

Relating Determinants of Profitability of Commercial Banks in India with Selected Financial Variables: A Dynamic Panel Data Analysis

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Abstract:

This article analyses the elements that determined the success of India's commercial banks between 1992 and 2016. Arellano and Bond's Dynamic Panel Data is used for the unbalanced panel data of 80 banks in India during the reform period, broken down into three ownership groups: Public Sector Banks, Domestic Private Banks, and Foreign Banks. The research also considers the NIM and ROA as supplementary measures of bank profitability. The Return on Assets (ROA) compares the profitability of a bank to its total asset base, while the Net Interest Margin (NIM) measures the profitability of the bank's interest-bearing activities. Explanatory variables include bank-specific (BS), industry-structural (IS), macroeconomic (ME), and other-specified (OS) factors. The empirical results demonstrate that industry-specific and macroeconomic factors, in addition to the banks' inherent features, impact profitability. Profitability of Indian banks is found to be heavily influenced by political and ownership issues. However, the profit-influencing factors differed widely among the groupings.

Keywords: Deregulation; commercial; profitability; dynamic panel data

I. Introduction

Profitability can be characterized as the capacity to generate financial gains or positive net income. Typically, it is commonly denoted as a proportion relative to another variable, such as the magnitude of an asset, the quantity of invested capital, and similar factors. This phenomenon is believed to be attributable to the tangible business operations conducted by the companies. Hence, the prioritization of profitability becomes paramount when assessing an organization's performance. Financial institutions are not granted an exemption from this policy. The banking industry has undergone significant transformations in its structure and operations in recent decades, resulting in the inefficiency, lack of productivity, and diminished utility of numerous publicly owned financial institutions. In response to recommendations put forth by the Committee on Financial Sector Reforms, the Reserve Bank of India (RBI) implemented a series of reforms in 1992 aimed at enhancing the financial stability of banks. The profitability of banks in the early 1990s was significantly impacted by the implementation of reforms and technical advancements in the financial markets. In recent years,

there has been a trend towards standardization of financial products and services provided by non-banking entities, such as mutual funds, insurance companies, investment firms, and other similar entities. The aforementioned phenomenon can be attributed to the growth of both global and non-governmental financial institutions in the sector. There has been a substantial increase in the scale and profitability of numerous banks. Given the aforementioned advancements, this study's main objective is to look at the variables that influence the financial viability of public sector banks, private domestic banks, and foreign banks operating within the Indian market subsequent to the implementation of reforms.

II. Previous Studies:

Prior research on the profitability of banks has examined a range of internal and external factors. Bank-specific variables refer to internal elements that are within the purview of bank management and are derived from the bank's balance sheet. The performance and outcomes of banking operations are influenced by the prevailing macroeconomic conditions, which are manifested in the external factors. The identification of specific factors that influence the profitability of commercial banks would enable policymakers to develop targeted initiatives aimed at enhancing the performance of these banks.

Studies analysing the profitability of banks have been carried out using either a panel of countries or focusing on a single country. In contrast to the singular country focus observed in the works of Neely and Wheelock (1997), PetyaKoeva (2003), Sanyal and Shankar (2005), Berger et al. (1987), Berger (1995), Berger (1995), as well as the specific examination of the United States by Molyneux and Thornton (1992), Haslem (1968), Short (1979), Bourke (1989), Demirguc-Kunt and Huizinga (2000), and Bikker and Hu (2002). The majority of studies on the profitability of Indian banks have taken into account both internal and external factors (Barajas et al., 1999 as cited in Columbia). Internal factors encompass various elements within an institution, such as its size, capitalization, risk management practises, managerial expenses, and level of company diversification. Multiple studies (Goddard et al., 2004; Haslem, 1968; Short, 1979; Bourke, 1989; Molyneux and Thornton, 1992; Bikker and Hu, 2002) have found evidence supporting a positive correlation between capital ratios and profitability. According to the authors of the study, banks with higher capital ratios demonstrate greater levels of soundness and safety, which in turn increases the likelihood of profitability for these institutions.

