The determinants of profitability of Indian listed commercial banks: A panel data approach

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Abstract

This study aims at finding out the determinants of Indian commercial banks profitability. Profitability of Indian banks is measured by three important variables namely, Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM). The study also uses a set of independent variables such as bank specific factors which include bank size, assets quality, capital adequacy, liquidity, operating efficiency, deposits, leverage, assets management and the number of branches.

Pooled, fixed and random effects models and Generalized Method of Moments (GMM) are built on panel data of 10 years for more than 60 commercial banks of India. The study also takes into account Gross Domestic Product (GDP), inflation rate, interest rate and exchange rate as macroeconomic determinants. The results of the survey show that all bank-specific factors, except the number of branches, had a significant impact on the profitability measured by NIM. The results also show that all macroeconomic determinants used in the study are important and have a negative impact on the profitability of Indian commercial banks.

Introduction

A bank has many dimensions. A bank caters to different segments of society. A bank does not come into being because banks need to make profits. Banks also have their social obligations, economic obligation, and national obligations and above all banks needs to be profitable so that it can self-sustain. In India, the nationalization of banks happened in 1969, just to ensure that the multitiered goals of a bank remain intact.

Private banks are riskier than government-affiliated banks because they are private banks. Banks in the public sector, along with banks, have the unique benefit of expanding support and contribution to all segments of society. LQD in banking can be described as the ability of banks to fund asset growth and meet expected and unexpected cash and collateral obligations at reasonable cost and without unacceptable losses (Settlements, B. for I). , 2008). "Liquidity risk is Our inability to fulfill such obligations if the due date arrives without adverse effects Bank Financial Status "(RBI, 2012). According to the guidelines of the Reserve Bank of India (2012), "mobility is the ability of banks to fund the growth of assets and fulfill their expected and unexpected cash and collateral obligations when they are due. is". "Indian banks were able to comply primarily with the Reserve Bank of India guidelines, With regard to liquidity management, the factors that influence the liquidity of Indian banks are relatively unrecognized due to the lack of research on liquidity management of Indian banks "(Bhati & Zoysa, 2012).

Many researchers, such as Ratnovski (2013), report that banks' primary role as creators of LQDs make banks vulnerable to LQD risk. Arif and Nauman Anees (2012) found that LQD risk is associated with the inability

of banks to meet their financial obligations without incurring unnecessary costs. Such a situation will depend on financial stability. Banks are better off maintaining proper liquidity storage. After deferring financial reasons, assume that the bank's solvency is the root cause. The Basel Committee on Banking Supervision (2010) proposed solvency, LQD formation by banks, and new capital requirements to prevent this situation in the future. Mandatory seal. Matz and Neu (2007) found that pre-global financial crisis banking literature often regarded LQD management as a secondary risk. Since then Performance has attracted the attention of policy makers and researchers.

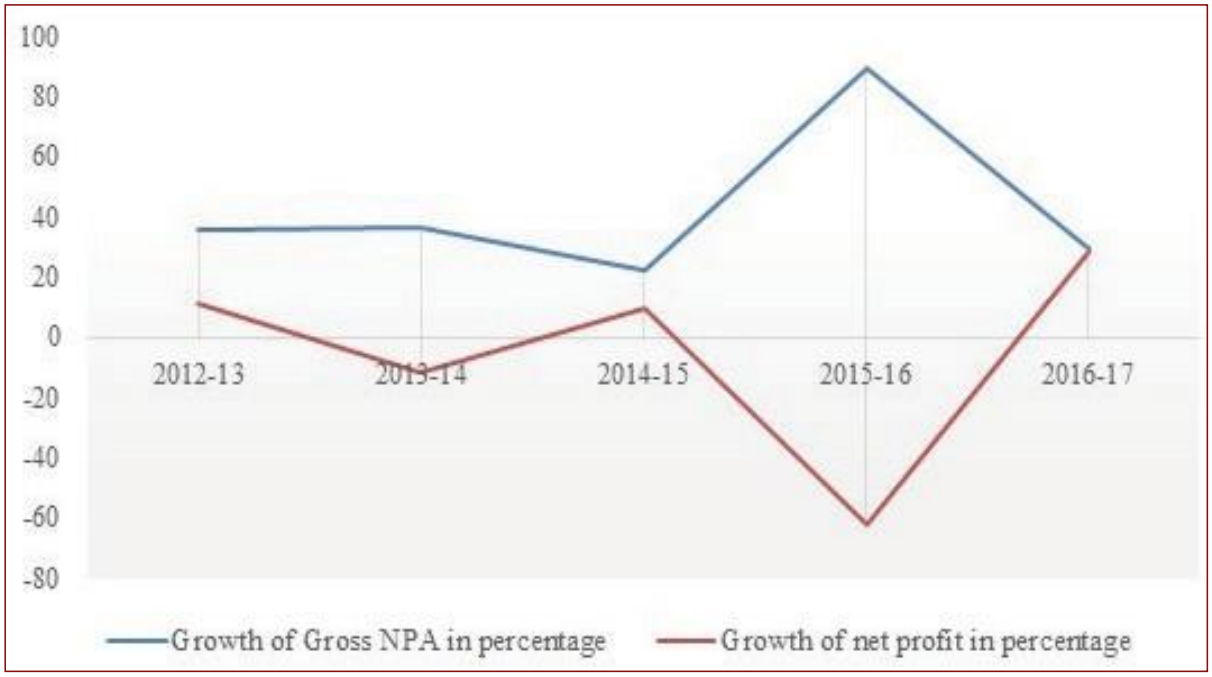
However, it should be noted that there is superficial literature on improper risk management practices by banks. Therefore, inadequate LQD has received considerable attention and is a major problem for banks. (Jenkinson, 2008).

