SMART

Journal of Business Management Studies

(A Professional, Refereed, International and Indexed Journal)

Professor **MURUGESAN SELVAM, M.Com, MBA, Ph.D, D.Litt**
Founder - Publisher and Chief Editor

SCIENTIFIC MANAGEMENT AND ADVANCED RESEARCH TRUST (SMART)

TIRUCHIRAPPALLI (INDIA)
www.smartjournalbms.org

THE IMPACT OF FINANCIAL LEVERAGE AND RETURN ON ASSETS ON BANKS' PROFITABILITY: EMPIRICAL EVIDENCE FROM BANKING SECTOR

Azeem Ahmad Khan*

Department of Accounting, Faculty of Business Administration,
Al Baha University, Al Baha, Kingdom of Saudi Arabia
aakcommerce@gmail.com

Abstract

This paper examined the factors of financial profitability for listed Indian public-sector banks, by computing financial leverage (FL) and return on assets (ROA) and the relationship between return on equity (ROE), financial leverage (FL), and return on assets (ROA) in the Indian banking sector. The study employed fixed effects and random-effects models. The study also used panel data regression and adopted Hausman test-correlated random effects to check both panel procedures, which is a common method for detecting a panel effect. When ROE was used as a dependent variable, both FL and ROA were found to be significant for public sector banks. FL had increased profitability in the overall PSB statistics but raised profitability in all the PSB banks in India.

Keywords: *Financial leverage, ROE, Fixed effects, Random effect, Hausman Test and PSBs*

JEL Code : *M41, M49, P34 and P45*

Paper Received : *21.10.2021*   ***Revised :*** *28.03.2022*   ***Accepted :*** *19.05.2022*

1. Introduction

In the most cutthroat business environment, banks have to remain financially healthy in order to survive. The Indian banking sector is the economy's backbone, and it is sufficiently capitalized and well regulated. The Indian banking sector escaped the global financial crisis, that affected all the world's major economies in 2008 **(Gopinath, 2009)**. The country's financial and economic circumstances are comparatively better than most of the countries in the region. The Indian banking sector is experiencing intense competition, regulatory changes and poor economic growth, all of which

* Corresponding Author

have had a significant impact. NPAs, Demonetization, GST, Digital India, payment wallets, and payments banks in India are the recent events, that have exercised impact on the banking sector. Recent developments in the Indian banking sector include the UPI payment service "Go Live," a healthy life program with HDFC and Apollo hospital, public sector bank mergers and acquisitions, SBI and associate banks' merger, recapitalization of regional rural banks, and mobile banking facilities in all post offices. The foreign exchange of India reached an all-time high in the last four years and the NPAs (Non-Performing Assets) of commercial banks recorded a record recovery. The banking sector should be ready for challenging times ahead, with an increased risk of deterioration in asset quality and lower demand for loans. The Reserve Bank has introduced various measures to support the banking sector, including relaxation in recognition and provisions for bad loans, to protect lenders and creditors during the corona virus pandemic. The government used public-sector mergers and acquisitions (state-owned banks) to further consolidate their financial health, allowing banks to streamline their operations and size while strengthening regional focuses.

2. Review of Literature

In this study, the author wants to discover the profitability factors for PSBs and elaborate on factors, that affect the return on equity (ROE). **(Goddard et al., 2004); (Mohan 2006); (Mittal, 2007)** looked into cross-sectional, pooled cross-sectional and dynamic panel models. The authors found that the relationship between the capital–assets ratio and profitability was positive. **(Prasad & Chari, 2011); (Gupta et al., 2011); (Chaudhary & Sharma, 2011); (Chaudhary & Sharma,**