The impact of liquidity on profits is a subject of debate within the academic literature. Profitability and liquidity have a negative association, according to Molyneux & Thornton (1992). The authors of Miller and Noulas' (1997) study revealed that credit risk had an adverse impact on profitability. According to their assertion, an increase in the proportion of high-risk loans within a portfolio is directly associated with a corresponding increase in the rate of nonperforming loans, while simultaneously leading to a decrease in profits. Molyneux and Thornton (1992), PetyaKoeva (2003), and Bourke (1989) have identified a positive correlation between profits and managerial quality.

Several studies, including those conducted by Goddard et al. (2004), Santiago and Francisco (2007), Athanasoglou et al. (2005), have consistently demonstrated that banks' earnings exhibit stability over time. This implies that a bank's performance in a given year is significantly influenced by its performance in the preceding year. External variables may have an impact on banks' profitability that pertain to both macroeconomic conditions and sector-specific dynamics. Macroeconomic determinants encompass factors such as inflation, interest rates, and money supply, which exert influence on the overall economic conditions. Conversely, industry-specific variables pertain to market concentration, industry scale, and ownership, which are specific to particular sectors or industries.

Ownership's effect on a bank's profitability was a subject that received significant attention in scholarly literature. Insufficient empirical evidence exists to substantiate the assertion that privately operated institutions yield higher financial returns. Nevertheless, the existing literature presents divergent assertions. Barth et al. (04) and Short (1979) discovered a negative correlation between the ratio of public to private ownership and bank profitability. According to the research conducted by Sanyal and Shankar (2005) and PetyaKoeva (2003) it has been observed that privately owned banks in the Indian context exhibit higher levels of profitability. Bourke (1989) and Molyneux and Thornton (1992) argue, nevertheless, that the ownership structure bears no significance on achieving financial success.

The preceding literature examined macroeconomic variables as the final set of factors influencing profitability. The variables most frequently utilised in academic discourse include money supply, long-term interest rates, and the inflation rate. Revell (1979) conducted a study examining the relationship among bank profits and inflation. The researcher discovered that the impact of inflation on a bank's profitability is contingent upon the relative rate of increase between operational costs and salaries compared to inflation. Perry (1992) posits that the impact of inflation on bank profitability is contingent upon the accuracy of inflation expectations forecasting. The positive correlation between profitability and inflation as well as the long-term interest rate was identified by Bourke (1989) and further supported by Thornton and Molyneux (1992).

Drawing from the literature previously mentioned, this present study examines the metrics of bank profitability, specifically the Return on Assets (ROA) and Net Interest Margin (NIM). The evaluation of financial institution efficiency predominantly relied on the utilisation of two key performance indicators, namely Net Interest Margin (NIM) and Return on Assets (ROA). The Return on Assets (ROA) metric is utilised to assess the profitability of a bank relative to its overall asset portfolio. Conversely, the Net Interest Margin (NIM) metric is employed to evaluate the profitability of a bank's interest-generating operations. The independent variables encompass the attributes of the bank, the industry, the macroeconomic conditions, and any other pertinent factors as determined by the researcher.

II. Methodology and Data

This study employs the Dynamic Panel Data Model proposed by Arellano and Bond (1991) to examine the determinants of commercial banks' profitability in India. The empirical study utilises a representative sample of participants from various sectors of the Indian banking industry, including the public, domestic private and international sectors. The following section provides an overview of the technical specifications of the model:

The equation can be written as

$$\begin{aligned} \Pi_{it} - \Pi_{it-1} = & \alpha + \beta (\Pi_{it-1} - \Pi_{it-2}) + \chi (BS_{it} - BS_{it-1}) + \psi (IS_{it} - IS_{it-1}) + \delta (ME_{it} - ME_{it-1}) + \gamma (OS_{it}) \\ & + (\epsilon_{it} - \epsilon_{it-1}) \quad i=1 \dots N; t=1 \dots T. \quad (1) \end{aligned}$$

Where

The variable π represents profitability in this context.