Literature Review

In spite of declining the profitability of Indian banks in the last recent years, some critical questions that may arise in this regard are "What are the determinants ofthe profitability of Indian commercial banks?" And also, what are the main causes for such kind of decline in the profitability measures during this period?

Table 1. Gross Nonperforming Assets and Net Profit of IndianBank

Year	Gross NPA (In billion)	Percentage Variation	Net Profit (In Billion)	Percentage Variation
2012-13	1941	35.8	911.65	11.5
2013-14	2644	36.2	809.10	-11.2
2013-14	3233	22.3	890.78	10.1
2015-16	6119	89.3	341	-61.7
2016-17	7918	29.4	439	28.6



There are various groups of researchers on the impact of bank lending on economic growth. One group argues that bank credit is essential to drive economic growth, while another believes that it is economic growth that lends bank credit to the economy and continues to grow. The third group found a bidirectional causal relationship between these two variables. Bayoumi and Melander (2008) found that GDP fell by 1.5% when total credit fell by 2.5%, and Demetriades and Hussein found such a link in a 1996 survey, raising funds to the economy. It has been suggested that it is one of the important factors for growth. Those who support the hypothesis that bank lending stimulates economic growth advocate the theory that bank lending can increase economic growth by increasing savings, improving the efficiency of allocation funds, and promoting capital formation. bottom. Robinson (1952), Gurly & Shaw (1967), Goldsmith (1969), and King & Levine (1993) are supporters of this hypothesis. Eatzaz Fuller and Malik (2009) also found that domestic bank lending to the private sector led to increased output per worker, which ultimately boosted economic growth. In the same year, in 2009, Arora said that while India's banking reforms have improved banking efficiency, they have also reduced lending to developing countries and regions. There is a wealth of other research in the literature, primarily aimed at exploring the causal relationship between financial development and economic growth that is reflected in the credit growth of banks. For example, King and Levine (1993), Gregorio and Guidotti (1995), Rajan and Zingales (1998), Das and Maity (1998), Levine et al (2000), Hassan et al (2011), Christopopulous and Tsionas (2004). , Pradhan (2010) Banerjee (2012), Mohanty, Kumar & Patra, (2016), etc. This supports the hypothesis that financial development leads to higher economic growth. Meanwhile, Chakraborty (2010), Pradhan (2010), Hassan et al. (2011), Herwadkar and Ghosh (2013), assume that economic growth expands bank credit. In addition, there are several other studies by Demetriades and Hussein (1996), Blackburn and Hung (1998), Yousif (2002), Pradhan (2011), which have the bilateral causality of financial and economic growth due to the expansion of bank credit. There is a relationship.