2011); (Gul, 2011); (Khan, 2011); (Ahmad & Ikram, 2012) attempted to analyze the financial performance of four major banks in India: SBI, PNB, ICICI, and HDFC. The study also examined how public and private sector banks managed nonperforming assets (NPAs) and mergers and acquisitions announcements. **(Paramasivan, 2013); (Kumar and Paramasivan, 2013); (Ong & Teh, 2013); (Olalekan & Adeyinka, 2013); (Lartey et al., 2013)** revealed positive and significant relationship between capital adequacy and profitability of a bank in Nigeria. The authors found fragile but positive relationship between the liquidity and the profitability of the listed banks in Ghana. According to **(Hassan & Adam, 2014); (Santhi, 2014; Petria et al., 2015),** liquidity and credit risk, management quality, company diversification, market competition, and economic growth, influenced bank profitability. **(Barua et al., 2016); (Varshney, 2016 ; Kedia, 2016)** analyzed the determinants of profitability of Indian Public Sector Banks and found that only two of these independent variables, Credit Deposit Ratio and Net Interest Income affected the net profitability of Indian Public Sector Banks. **(Ahmad, 2017; Miyan, 2017; Agarwal & Arya 2017; Khan & Javed, 2017)** reported significant results of the ARCH and GARCH effects. The foreign market's return volatility or an outside shock can influence the volatility of the BANKEX return. (**Adelopo et al., 2018); (Brahmaiah, 2018); (Bapat, 2018); (Bansal et al., 2018); (Alarussi & Alhaderi, 2018); (Almaqtari et al., 2019)** found strong positive relationship between firm size, working capital, company efficiency (assets turnover ratio), and profitability in Malaysian listed companies. (**Ahmad Khan & Zia, 2019)** suggested that merger announcements showed negative or positive reactions in the Indian

banking sector. (**Jin & Hutagaol-martowidjojo, 2019; Rafiq et al., 2020); (Biswas & Bhattacharya, 2020)** measured the performance of the new generation of private banks in India, using the CAMEL model approach. The authors analysed corporate image, switching cost and customer trust on customer satisfaction, particularly in the banking sector.

3. Statement of the Problem

India's banking industry is diverse in nature, including banks in both the public and private sectors and the banks vary in size and profitability level. Public sector banks were facing problems with financial leverage and return on assets efficiency and this hurt their profitability. As noted earlier, Indian banks faced several issues, like NPA and lending scams, which significantly affected profitability. The key factors of profitability include ROA, ROE, and financial leverage. There are several possible drivers of bank profitability. These include capital adequacy, liquidity, production, bank size, credit risk, funding risk, inflation rate, and income. Several studies have been conducted till date, including studies by **Ali and Puah (2019), Jreisat and Bawazir (2021),** which examined key determinants of bank profitability. Therefore, the current study aims to analyze the impact of financial leverage and return on assets on a bank's profitability, for a larger cross-section of PSBs, with special reference to the Indian banking sector.

4. Need of the Study

The need for this study was based on the requirement to see how financial leverage and return on assets could be crucial factors in contributing to banking profitability. This research is significant for a number of reasons. Firstly, India's banking sector is moving towards a merger of banks. The annual disclosure of banks indicated low performance in financial leverage and return on assets. Secondly, in India, only a few studies examined the relationship between FL and ROA on profitability, after the merger of nationalized banks in 2021. Thirdly, this study fully used Indian banking data in the present context. Fourthly, this study developed a unique framework that would enable banks, business consultants, and researchers to determine and understand the factors that boost banks' profitability.

5. Objectives of the Study

To investigate the determinants of profitability for PSBs, by taking ROE as a dependent variable and to measure the impact of selected determinants on profitability under a FE or RE model, using the Hausman test, to determine which model is the best.

6. Hypotheses of the Study

NH1: There is no significant impact of FL and ROA on profitability under fixed effect model.

NH2: There is no significant impact of FL and ROA on profitability under random effect model.

NH3: There is no correlation between the unique errors and the regressors in the model (Random Effect Model is appropriate).

7. Research Methodology

7.1. Sample Selection

There are 34 commercial banks in India, which include 12 PSBs and 22 private sector banks. The targeted population included only PSB banks and the sample size was 12, which was nearly 35.29% of the total population. A purposive sampling method was adopted for this study.

7.2. Sources of Data

Financial statements (profit and loss account, balance sheet) of publicly traded major banks were gathered from annual reports of banks, over the past 11 years and the BSE (April 2009 to March 2020).Financial ratios were derived, using bank financial statements under this study.