The acronym "BS" refers to the bank-specific characteristics.

The abbreviation "IS" uses industry-specific variables.

The acronym "ME" denotes the macroeconomic variable.

The term "OS" refers to the other specified dummy variables.

The parameters to be estimated in this study are denoted by α , β , χ , Ψ , δ , and γ , while the error term is represented by ε .

Equation (1) encompasses a set of explanatory factors, wherein the error term ($it - it-1$) is associated with the lagged dependent variable, among other factors. The conventional approach to address these and other potential endogenous challenges entails the utilisation of an instrumental variable methodology. The Generalised Method of Moments (GMM) estimator, which was introduced by Arellano and Bond (1991), utilises lagged values of the independent variables in their original levels as instrumental variables. This methodology employs a dual-pronged strategy for estimation. In the initial phase, it is postulated that the errors exhibit a random pattern and follow a normal distribution, encompassing the entire sample and occurring over time. During the second stage, a variance-covariance matrix estimate is generated by utilising the residuals obtained from the first stage. However, according to Griliches and Hausman (1986), the utilisation of the difference estimator approach is believed to magnify biases caused by measurement errors. Moreover, along with the regression in levels, a different methodology for estimating the regression in differences was put out by Arellano and Bover in 1995. The instruments utilised by the estimator consist of lags in the explanatory variables. The validity of employing the instrumental variable approach hinges on the presence of values of the explanatory factors and the bank-specific impact are correlated with time. The validity of the GMM estimator hinges on two key assumptions: firstly, the absence of serial correlation in the error term, and secondly, the accuracy of the instruments used in the model. In order to examine these assumptions, the study employs two diagnostic tools as suggested by Arellano and Bond (1991).

Included in this analysis are two additional metrics used to assess a bank's profitability: Return on Assets (ROA) and Net Interest Margin (NIM). The Return on Assets (ROA) metric is utilised to assess the profitability of a bank in relation to its overall asset portfolio. On the other hand, the Net Interest Margin (NIM) is employed to gauge the profitability of a bank's interest-bearing operations. The explanatory factors can be categorised into four distinct groups, namely bank-specific (BS), industry-structural (IS), macroeconomic (ME), and other-specified (OS).

To address the industry-specific features, we accounted for factors such as the size of the banking sector and the capitalization of the stock market and how the performance of the banks affected the stock market. The size of the banking industry is represented by the ratio of total bank assets to GDP (AGDP), which is itself a measure of the size of the economy. Even while MGDP and bank profits go hand in hand, the inverse relationship between the two shows that moderately developed stock markets can stand in for bank funding.

This analysis encompasses macroeconomic factors such as inflation (INF), economic growth (GROW), and interest rates (RINT).

This study utilised an imbalanced panel consisting of 80 commercial banks, including 20 public sector banks (PSBs), 30 Domestic Private Banks (DPBs), and 30 Foreign Banks (FBs). It should be noted that data for all financial institutions was not available. The empirical investigation heavily relied on scholarly papers and publications sourced from the Reserve Bank of India, as well as data obtained from the PROWESS database provided by the Centre for Monitoring the Indian Economy (CMIE).

III. Results and Discussion:

Table 1 presents the summary statistics of the selected variables obtained from the primary analysis. The GDP deflator was employed to convert all monetary values into their respective equivalent

TABLE-1
Summary Statistics: Means of the selected variables by group
 (Standard deviation in parenthesis)