Increasing bank credit creates demand for goods and services, which ultimately stimulates employment, increases income and boosts economic growth. Therefore, credit is expected to have a positive impact on economic growth. Government spending also plays an important role in the country's economic development. When the government spends on dealing with various development programs. For example, in the case of spending on the social sector, this is expected to boost economic growth, as government spending plays an important role in increasing income, as the same national income theory shows. These different views arouse

the curiosity of researchers about this relationship. However, there is no consensus on the relationship between bank credit and economic growth. Under these circumstances, this paper attempts to examine the role of the Government of India in bank lending, capital spending, and the government's social sector spending on per capita net domestic product. Therefore, the current study aims to investigate the determinants of the profitability of Indian commercial banks. In particular, bank-specific macroeconomic determinants that can affect the profitability of Indian commercial banks, measured by ROA, ROE, and NIM, are empirically evaluated. This study bridges a serious gap in the literature on the profitability of Indian banks. In addition, the current study is Almaqtari et al.

Extends, runs, and builds research in. (2018) Those who have ignored important indicators of bank profitability. We have extensively investigated the net interest margin NIM and the bank-specific and macroeconomic determinants of Indian commercial banks. Current research uses a variety of econometric techniques to analyze the data and provide more informed results. Banks are a type of social system that serves multiple purposes at the same time. Banks' economic challenges also, in a sense, relate to social causes for the greater benefit of banks. There are many issues in the academic literature on banks that are directly or indirectly related to their performance.

Regulations affect both bank performance and bank profitability (Agoraki et al., 2011, Barth et al., 2008, Barth et al., 2004a).

The regulation is a double-edged sword. It helps reduce the risk appetite of banks, but it also affects the profitability of banks (Bolt and Tieman, 2004, Chen, 2007). There are some questions about banking regulations that are usually part of the debate. First, let's talk about why regulations reduce profits. This means that the less regulated, the higher the risk and profitability. However, there is little evidence that the higher the risk, the more profitable it is (Barth et al., 2008, Barth et al., 2004b). Meanwhile, established regulations have been argued to be ineffective because they failed to contain the 2007 global financial crisis (Pakravan, 2014, Samitas and Polyzos, 2015). In addition, Basel III, the result of the failure of the 2007 financial crisis, did more harm than good (Schwerter, 2011). Regulatory issues and their impact on profitability are still subject to debate and debate, and this paper has helped provide direction. Profitability was an important indicator for measuring bank performance (Bikker and Vervliet, 2018, Ozili and Uadiale, 2017, Trade et al., 2017). Profitability and risk are said to move in the opposite direction (Balasubramaniam, 2012). Risk provisioning is seen as another major dent in understanding the role of risk-taking in a bank's profitability. (Claessens, 2003, De Lis et al., 2001, Laeven and Majnoni, 2003). Provisioning requires risk management or hedging, but is believed to reduce profitability. This paper is an attempt to find out what the determinants are and how they affect a bank's profitability.

NPA has always left a mark on both bank performance and profitability (Midthanpally, 2018, Sen and Sen, 2015, Shajahan, 1998). NPA is considered the biggest problem for banks. NPA is a vicious circle. NPA occurs because banks lend to individuals with low creditworthiness. NPA reduces profitability, and banks desperately increase profitability. To make money, banks distribute the load to endangered people at low rates, but the cycle from poor progress to low profitability continues (Sen and Sen, 2015, Shajahan, 1998).). A certain percentage of the total down payment will definitely result in bad debt. Provisioning is a way to improve this and can reduce a bank's profitability, but it can be managed in the long run as long as the bank does not fall into the virtuous circle of rolling over bad debts. Deploying using analytics is risk management. This isn't bad, even if it cuts into profits. However, keeping poor assets on the books, obscuring real distressed

assets for years, and providing the market with false information about its true position is corporate governance rather than profit for banks. Causes more problems for. This discussion surrounding this paper reveals how NPA promotes bank profitability.

Table summarizes the descriptive statistics of the independent and dependent variables of the Jordanian commercial banks surveyed and shows the mean, median, highest, lowest, and standard deviation of each variable, calculated from the financial statements increase.

Table

STATISTICS FOR THE INDEPENDENT & DEPENDENT VARIABLES

Descriptive	ROE	ROA	CR	DTL	NPL	LSL	SZ	TD
Mean	6.8865	1.0781	0.067643	0.063233	0.00858	0.031423	2.39E+10	1.66E+10
Median	6.6605	1.0875	0.075639	0.069753	0.00301	0.036664	2.39E+10	1.72E+10
Maximum	10.061	1.583	0.085228	0.080364	0.057064	0.04423	2.59E+10	2.78E+10
Minimum	3.832	0.596	0.025925	0.02522	0.00137	0.006911	2.12E+10	19492215
Std. Dev.	1.931818	0.340777	0.020339	0.018617	0.016316	0.012427	1.34E+09	6.43E+09

