firms. But De Angelo and Masulis contradicted and disclosed the existence of non-debt tax shields like: depreciation, allowances and investment tax credit is enough to upturn the leverage irrelevant approach and presence of an exclusive optimum capital structure for each firm. Although, M &M approach is still regarded as a pillar of capital structure theory (Rouf & Abdur, 2015).

Far ahead, Jensen and Meckling introduced the approach based upon agency costs, where they specified that agency costs ascend due to the conflict of interest between managers and owners of the firms or between outsiders (debt holders) and owners (equity holders) of the firm. The theory interprets that, clash of interest happens as; managers may try to divert the extra cash flow to negative or low Net Present Value proposals and owners prefer using debt, as the interest expense will lessen the surplus cash available (Myers & Majluf, 1984).

Fama and French further suggested that agency problems may be shaped among owners and outsiders due to extra debt, which can lead to negative effect on firm's performance. According to the tradeoff theory, there is a level of usage of debt, beyond which bankruptcy costs increases which will offset the advantages of tax shield on debt. The approach hypothesizes that there should be a positive association with firms' debt level in capital structure and profitability and this conclusion is in consistence with the previous studies (Musah & Kong, 2019).

Further, pecking order theory was developed by Donaldson which was later modified by (Myers & Majluf, 1984). This theory hypothesizes that firms prefer to use internal sources of financing wherever possible and there is nothing like an optimal capital structure. The theory is based upon assumptions of transaction cost and asymmetric evidence. According to this theory, for reducing information lopsidedness, firms need to trail a financing hierarchy, as profitable

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firms does not need external financing much, as they have sufficient reserves available as internal source of funding. But, if the internal sources fail to fund the investment opportunities, then through debt funds are raised and further equity issue is considered as a last funding resort. Thus, the theory suggests that whenever internal fund are available, firms will prefer to use them first and if further financing is required, firms will prefer debt over equity. Thus, this theory contradicts the previous theories and assumes a negative relationship between profits and leverage. There is sufficient support for pecking order theory, as being empirically proved by (Dietrich & Wanzenried, 2011).

Later, while providing signaling theory, Ross suggested that signal are essential to elevate fund for a firm. High-quality firms will use more debt and have higher leverage as a signal of higher growth prospects and thus, there exists positive relationship between leverage and profitability. Thus, management's actions are actually hints to investors, on how management opines the firm's vision. But there are limitations, that wrong signals may lead to ethical hazards, since the cost of risk will not be borne by managers but by the investors (Modigliani & Miller, 1958).

Thus, connection of financial leverage and firms' profitability has been a subject to substantial debate from the existing research database and the developing nation like: India has very less contribution to this very vital area, therefore this study tries to find out whether a different inference can be drawn by using some progressive econometrics tools on financial data of banks operating in India (Khan & Jain, 2011).

Hypothesis Development

H_1: *There is a negative effect of financial leverage on profitability (ROA and NIM) of banks.*

RESEARCH METHODOLOGY

1. Data source and type: The report of the controller and auditor general of India on recapitalization of Public Sector Banks (PSBs) suggests that a complete recapitalization of 21 PSBs has taken place between a period 2008 to 2017. These reports suggest, capital infusion has generally been through preferential allotment of equity shares by the recipient bank to GOI. Therefore, the research tries to explore whether this recapitalization in terms of capital infusion has any effect on the profitability of these PSBs or not (Pandey & Prabhavathi, 2016).
2. Sampling Units & sample data: For analysing the impact of leverage on profitability of PSBs, 21 PSBs are taken as sample in which infusion of capital has been made by GOI through equity over a period from 2008 to 2017. These 21 PSBs are observed over 10 years for the said period, forming a panel data of 210 observations (Davydenko, 2010).
3. Data collection: The research study uses secondary sources for data assortment. The data is collected from annual Reports, Notes to accounts, Schedule of accounts and Auditor's report which was taken from Companies official website and from Moneycontrol.com website for the year 2008 to 2017. Also, the data was collected from Report of the controller and auditor general of India on recapitalization of Public Sector Banks (PSBs) (Reddy, 2016).
4. Description of Variables: The research has used return on assets (ROA) and net interest margin (NIM) as dependent factors. Bank performance is principally reflected in the return on assets (ROA). Return on Assets reflects how much profitable a bank is in respect of its total assets. ROA measures the efficiency of utilizing the bank assets to generate profit. NIM is computed as the ratio of banks' net interest to total assets (Bhaduri, 2002).

Leverage (LEV) serves as the main independent variable which is defined as the ratio of total debts to total assets. The researcher has controlled the effect of bank size (BSIZE) which

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has also been accorded significance in the literature as a profitability driver. The natural log of banks' total assets explains bank size.

Model and Estimation Technique

This research study model uses a panel approach and can be indicated as:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad \text{.....(1)}$$

Here, the dependent variable is Y and X implies the explanatory variable. The data element of cross-section and time dimension is indicated alphabetically by i and t respectively (Kumar, 2014).