Variables	Description	PSB	DSB	FB	All Bank
NIM	Net Interest Margin	1.136 (9.63)	0.96 (3.83)	4.36 (28.05)	2.187 (17.49)
ROA	Returns on assets	7.163 (14.03)	5.849 (6.01)	40.89 (119.93)	17.2 (72.23)
EFF	Cost efficiency	0.93 (0.07)	0.94 (0.07)	0.93 (0.07)	0.95 (0.05)
CA	Ratio of capital to assets	3.15 (5.217)	2.39 (4.47)	31.43 (93.19)	12.7 (56.03)
NIA	Ratio of non interest income to assets	6.0279 (12.557)	4.89 (5.3)	36.49 (103.94)	16.017 (63.29)
LA	Ratio of loans to Assets	79.37 (183.057)	62.15 (89.27)	219.27 (629.23)	121.81 (391.07)
OHA	Ratio of overhead expenses to assets	2.679 (4.63)	1.58 (1.43)	7.53 (23.43)	3.97 (14.157)
AGDP	Ratio of assets to GDP	39.17 (5.09)	6.69 (4.37)	3.69 (1.03)	59.47 (6.97)
HHI	Herfindahl-Hirschman Index	--	--	--	797.39 (243.43)
MGDP	Market capitalization to GDP	--	--	--	57.43 (23.47)
INF	Inflation	--	--	--	5.27 (2.57)
RINT	Rate of Interest	--	--	--	10.53 (2.67)
GROW	Growth rate of Economy	--	--	--	6.25 (1.57)
D_PSB	Dummy variable for PSB	--	--	--	0.37 (0.49)
D_FB	Dummy variable for FB	--	--	--	0.35 (0.47)
D_NDA	Dummy variable for NDA	0.47 (0.53)	0.45 (0.53)	0.49 (0.53)	0.47 (0.53)
D_CNG	Dummy variable for Congress	0.47 (0.53)	0.39 (0.47)	0.37 (0.49)	0.39 (0.47)

Note: PSB = Public Sector Banks, DSB: Domestic Sector Banks, FB = Foreign Banks.

in dollars of the years 2011-12. Return on assets (ROA) and net interest margin (NIM) are two key metrics used to assess the financial well-being of an entity. In India, international banks exhibit the highest level of profitability among various types of banks, as evidenced by the median values of profitability indicators. Commercial banks in India exhibit an average interest margin of 2.187% and total asset returns of 17.49%. Based on average efficiency metrics, it has been observed that private domestic and foreign banks exhibit comparatively higher levels of efficiency in comparison to public sector banks in India. The commercial banks in India exhibit a high degree of proximity to the efficient frontier, as evidenced by their cost efficiency ratings of 0.95 points. Foreign banks exhibit a higher proportion of non-interest revenue to assets in comparison to private and public sector banks, indicating

their engagement in a broader spectrum of banking activities. In comparison to the other two groups, international banks exhibit a higher mean value of capital to assets (31.43), indicating a greater degree of financial stability. Moreover, the loan to asset ratio serves as an indicator of the proportion of loans within a bank's collection of assets, revealing that international banks exhibit a greater loan to asset ratio compared to domestic or domestically based banks. Nevertheless, Indian banks encounter a precarious operational environment. The relationship between international banks' overhead expenditures and their assets suggests that their employees receive higher compensation compared to their domestic and regional counterparts. Potential Explanation: One potential factor contributing to this phenomenon is the disparity in compensation between employees of international banks and those of domestic commercial and public banks. According to the asset to GDP ratio (AGDP), public sector banks exhibit larger asset sizes compared to private domestic banks, foreign banks, and private foreign banks. The banking sector holds a significant position in India's economy, accounting for 59.47 percent. Similarly, the stock market also plays a substantial role, representing 57.43 percent of the country's GDP.

The outcomes for the Net Interest Margin (NIM) and Return on Assets (ROA) derived from the dynamic panel equation are presented in Tables 2 and 3, correspondingly.

The study period reveals a gradual decline in the level of concentration within the Indian banking industry. Throughout the designated period of analysis, the Indian economy experienced an annualised gross domestic product (GDP) growth rate of 6.25 percent, an annual inflation rate of 5.27 percent, and an annual interest rate of 10.53 percent, as indicated by the average statistics. The standard deviation values of the mentioned variables may exhibit slight fluctuations due to the diverse lending practises employed by banks.