As shown in Table above,

the mean and median ROEs are (6.8865) and (6.6605), respectively, and the mean ROA is 1.0781 and the median is 1.0875. These ratios are good, reflecting the fact that Jordanian banks are facing low CR ratios. Table 1 also shows that the average non-performing loan for total loans is (0.063233), with a median of 0.069753. This shows that about 93% of loans financed by Jordanian commercial banks are recovered from borrowers and 7% of all loans fall into the non-performing loan category. This table shows the average percentage of non-performing loans (0.00858) and the median (0.00301). This table shows the ratio of average bad debt losses to total loans granted by commercial banks. Jordan (0.031423) shows that commercial banks have efficient credit management customer lending policies.

Data Analysis

Table: Pearson correlation matrix and multicollinearity diagnosis for profitability, bank-specific macroeconomic variable measurements. For bank-specific variables, the results show that AQ, BRNCH, LEV, and LNA are negatively correlated with ROA and NIM, but positively correlated with NIM. Similarly, DEP and LIQ show a negative association with all profitability indicators. ROA, ROE, NIM. This may indicate that DEP and LIQ are making a negative contribution to the profitability of Indian banks. In addition, the results show that CAD and OPEF have a positive correlation with ROA and NIM, but have a negative correlation with ROE. For macroeconomic variables, the results show that all macroeconomic determinants

except INTR are negatively correlated with all profitability indicators. ROA, ROE, NIM. EXCH, GDP, and INF show negative correlations with ROA, ROE, and NIM. However, INTR is positively associated with three profitability indicators. ROA, ROE, NIM. The results also show that the highest correlation between the two variables is 0.67 for LEV and LNAS, indicating that there is no multicollinearity problem between the variables.

For more reliable analysis, multicollinearity diagnostics was conducted using bothVIF and Tolerance tests. The results in Table 5, Panel B reports VIF and Tolerance values for all independent variables. VIF has a maximum value of 3.75 and the lowest value of tolerance is 0.27 which indicate that there are no multicollinearity probles among independent variables.

Table . Correlation matrix and multicollinearity diagnostics

Pane A Person Correlation Matrix

	Profitability Measures			Bank-Specific Determinants (Independent Variables)									Macro-Economic Determinants (Independent Variables)			
Variables	ROA	ROE	NIM	LNAS	CAD	AQ	LIQ	DEP	AM	OPEF	LEV	BRNCH	GDP	INF	INTR	EXCH
Profitability measurement (Independent Variable)																
ROA	1															
ROE	0.54	1														
NIM	0.51	0.14	1													
Bank Specific Determinants																
LNAS	−0.39	0.09	−0.39	1												
CAD	0.27	−0.12	0.35	−0.56	1											
AQ	−0.32	0.1	−0.18	0.49	−0.35	1										
LIQ	−0.14	−0.11	−0.06	0.01	−0.01	−0.25	1									
DEP	−0.11	−0.04	−0.07	0.00	−0.08	0.06	0.05	1								
AM	0.29	0.17	0.19	−0.01	−0.01	0.02	−0.13	−0.25	1							
OPEF	0.3	−0.01	0.2	−0.49	0.11	−0.26	0.02	0.01	0.02	1						
LEV	−0.6	0.08	−0.6	0.67	−0.6	0.40	0.08	0.011	−0.0	−0.4	1					

	3				1				8	0						
BRNCH	−0.22	0	−0.25	0.58	−0.23	0.3	0.00	−0.01	0.00	−0.18	0.31	1				

Macro- Economic Determinants

GDP	−0.08	−0.14	−0.05	0.05	0.04	−0.04	0.01	0.03	0.00	0.03	0.00	0.03	1			
INF	−0.17	−0.33	−0.06	0.15	−0.05	0.09	0.01	0.09	−0.11	0.03	0.00	0.10	−0.19	1		
INTR	0.01	0.02	0.02	−0.04	0.02	−0.04	0.07	−0.04	−0.01	−0.03	−0.03	−0.03	−0.04	0.14	1	
EXCH	−0.1	−0.19	−0.03	0.1	0.00	0.03	−0.08	0.13	−0.15	0.03	−0.02	0.07	0.36	0.43	0.14	1

Diagnostic of Multicollinearity

VIF				1.12	1.5	1.61	1.97	1.11	1.72	1.42	1.55	1.06	2.41	1.16	3.75	1.55
Tolerance				0.89	0.67	0.62	0.51	0.9	0.58	0.71	0.65	0.94	0.41	0.86	0.27	0.65

Note: ROA is ratio of bank net profit to total assets, ROE is ratio of net profit to shareholders' equity, LOGA is the natural logarithm of total assets, CAD is the capital adequacy ratio (%), AQ is the asset Quality (%), LIQ is the Liquidity ratio (%), DEP is the deposits over the total assets (%), AM is the asset Management (%), LEV is the financial risk, BRNCH is the No. of branches, GDP is the real Gross domestic product (%), INF is annual inflation rate(%), INTR is the lending Interest rate (%), EXCH is the exchange rate.