7.3. Period of the Study

The required data for this study were collected during the study period from April 2009 to March 2020.

7.4. Tools used in the Study

According to **Gujarati, 2004** and **Dougherty 2011),** regression model technique, using fixed effect and random effect models, would be appropriate for the study. In order to meet the study's aims, the author used the Hausman Test, for model selection, after using the panel data regression model. For this model, the dependent variable was Return on Equity, and the independent variables were ROA and FL.

8. Data Analysis

The results indicated that all data were stationary (non-presence of the unit root), at the second difference of panel data set. This was critical to evaluate the correlation among variables in the presence of multicollinearity, before examining panel data models. Since the correlation values did not exceed a cut threshold of zero point seven, the results confirmed that there was no cause for multicollinearity in the models.

The panel regression analysis of India's public sector banks, was employed to determine the cross-sectional impacts. The return on equity (ROE) was employed as a dependent variable in the FE panel while return on assets (ROA) and financial leverage (FL) were employed as independent variables at the same time. There were 120 observations in total in this panel, with 12 in the cross-section. This research used data from April 2009 to March 2020, which covered eleven years. Under the fixed effect (FE) regression model, for public sector banks in India, both the determinants of independent variables, return on assets (ROA) and financial leverage (FL), were found to be significant, with profitability values of 0.000 and 0.0001, respectively. Return on assets and bank profitability, which were represented by return on equity in India, reported favorable impact. Financial leverage was proved to be significant. However, public sector banks recorded negative coefficient, with regard to return on equity. As a result, **NH-1: There is no significant impact of FL and ROA on profitability under Fixed Effect Model,** was rejected. Under cross-section analysis, the R^2 of this FE panel regression model was 88.23 percent, while the corrected R^2 was 86.78 percent. The R^2 could explain 88 percent of the existence of included variables between 2009 and 2020.This panel's modified R^2 explains 86 percent of the differences. Because the f-test statistic was 61.12 with a probability value of 0.00, the model was acceptable. The result of Durbin Watson statistics was 1.32, indicating that the FE model did not experience any autocorrelation problem and it was also free of heteroskedasticity **(Table-1).**

The FE affected panel equation,

Return on Equity (ROE) $_{it}$ = (*-0.017*) + *16.339* ROA$_{it}$ + (*-0.005*) Fl$_{it}$ + U_{it} ……………… (1)

Return on Assets (ROA) and Financial Leverage (FL) were shown to be significant in the RE regression model, with profitability values of 0.000 and 0.0002, respectively. The financial leverage coefficient was negative and this was considerable when compared to the Return on Equity of India's public sector banks. The Return on Assets, on the other hand, raised the Return on Equity substantially. Hence **NH-2: There is no significant impact of FL and ROA on profitability under Random Effect Model,**

was rejected. The RE model reported an R^2 of 87.01 percent, with an adjusted R^2 of 86.79 percent. From 2009 through 2020, the R^2 could explain 87 percent of the variation. This panel regression model's modified R^2 could explain 86 percent of the variation in Return on Equity. Under the model, an f-statistic was 392 and a probability value was 0.000, while the Durbin Watson statistic was 1.21, indicating that the RE panel regression model reported positive autocorrelation problem.

The RE affected panel equation,

$$\text{Return on Equity (ROE)}_{it} = (-0.017) + 16.316\,\text{ROA}_{it} + (-0.004)\,\text{Fl}_{it} + U_{it} + e_{it} \quad \text{…………….. (2)}$$

These were employed in this investigation to create a regression model. To quantify the link, the panel EGLS (cross-section random effect) approach was used. The specification module was used to create cross-section random and idiosyncratic random effects. Durbin Watson's test was used to check for heteroskedasticity and autocorrelation. The goodness of fit of this model was assessed, using the ANOVA f-test at a level of confidence of 5% **(Table-2).**