The inclusion of statistically significant coefficients for the lagged profitability variables, net interest margin (NIM $t-1$) and returns on assets (ROA $t-1$), in the model formulation illustrates its dynamic character. Based on the determinant mentioned above, banks are inclined to increase their NIM/ROA levels in the subsequent year when they observe high NIM/ROA levels in a particular year. Significantly, in cases where our diagnostic tests do not provide sufficient evidence to reject the null hypothesis, both Sargan's test and the assessment of second order serial correlation concur that the model is plausible without the presence of autocorrelation, and that the specified relevant variables are generally deemed valid. The findings exhibit a moderate level of alignment with the ESX theory of efficient structure. The initial independent variable, namely cost efficiency, exhibits statistical significance in relation to the equations for net interest margin (NIM) and return on assets (ROA) in both public sector banks and all bank groups. The results of our study offer limited support for the efficient structure hypothesis and indicate that profitability is not primarily determined by efficiency.

Previous studies and empirical findings have established that the capital adequacy of a financial institution plays a crucial role in influencing its profitability. Extensive research has established that capitalization exerts a significant influence on profitability. The evidence presented in both cases exhibits a considerable degree of robustness, irrespective of the metric employed to compute the net interest margin or the return on assets. All groups, except for domestic private banks, produce identical outcomes when computing the net interest margin. This discovery suggests that the percentage of financially stable banks in India is lower than previously anticipated. Organisations possess the ability to mitigate their reliance on external financial resources and augment their profitability through the management of expenses associated with insolvency. In all instances of return on assets (ROA), there exists a statistically significant positive coefficient observed for the non-interest income to assets ratio.

Previous studies and empirical findings have established that the capital adequacy of a financial institution plays a crucial role in influencing its profitability. Extensive research has established that capitalization exerts a significant influence on profitability. The evidence presented in both cases exhibits a considerable degree of robustness, irrespective of the metric employed to compute the net interest margin or the return on assets. All groups, except for domestic private banks, produce identical

TABLE-2
Results of Dynamic Panel Data Model on Net Interest Margin (NIM)

(Standard errors are in parenthesis)

Variables	Description	PSB	DSB	FB	All Bank
Constant	--	1.393** (0.53)	-0.502* (0.107)	-3.289* (0.97)	-0.58* (0.059)
NIM _{t-1}	Lagged NIM	0.203* (0.043)	0.027 (0.049)	-0.047** (0.017)	0.145* (0.001)
EFF	Cost Efficiency	14.195* (27.37)	27.865 (20.79)	8.843 (108.45)	20.035* (3.87)
CA	Ratio of capital to assets	0.981* (0.099)	0.029 (0.037)	0.137* (0.007)	0.127* (0.0003)
NIA	Ratio of non interest income to assets	-0.815* (0.037)	-0.617* (0.024)	-0.487* (0.017)	-0.429* (0.003)
LA	Ratio of loans to Assets	-0.007 (0.005)	0.045* (0.003)	0.059* (0.003)	0.053* (0.0003)
OHA	Ratio of overhead expenses to assets	1.607* (0.16)	0.537* (0.11)	1.077* (0.125)	0.941* (0.015)
AGDP	Ratio of assets to GDP	0.027 (0.083)	-0.057* (0.017)	-0.517* (0.123)	-0.039* (0.01)
HHI	Herfindahl-Hirschman Index	0.015** (0.005)	0.003 (0.001)	-0.003 (0.003)	-0.003* (0.0005)
MGDP	Market capitalization to GDP	-0.17 (0.037)	0.027* (0.007)	0.102*** (0.057)	0.027* (0.003)
INF	Inflation	0.257 (0.27)	-0.271* (0.07)	-0.973* (0.249)	-0.363 (0.02)
RINT	Rate of Interest	-0.127 (0.63)	-0.779 (0.205)	-3.223*** (1.23)	-0.269* (0.09)
GROW	Growth rate of Economy	0.297 (0.31)	0.005 (0.087)	0.801* (0.15)	0.183* (0.039)
D_PSB	Dummy variable for PSB	--	--	--	-10.25* (0.57)
D_FB	Dummy variable for FB	--	--	--	0.037 (0.427)
D_NDA	Dummy variable for NDA	0.237 (1.27)	0.927** (0.457)	7.937** (3.07)	1.27* (0.57)
D_CNG	Dummy variable for Congress	-0.957 (2.07)	-2.459* (0.83)	-8.817 (6.19)	-0.77* (0.29)
The Sargan Test P-value		0.83	1.00	1.00	1.00
The Serial correlation test p-value		0.503	0.517	0.647	0.587