Regarding the effect of macroeconomic determinants on the profitability of Indian banks, the results in Table 6 show that all macroeconomic determinates except GDP have statistically significant effect on ROA. Both EXCH rate and INTR rate exhibited a significant and negative effect on ROA revealing an inverse contribution to the profitability of Indian banks as measured by ROA.

Table . Model estimation results summery

	ROA						ROE						NIM					
D.V.	Pooled		Fixed		Random		Pooled		Fixed		Random		Pooled		Fixed		Random	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	−0.11	0.03**	−0.14	0.00***	−0.11	0.02**	−11.15	0.00***	−1.82	0.00***	−2.07	0.00***	0.03	0.45	0.08	0.000***	0.03	0.47
Bank-specific factors																		
AM	0.62	0.00***	0.57	0.00***	0.62	0.00***	2.81	0.00***	2.80	0.000***	2.99	0.00***	0.30	0.00***	0.38	0.000***	0.30	0.00***
BRNCH	0.00	0.59	0.00	0.24	0.00	0.46	0.00	0.001***	0.00	0.11	0.00	0.19	0.00	0.59	0.00	0.08*	0.00	0.60
CAD	0.00	0.65	0.00	0.85	0.00	0.74	−0.01	0.69	−0.01	0.68	0.01	0.56	0.00	0.05**	0.00	0.49	0.00	0.05**
DEP	0.00	0.69	0.00	0.68	0.00	0.72	0.02	0.38	0.01	0.56	0.01	0.90	0.01	0.06*	0.00	0.69	0.01	0.07*
LEV	−0.03	0.00***	−0.02	0.00***	−0.03	0.00***	−0.01	0.83	0.00	0.90	−0.06	0.05**	−0.02	0.00***	−0.01	0.000***	−0.02	0.00***
AQ	0.00	0.92	0.01	0.14	0.00	0.92	0.09	0.04**	0.09	0.03**	0.19	0.04**	0.03	0.00***	0.04	0.000***	0.03	0.00***
LNAS	0.45	0.02**	0.50	0.00***	0.45	0.02**	6.48	0.00***	6.68	0.000***	8.27	0.01***	0.25	0.08*	0.06	0.61	0.25	0.09*
OPEF	−0.04	0.46	−0.02	0.58	−0.04	0.47	−0.23	0.54	−0.52	0.17	−0.12	0.02**	0.11	0.00***	0.11	0.001***	0.11	0.00***
LIQ	−0.01	0.29	−0.01	0.21	−0.01	0.31	0.05	0.14	0.05	0.13	0.06	0.34	0.02	0.01***	0.03	0.000***	0.02	0.01***
Macroeconomic determinants																		
EXCH	−0.02	0.06*	−0.01	0.01***	−0.02	0.07*	−0.27	0.000***	−0.28	0.000***	−0.26	0.03**	−0.04	0.00***	−0.03	0.000***	−0.04	0.00***
GDP	0.0	0.2	0.0	0.01	0.0	0.2	0.5	0.00	0.5	0.0	0.6	0.0	0.0	0.9	−0	0.0	0.0	0.9

	3	1	4	***	3	7	7	***	9	0***	0	0***	0	1	.04	0***	0	2
INF	0.05	0.01***	0.04	0.000***	0.05	0.000***	0.50	0.000***	0.53	0.000***	0.57	0.83	0.01	0.44	−0.02	0.000***	0.01	0.45
INTR	−0.08	0.000***	−0.04	0.000***	−0.08	0.000***	−0.28	0.02**	−0.34	0.000***	−0.59	0.52	−0.02	0.29	−0.02	0.001***	−0.02	0.30
Adj. R-squared		0.53		0.66		0.53		0.45		0.46		0.22		0.40		0.49		0.40
F-statistic		54.67		15.69		54.67		39.79		7.39		14.83		33.46		8.26		33.46
Prob (F-statistic)		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Durbin-Watson		2.39		2.33		2.39		2.03		2.21		1.91		2.18		2.37		2.18
Hausman Test						.38						0.93						0.94