The study employed the Hausman Test, to determine which model is the best, in order to select the best models. Out of the two models (FE and RE), the X^2 value for the FE model was 1.30, which was both insignificant and considerable at the 5% level of confidence. For public sector banks in India, the FE model revealed that the variables ROA and FL were significant with regard to the Return on Equity. According to the null hypothesis, the random effect model was suitable and the probability value was greater than 0.05. Therefore, **NH-3: There is no correlation between the unique errors and the regressors in the model (The**

Random Effect Model is appropriate) was widely accepted. As a result, it is concluded that the random-effects model was more appropriate for public sector banks, under the study's specified factors **(Table-3).**

9. Findings of the Study

It is found that factors' return on assets (ROA) and financial leverage (FL) were significant in the fixed and random-effects regression models, for public sector banks in India. Return on Equity and FL reported negative coefficient in the FE/RE model. The findings demonstrated the importance of ROA in creating profit for selected institutions in the banking sector over the last 12 years. Even with less loan capital, banks' efficiency in creating profit for investors was sufficient. Under the study's specified determinants, the random-effects model was found to be the best for public sector banks.

10. Suggestions

According to the study, public sector banks are advised to adopt the strategy of using a large proportion of debt rather than equity, which will

help in increasing the profit for the investors. The author also advises that PSB investors should know the banks' leverage ratio before investing, which would help them make the best investment decision. The merger of banks provides another option for public sector banks, to improve their profitability and leverage.

11. Conclusion

The author used panel regression analysis, to determine the profitability of public sector banks. From 2009 to 2020, the independent variables of ROA and FL did have impact on the ROE of public sector banks. Therefore, the panel regression model was considered a more reliable and authenticated technique. The study concluded that ROA represented an increase in the profitability of banks. But the coefficient of FL in FE/RE models indicated a negative value, which implied that banks were generating profit significantly, without using more debt. FL appears to have maintained bank solvency and showed a healthy capital structure, which contributed significantly to the increase in return on equity. The findings also revealed that public sector banks' ROA and ROE reported positive relationship. The result demonstrated that public sector banks were able to maintain their ROA ratio. The study also showed that there was significant relationship between ROA, FL, and profitability of banks when ROE was taken as the profitability measure in both panel regression models. The author suggests that public sector banks should change their strategy of using borrowed capital to a larger extent, to increase the return on investment, which would help them generate more revenue for the public sector banks. The author also suggests that PSBs should improve the financial leverage of banks, which would help the banks to improve their image in the market, and ultimately help to increase the value of banks in the eyes of investors.

12. Limitation of the Study

First, this study was limited to India's banking sector. Studies on other countries may have different outcomes and characteristics. Secondly, this analysis was based solely on information gathered from yearly reports about financial profitability of banks.

13. Scope for Further Research

This study focused solely on PSBs in India. Richer findings could be gained, if any study were to consider both private and public banks. This study included only variables such as financial leverage, Return on Assets, and Return on equity. Therefore, future researches could be conducted by adding more new variables. This study focused only on quantitative data. More insights could be achieved if any study was conducted quantitatively as well as qualitatively, pertaining to profitability.

14. References

Adelopo, I., Lloydking, R., & Tauringana, V. (2018). Determinants of bank profitability before, during, and after the financial crisis. *International Journal of Managerial Finance*, *14*(4), 378–398.

Agarwal, M., & Arya, P. (2017). A study of customers' perception and satisfaction towards housing loans of lic housing finance ltd. and sbi bank in Haldwani region. *SMART Journal of Business Management Studies,* 13(2), 61-72.

Ahmad Khan, A., & Zia, A. (2019). Market volatility of banking stock return vis-à-vis banks merger: An application of garch model. *Management Science Letters*, *9*(5), 629–638.

Ahmad, A. (2017). Accounting Of Post Merger Financial Performance Of Punjab National

Bank (Pnb) and Nedungadi Bank. *International Journal of Mechanical Engineering and Technology, 8*(11), 1043–1062.

Ahmad, A., & Ikram, S. (2012). Testing the Efficiency of Indian Stock Market Vis-À-Vis Merger and Acquisitions - A Study of Indian Banking Sector. *International Journal of Latest Trends in Finance and Economic Sciences,2*(2), 155–168.

Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*, *45*(3), 442–458.

Ali, M. and Puah, C.H. (2019). "The internal determinants of bank profitability and stability: An insight from banking sector of Pakistan", *Management Research Review,* Vol. 42 No. 1, pp. 49-67.

Almaqtari, F. A., Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance and Economics*, *24*(1), 168–185.

Bansal, R., Singh, A., Kumar, S., & Gupta, R. (2018). Evaluating factors of profitability for Indian banking sector: a panel regression. *Asian Journal of Accounting Research*, *3*(2), 236–254.

Bapat, D. (2018). Profitability drivers for Indian banks: a dynamic panel data analysis. *Eurasian Business Review,* 8(4), 437–451.

Barua, R., Roy, M., & Raychaudhuri, A. (2016). Structure, Conduct and Performance Analysis of Indian Commercial Banks. *South Asian Journal of Macroeconomics and Public Finance,* 5(2), 157–185.

Biswas, S., & Bhattacharya, M. (2020). Financial Performance Analysis of "New Generation Private Sector Banks": A Camel. *Journal of Commerce & Accounting Research,* 9(4), 37–44.

Brahmaiah, B. (2018). Factors Influencing Profitability of Banks in India. *Theoretical Economics Letters,* 3046–3061.

Chaudhary, K., & Sharma, M. (2011). Performance of Indian Public Sector Banks and Private Sector Banks : A Comparative Study. *International Journal of Innovation, Management and Technology* 2(3).

Damodar, N. G. (2004). Basic Econometrics-Damodar N. Gujarati. McGraw" Hill.

Dougherty, C. (2011). Introduction to Econometrics, Fourth Edition., Oxford Unversity Press. United States

Ganesh,K.V. and Paramasivan, C. (2013). Operational Efficiency of Financial Inclusion in Puducherry. *Selp Journal of Social Science,* 4(17).

Goddard, J., Molyneux, P., & Wilson, J. O. S. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. Manchester School, 72(3), 363–381.

Gopinath,S.(2009). Indian financial institutions: healthy amid global crises. *Macroeconomics and Finance in Emerging Market Economies,* 2(2), 239-246.

Gul, S. I. F. Z. K. (2011). Factors Affecting Bank Profitability in Pakistan. *Romanian Economic Journal,* 39, 61–87.

Gupta, P., Kochhar, K., & Panth, S. (2011). Bank Ownership and the Effects of Financial Liberalization: Evidence From India. IMF Working Papers, 11(50), 1.

Hassan, M., & Adam, M. (2014). Evaluating the Financial Performance of Banks Using Financial Ratios- A Case Study of Erbil Bank for Investment and Finance. *European Journal of Accounting Auditing and Finance Research,* 2(6), 162–177.

Jin, Y. J., & Hutagaol-martowidjojo, Y. (2019). Determinants of Bank Competitiveness in

Digital Era A Case Study of South Korea. *Journal of Banking and Financial Economics,* 2(6), 39–55.

Jreisat, A., & Bawazir, H. (2021). Determinants of Banks Profitability in the Middle East and North Africa Region. *The Journal of Asian Finance, Economics and Business,* 8(6), 701-711.

Kedia, N. (2016).Determinants of Profitability of Indian Public Sector Banks. *Ira-International Journal of Management & Social Sciences,* 02(03), 1–16.

Khan, A. A. (2011). Merger and Acquisitions (M & As) in the Indian Banking Sector in Post Liberalization Regime. *International Journal of Contemporary Business Studies,* 2(11),31–45.

Khan, A. A., & Javed, S. (2017).A study of volatility behaviour of S & P BSE BANKEX Return in India/ : A pragmatic approach using GARCH model. *International Journal of Advanced and Applied Sciences,* 4(4), 127–132.

Lartey, V. C., Antwi, S., & Boadi, E. K. (2013). The Relationship between Liquidity and Profitability of Listed Banks in Ghana. *International Journal of Business and Social Science*, 4(3), 48–56.