Note: PSB = Public Sector Banks, DSB: Domestic Sector Banks, FB = Foreign Banks.
The percentages *Significant at 1%, **Significant at 5%, and ***Significant at 10%.

TABLE-3
Results of Dynamic Panel Data Model on Returns on assets (ROA)
 (Standard errors are in parenthesis)

Variables	Description	PSB	DSB	FB	All Bank
Constant		0.907* (0.27)	-0.199 (0.115)	-2.407* (0.75)	-0.375* (0.027)
ROA _{t-1}	Lagged ROA	0.231* (0.067)	0.087* (0.033)	-0.0003 (0.002)	0.013* (0.0003)
EFF	Cost Efficiency	4.097** (38.87)	33.705 (20.597)	35.146 (113.01)	13.247* (1.65)
CA	Ratio of capital to assets	0.757* (0.117)	0.057** (0.037)	0.0131* (0.007)	0.137* (0.0003)
NIA	Ratio of non interest income to assets	-0.004* (0.001)	0.047* (0.002)	0.057* (0.001)	0.053* (0.0008)
LA	Ratio of loans to Assets	-0.005* (0.001)	0.047* (0.003)	0.057* (0.001)	0.053* (0.0007)
OHA	Ratio of overhead expenses to assets	1.699* (0.027)	0.069 (0.17)	1.257* (0.093)	0.987* (0.007)
AGDP	Ratio of Industry assets to GDP	0.017 (0.017)	-0.021 (0.019)	-0.463* (0.107)	-0.017* (0.004)
HHI	Herfindahl-Hirschman Index	0.007* (0.003)	0.003 (0.001)	-0.019* (0.005)	-0.009* (0.0003)
MGDP	Market capitalization to GDP	-0.019 (0.013)	0.017** (0.0052)	0.047 (0.051)	0.003** (0.002)
INF	Inflation	0.223* (0.105)	-0.257* (0.053)	-1.279* (0.7)	-0.347* (0.017)
RINT	Rate of Interest	-0.189 (0.147)	-0.307* (0.13)	-1.453** (0.59)	-0.069*** (0.037)
GROW	Growth rate of Economy	0.273* (0.069)	0.121** (0.07)	1.073*** (0.67)	0.057* (0.017)
D_PSB	Dummy variable for PSB	—	—	--	7.623* (0.495)
D_FB	Dummy variable for FB	--	--	--	1.117* (0.207)
D_NDA	Dummy variable for NDA	0.547 (0.7)	1.087* (0.249)	3.257 (5.98)	0.47* (0.087)
D_CNG	Dummy variable for Congress	0.093 (0.73)	-0.731*** (0.397)	-1.000 (5.67)	-0.449* (0.107)
The Sargan Test P-value		1.00	1.00	1.00	0.95
The Serial correlation test p-value		0.67	0.51	0.69	0.87

Note: PSB = Public Sector Banks, DSB: Domestic Sector Banks, FB = Foreign Banks.

The percentages *Significant at 1%, **Significant at 5%, and ***Significant at 10%.

outcomes when computing the net interest margin. This discovery suggests that the percentage of financially stable banks in India is lower than previously anticipated.