The constant is represented through α, along with β, and ε representing coefficients of the independent factors and error term respectively. To empirically analyze the effect of financial leverage alongside bank size on bank profitability, the model can be further expanded as:

$$ROA_{it} = \alpha_0 + \beta_1 LEV_{it} + \beta_2 BSIZE_{it} + \varepsilon_{it} \quad \text{.....(2)}$$

$$NIM_{it} = \alpha_0 + \beta_1 LEV_{it} + \beta_2 BSIZE_{it} + \varepsilon_{it} \quad \text{.....(3)}$$

The research applies the fixed and random effects techniques as our estimation strategies. These research approaches consider the group and time effects of panel dataset which is a limitation in the ordinary least squares (OLS) estimation method (Bezawada, 2020).

To choose a suitable technique, the researcher performed the Hausman test. A probability value (p-value) of less than 5% statistical significance suggests the preference of the fixed effects technique, and thus the random effects assumptions are rejected. A p-value greater than 5% means rejection of the fixed effects model, and the OLS or the random effects model is chosen based on the Breusch–Pagan test results (Batten & Vo, 2019).

EMPIRICAL RESULTS

Descriptive Statistics and Correlation Analysis

Table 1 displays the descriptive statistics of all the variables for the sampled twenty-one PSBs. It illustrates the average, standard deviation, minimum, and maximum values of the variables estimated from the banks' financial statements. Return on assets (ROA) shows an average of 3.8% which has a maximum of 9.1% and a minimum of -3.2%. The mean of banks' net interest margin (NIM) is 7.6%. The low standard deviation values of ROA and NIM relative to their averages depict less volatility in the banks' profits. Leverage (LEV) reveals a mean of 0.811, suggesting that the banks are highly leveraged, and employ about 81.1% debt to finance banks' total assets. Bank size (BSIZE) is averaged at 13.17. The correlation analysis is also presented in Table 1. We argue that our variables are free from multicollinearity issues given their weak association and high tolerance values (Azhagaiah & Gavoury, 2011).

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Table 1 DESCRIPTIVE STATISTICS AND MULTICOLLINEARITY ANALYSIS				
	ROA (1)	**NIM (2)**	**LEV (3)**	**BSIZE (4)**
Mean	0.038	0.076	0.811	13.176
Standard Deviation	0.025	0.021	0.038	0.842
Maximum	0.091	0.143	0.932	14.013
Minimum	-0.032	0.027	0.652	11.079
Observations	210	210	210	210
(1)	1.000			
(2)	0.327	1.000		
(3)	-0.288	-0.323	1.000	
(4)	0.264	0.375	-0.016	1.000
VIF			1.00	1.00
Tolerance			0.999	0.999

Source: Developed for this research

Regression Results

The regression results on leverage and bank profitability relationship are contained in Table 2. From the estimations in Model 1, the fixed effects (FE) technique is rejected as the probability value of the Hausman test exceeds 5% significance level. The significance of the Breusch-pagan test at 5% level lends support to the random effects technique (Turkson et al., 2013).

Hence, the interpretations of our findings in Model 1 is based on the estimation of the random effects (RE). The 5% significance of the Hausman test in Model 2 suggests the use of the fixed effects estimation. In Models 1 and 2, the R2 values respectively illustrate that the explanatory factors predict only 14.6% and 39.1% variations in banks' profitability. The Wald test of the random effects estimation in Model 1 and the F-statistics of the fixed effects estimation in Model 2 prove that our estimated models are valid (Awunyo-Vitor & Badu, 2012).

Table 2 REGRESSION ANALYSIS				
	Model 1 (ROA)		**Model 2 (NIM)**	
Variables	**Fixed Effects (FE)**	**Random Effects (RE)**	**Fixed Effects (FE)**	**Random Effects (RE)**
LEV	-0.176***	-0.174***	-0.202***	-0.195***
	(0.052)	(0.049)	(0.047)	(0.046)
BSIZE	0.005*	0.006**	0.008***	0.009***
	(0.002)	(0.002)	(0.001)	(0.001)
C	0.124*	0.103	0.121**	0.105**
	(0.072)	(0.067)	(0.051)	(0.047)
Diagnostics				
R^2	0.150	0.146	0.389	0.391
Hausman test λ^2	0.57		6.51	
[Prob. > λ^2]	[0.060]		[0.036]	
Breusch-Pagan test λ^2		26.87		
[Prob. > λ^2]		[0.000]		
F-statistic	8.56		30.26	
Prob. (F-statistic)	[0.000]		[0.000]	
Wald λ^2		18.79		67.62
[Prob. > λ^2]		[0.000]		[0.000]

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Observations	210	210	210	210
No. of Banks	21	21	21	21

Notes: 10%, 5% and 1% statistical significance are represented by *, ** and *** respectively. Values represented through the brackets- round and square ( ) and [ ] are standard errors and p–values respectively (Thomas, 2013).