Mittal, M. (2007).Profitability and Productivity in Indian Banks/ : A Comparative Study. *AIMS International,* 1969.

Miyan, M. (2017).A Comparative Statistical Approach towards NPA of PSU and Private Sector Banks in India, *International Journal of Advanced Research in Computer Science.* 8(1), 46–53.

Mohan, K. (2006). Dynamics of VRS in banking sector: A case study in the pondicherry region. *SMART Journal of Business Management Studies,* 2(1), 12-19.

Olalekan, A., & Adeyinka, S. (2013).Capital Adequacy And Banks' Profitability : An Empirical Evidence From NigeriaAmerican *International Journal of Contemporary Research,* 3(10), 87–93.

Ong, T., & Teh, B. (2013). Factors affecting the profitability of Malaysian commercial banks. *African Journal of Business Management,* 7(8), 649–660.

Paramasivan, C. (2013). Economic Empowerment of Women Through SHG in Kolli Hills, *Research Explorer,* 2(4), 4–7.

Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of Banks' Profitability: Evidence from EU 27 Banking Systems. *In Procedia Economics and Finance* (Vol. 20, pp. 518–524).

Prasad, K. V. N and Chari, A.A (2011). Financial Performance of Public and Private Sector Banks/ : An Application of Post-Hoc Tukey HSD Test. *Indian Journal of Commerce & Management Studies,* 2(5).

Rafiq, M. Z., Jun, J. C., Ali, R., Majeed, M. K., & Mohsin, M. (2020). Impact of corporate image, switching cost and customer trust on customer satisfaction: Evidence from listed banking sector. *SMART Journal of Business Management Studies,* 16(1), 26-34.

Rao, Y., Hadri, K., & Bu, R. (2010). Testing for stationarity in heterogeneous panel data in the case of model misspecification. Bulletin of Economic Research, 62(3), 209–225.

Santhi, P. (2014). Basel III and Preparedness of Public Sector Banks in India. *SMART Journal of Business Management Studies,* 10(1), 51-60.

Varshney, N. (2016).A Study on the Comparison of Financial Performance of Public Sector Banks with Special Reference to State Bank of India and Punjab. *Voice of Research,* Vol.5(3).

Table-1: Summary of Panel Regression Model Using Method PLS Under Fixed Cross Section

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017605	0.009008	-1.954265	0.0533
ROA	16.33985	0.591193	27.63878	0.0000
FL	-0.005043	0.001270	-3.970263	0.0001
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.882303	Mean dependent var		-0.006652
Adjusted R-squared	0.867869	S.D. dependent var		0.270712
S.E. of regression	0.098403	Akaike info criterion		-1.690205
Sum squared resid	1.026419	Schwarz criterion		-1.364998
Log likelihood	115.4123	Hannan-Quinn criter.		-1.558137
F-statistic	61.12470	Durbin-Watson stat		1.325564
Prob(F-statistic)	0.000000			

Source: Secondary Data computed and Compiled Using Eviews10

Table-2: Summary of Panel Regression Model using Method PLS Under Random Cross Section

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017543	0.010754	-1.631281	0.1055
ROA	16.31604	0.590040	27.65242	0.0000
FL	-0.004922	0.001266	-3.889310	0.0002
	Effects Specification			
			S.D.	Rho
Cross-section random			0.020349	0.0410
Idiosyncratic random			0.098403	0.9590
	Weighted Statistics			
R-squared	0.870148	Mean dependent var		-0.005567
Adjusted R-squared	0.867928	S.D. dependent var		0.269966
S.E. of regression	0.098110	Sum squared resid		1.126201
F-statistic	392.0124	Durbin-Watson stat		1.214735
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.865974	Mean dependent var		-0.006652
Sum squared resid	1.168830	Durbin-Watson stat		1.170431

Source: Secondary Data computed and Compiled Using Eviews10

Table-3: Result of Hausman Test of Public Sector Banks

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		1.304607	2	0.5208
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
ROA	16.339849	16.316045	0.001361	0.5188
FL	-0.005043	-0.004922	0.000000	0.2608

Source: Secondary Data computed and Compiled Using Eviews10