Note: significance at *1, **5, *10 per cent levels**

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Findings

This paper examines the impact of bank-specific macroeconomic determinants on a bank's profitability. Bank profitability as measured by the ROA, ROE, and NIM of 69 Indian commercial banks between 2008 and 2017 was a function of both bank-specific factors. And macroeconomic determinants. Bank-specific variables were considered independent variables consisting of asset size, capital adequacy ratio, asset quality, liquidity, deposits, asset management, operational efficiency, financial risk, and number of branches. Similarly, macroeconomic determinants represent the second category of independent variables such as GDP, inflation, exchange rates and interest rates. In terms of bank-specific determinants, ROA-measured profitability of commercial banks in India has a positive correlation with assets, bank size, management ratio, and number of branches, but a negative correlation with leverage ratio. I understand. this is Bank size, asset management ratio, number of branches, and leverage ratio are the major bank-specific determinants that affect the profitability of Indian commercial banks as measured by ROA. From a macroeconomic point of view, the results also showed inflation. This paper describes the determinants of a bank's profitability. Bank profitability has been found to be positively related to the regulations imposed on banks.

In addition to regulation, a bank's profitability has a negative relationship with the bank's NPA. This white paper does more than just test two variables (that is, regulation and NPA) as determinants of profitability. In addition, only one proxy (regulation and NPA) is used for testing at a time. Using both more variables and the index numbers within the variables considered (for example, index measurement regulation and another index measurement NPA), we were able to better analyze the concept of a bank's profitability

determinants. must. India recorded decent GDP growth when it overcame the recent global financial crisis as an emerging market and many major economies fell into recession. This is largely due to the government's strong macroeconomic policies and prudent fiscal policies and regulations implemented in a timely manner by the regulatory agency, the Reserve Bank of India (RBI). Both public and private banks have effectively managed credit risk over the last decade. NPA levels have fallen from record highs in the 1990s to record lows in 2008, but many analysts are concerned about the gradual increase in NPA over the last two years.

Since delayed NPA is the main driving force of NPA today, commercial banks need to have a prudent lending policy to avoid adverse effects on credit risk. GDP growth in the Indian economy has helped the banking sector to keep bad debt at acceptable levels. Most studies predict a two-year delay between the credit growth boom and NPA growth, so the banking sector needs to pay attention to managing NPA over the next few years.

Conclusion

The relationship between bank credit and economic growth is one of the most discussed topics among scholars and practitioners. In general, bank credit plays a central role in economic growth. Bank lending stimulates capital accumulation and savings rates, which can further drive economic growth (Mohanty & Patyra, 2016). In the economy, few empirical studies have investigated the impact of bank lending on national scrotal-level economic output or per capita government gross domestic product. Therefore, this study examined the relationship between government net domestic product per capita and bank lending, capital spending and social sector spending in different parts of India during the period 1997-2017. Followed the RBI guidelines for regional classification. We have applied fixed effect model and random effect model and also Housman specification test in this study.

This study finds that expansion of bank credit significantly affecting the per capita net state domestic product, capital outlay also positively and significantly affecting the per capita net state domestic product. The study reveals that, commercial banks in India show a tendency to persist their profits over time. Efficiency is not the sole determinant of profitability as other internal variables, such as, the ratio of capital to assets and the ratio of overhead expenses to assets are also significant and having positively associated with the profitability of the banks. The ratio of noninterest income to assets is positively associated with the profitability of banks in case of returns on assets specification; and negatively associated in case of net interest margin specification. In addition, the ratio of loans to assets is positively correlated with the profitability of banks, except for public sector banks. For structural variables, the size of the industry has a negative relationship with the profitability of the bank. The development of the stock market has a positive relationship with the profitability of domestic, international and all banking groups. Bank concentration has a positive relationship with the profitability of public banks and a negative relationship with foreign banks and all banking groups. Inflation and interest rates are negatively related to bank profitability when it comes to macroeconomic determinants. Economic growth has a positive relationship with bank profitability.

Further, our empirical results also reveal the presence of nexus between political party in power and banks performance in India as bank profitability is negatively associated with the Congress party regime and positively associated with the NDA regime. Besides, the study finds that ownership character is also one of the determinants of bank profitability in India.

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