From the estimation in Model 1, leverage significantly and negatively affect banks' profitability (measured by ROA) at 1% significance level. A similar result is reported in Model 2 when net interest margin (NIM) proxies' banks' profitability. The finding generally portrays that as PSBs in India demand more on debt as a financing method, their profit level reduces. A reasonable implication is that banks may tend to spend more of their profits on servicing the interest on debt and thus retaining less funds to carry out their activities. As established in the descriptive statistics, the sampled banks are highly leveraged, and more of their earnings are likely to be directed to interest payments. The findings supports the prior studies (Abbadi & Abu-Rub, 2012; Chechet & Olayiwola, 2014). Also the infusion of capital through equity by GOI could not increase the profits, as it is likely to increase the dividend cost (Akani & Ifechi, 2017).

It can also be seen in both models, that bank size affects profitability- positively and significantly. This means that as banks expand, their profitability level is enhanced. This is consistent with the rapid branch expansion strategies of PSBs in India. The result also syncs with the argument that diversification strategies are easily undertaken by larger banks which help in boosting profits Table 3.

Table 3
THE BANK-WISE POSITION OF CAPITAL INFUSIONS RECEIVED FROM GOVERNMENT OF INDIA (GOI) IS INDICATED

S. No.	Public Sector Banks in India	Capital Infused by GOI during 2008 to 2017 (Rs. In crores)
1	IDBI Bank	8513
2	State Bank of India	21267
3	Vijaya Bank	2038
4	United Bank of India	2388
5	Union Bank of India	3487
6	UCO Bank	4377
7	Syndicate Bank	2033
8	Punjab National Bank	5189
9	Punjab and Sind Bank	240
10	Oriental Bank of Commerce	2190
11	Indian overseas Bank	6704
12	Indian Bank	280
13	Dena Bank	1786
14	Corporation Bank	1820
15	Central bank	8820
16	Canara Bank	2017
17	Bank of Maharashtra	3010
18	Bank of India	6424
19	Bank of Baroda	6907
20	Andhra Bank	1871
21	Allahabad Bank	2363

Source: Developed for this research. Records of DFS and data furnished by PAO, Banking, Ministry of Finance.

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CONCLUSION

In this study, the impact of leverage on profitability of Public Sector Banks (PSBs) in India was examined while using bank size as the control variable. The study employed the panel random effects and fixed effects techniques on data of twenty-one recently recapitalized Public Sector Banks (PSBs) in India. Unlike prior studies, this paper considered two key measures of profitability (ROA and NIM) to ensure consistent findings.

From the analysis, it was found that leverage negatively and significantly affects PSBs profitability. The inference is extending support to the pecking order theory. This theory upholds that businesses/banks adhere to a hierarchy of financing sources and should prefer internal financing when available, followed by debt and last preference should be given to equity, in case of requirement of external financing. The study also finds that maximum PSBs use external debt as a source of finance, as they don't have sufficient internally generated funds to use and subsequently new equity financing insertion by GOI is used to meet up the current funds requirements.

It was further observed that bank size exerted a positive significant effect on both profitability measures. Thus, it can be concluded that bank size is also a vital factor for banks' profits. It could also be concluded that the negative impact of leverage on profitability of PSBs in India could be due to the dependence on risky mode of financing, cumulative competitions, inefficiency in use of funds to generate profit.

Based on these findings, we recommend that banks should resort to internal financing to fund their projects and operations given that leverage obstructs their profitability. Banks can also ensure profit growth by improving their asset by following branch expansion approaches.

Limitations

The research study is subjected to certain limitations. The limitations could be in terms of time period of the study and limited sample in terms of PSBs. As banks change their financing strategies quite often, therefore different results can be found, if longer period beyond ten years data are included. Also, private sector banks, their mode of financing and impact on profitability can also be studied to have a complete overview of the Indian Banking industry.

The research study has undertaken PSBs size as the control variable. Besides, other variables can also be included such as age, tangibility, spread, growth of the banks etc. affecting performance of the banks. Thus, by taking into account the limiting factors of this study, further research studies can be conducted to verify, whether the results are in line with other available theories on financial leverage.

Recommendations and Scope of Further Study and Research

The current research analysis the effect of financial leverage on Public Sector Banks in India. Further, research study could be conducted to analyze the impact of leverage on private banks or foreign banks operating in India. Also, research could be conducted on understanding the effect of operating and combined leverage on profitability of different banks. The research analysis can also conducted in the form of a comparative study by taking data from different industrial sectors to study the relationship between financial leverage on firm's financial performance. The bank-wise position of capital infusions received from Government of India (GOI) is indicated.

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Statements & Declarations

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Competing Interests

The author have no relevant financial or non-financial interests to disclose.

Ethical Approval

Informed consent: Informed consent was obtained from all individual participants included in the study.

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