Except for public sector banks, all other categories of banks demonstrate a statistically significant and positive correlation in relation to the loans to assets ratio. Bank loans are considered to be financial instruments that have the ability to generate interest income, thereby rendering them as valuable assets. Therefore, a greater interest margin confers benefits to business operations. The presence of a negative and statistically significant coefficient of asset quality management in the calculation of return on assets (ROA) may lead to inadequate management of asset quality in public sector banks. This situation can be ascribed to multiple factors, specifically the increase in lending to priority industries, the escalation of nonperforming loans, the reduction in interest rates, and the decline in income levels. However, it is important to acknowledge that the asset quality of Indian banks seems to be satisfactory. This is supported by the positive and statistically significant coefficient observed in all bank categories when considering both the Return on Assets (ROA) and Net Interest Margin (NIM) criteria.

In all cases of net interest margin (NIM) and return on assets (ROA), except for domestic private banks when calculating ROA, there is a positive and statistically significant correlation between the coefficient of the ratio of overhead expenses to assets and these financial indicators. The coefficient value of 0.987 for the overhead variable in the returns on assets suggests that banks may transfer a substantial portion of their overhead expenses to borrowers and savers by raising lending rates and lowering deposit rates. The coefficient of AGDP, which measures the relationship between industry size and the ratio of industrial assets to GDP, exhibits a statistically significant negative association for both private sector banks and foreign banks. The group of public sector banks is positively influenced by the criteria of Net Interest Margin (NIM) and Return on Assets (ROA). This study illustrates that banks encounter significant levels of competition in economies where financial assets constitute a larger share of the Gross Domestic Product (GDP), resulting in diminished profit margins and less financially rewarding banking systems.

The relationship between stock market capitalization to GDP and the NIM variable exhibits a positive and statistically significant correlation across all bank groups, including Domestic, Private, and Foreign Banks. This phenomenon may arise as a result of the complementary relationship between equity and debt financing. The advent of stock markets has facilitated the dissemination of enhanced information, thereby expanding the potential pool of borrowers. Consequently, banks are better equipped to identify and monitor these borrowers, thereby streamlining the lending process. This strategy aims to increase the overall revenue of the business, thereby enabling the possibility of achieving higher profit margins.

In the context of the macroeconomic variables, it is observed that the interest rate exhibits a negative and statistically significant relationship with both the Net Interest Margin (NIM) and Return on Assets (ROA) equations across all bank groups, with the exception of the public sector group. Banks operating in India may have encountered challenges in adapting their pricing strategies as a result of the upward trajectory of inflation and interest rates. The financial institution's profitability may have been negatively impacted due to the escalated borrowing expenses. The inflation coefficient (INF) is an additional metric employed for assessing the condition of the economy. The negative and statistically significant values of NIM and ROA are observed across all groups, excluding the public sector. The practical significance of the positive coefficient for the public sector group is observed solely within the ROA specification. The evidence suggests that Indian financial institutions displayed a lack of prudence

in their management of interest rates, primarily attributable to their reliance on flawed inflation forecasts. Consequently, the increase in bank expenses outpaced the growth in bank revenues, potentially compromising the overall profitability of banks. The economic growth rate represents the final component among the three primary macroeconomic variables. The coefficient exhibits a positive and statistically significant relationship in both the Return on Assets (ROA) and Net Interest Margin (NIM) models. The presence of domestic commercial and public bank conglomerates is atypical. This illustrates that Indian banks have actively pursued various opportunities within the affluent nation in order to expand their banking enterprises and enhance profitability in recent years.

The ownership structure exerts a significant impact on the profitability of the banking sector in India. There exists a negative correlation between state ownership and bank profitability, while a positive correlation is observed between bank profitability and foreign ownership. This finding provides further evidence supporting the notion that foreign banks tend to provide more advanced and superior services compared to their domestic counterparts. The study reveals no discernible convergence in the impacts of foreign and domestic financial institutions.

This study conducts a synthesis of existing literature to investigate the influence of the governing political party on the performance of financial institutions. Based on the presented data, there is evidence of a negative correlation between the administration led by the Congress (or UPA) and financial prosperity. The National Interest Margin and Return on Assets criteria are encompassed within the evaluation framework for both domestic private banking groups and all bank groups. The study also identified a significant correlation between domestic private banks and all bank groups in the return on assets (ROA) equation. Additionally, a correlation was observed between foreign banks and domestic private banks in the net interest margin (NIM) equation. One plausible explanation for this phenomenon is that the introduction of new banking products and services occurred during the era of non-disclosure agreements (NDA), facilitated by the increased participation of private and foreign banks and the deregulation of interest rates.

IV. Concluding Remarks:

The present research utilised the dynamic panel data model proposed by Arellano and Bond (1991) to examine the determinants of commercial bank profitability in India. The study employed an unbalanced panel dataset comprising 80 commercial banks, including 20 public sector banks (PSBs), 30 development banks (DPBs), and 30 foreign banks (FBs), spanning the period from 1992 to 2016.

The available empirical evidence suggests that profitability of a financial institution is influenced by a combination of industry-specific and macroeconomic factors, as well as the unique characteristics of the bank itself. According to the survey findings, Indian commercial banks exhibit a preference for maintaining a consistent level of profitability over an extended period. The study has examined two distinct methodologies for assessing profitability, namely net interest margin (NIM) and return on assets (ROA). The study examined the proposition that profitability in banks is influenced by factors beyond efficiency. Specifically, it explored the significance of internal factors such as the ratio of non-interest income to assets, the ratio of capital to assets, and the ratio of non-interest income to assets. The findings suggest that these factors are also important and positively associated with bank profitability.

The examination of indicators such as the ratio of assets to GDP, the Herfindahl-Hirschman Index, and the stock market capitalization to GDP allowed for an assessment of the health of various sectors. The study revealed a positive correlation between assets and GDP. In contrast to private domestic banks and multinational banks, it was observed that public sector banks exhibited considerably

greater levels of assets. The case study on the Herfindahl-Hirschman Index demonstrates a positive relationship between bank concentration and the profitability of public sector banks. Conversely, the profitability of other bank groups and foreign banks exhibits an inverse correlation with bank concentration. Throughout the duration of the study, a decline in concentration within the Indian banking industry is observed. The research revealed a positive correlation between the expansion of the stock market and the profitability of various types of banks, encompassing local, private, and international banks. This correlation was established by comparing the ratio of stock market capitalization to GDP. A positive and statistically significant correlation was observed between the variable representing net interest margin (NIM) and all categories of banking institutions. However, it has been observed that the specification for return on assets (ROA) exhibits positive and statistically significant results exclusively for domestic private banks and all bank groups.

Inflation and interest rates are two macroeconomic variables that exert an adverse influence on the profitability of banks. With the exception of the public sector group, all bank groups exhibit a negative and statistically significant rate of interest (RINT) in both net interest margin (NIM) and return on assets (ROA) measures. Except for the public sector groups, both the NIM and ROA terms exhibit comparable levels of statistical significance in relation to the inflation rate across all groups. The research highlights the inaccuracies of inflation predictions made by Indian banks in previous instances. There exists a positive correlation between the profitability of banks and the growth rate of the economy.

The ownership structure exerts a significant impact on the profitability of the banking sector in India. There exists a negative correlation between state ownership and bank profitability, while a positive correlation is observed between bank profitability and foreign ownership. This finding provides further evidence supporting the notion that foreign banks tend to provide more advanced and superior services compared to their domestic counterparts. The research findings indicate a lack of correlation between the impacts of foreign and domestic financial institutions. The data presented in our study indicates a relationship between the political party in governance in India and the financial well-being of the country's banking sector. Specifically, we observe a positive correlation between the National Democratic Alliance (NDA) and bank profitability, while a negative correlation is observed with the Congress party.

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