

Determinants of Bank-Specific Risk and Performances

- A Study on Indian Commercial Banks

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ARTICLE INFO	ABSTRACT
Received: 05 Oct 2024	The profitability of commercial banks in India is examined by the authors in relation to credit, operational, and liquidity issues. The objective of this study is to investigate the impact of various types of risks on bank profitability focusing on liquidity risk, operational risk, and credit risk. Using Prowess Database, secondary data are extracted from the annual accounts of 11 specific commercial banks with 99 firm-year observations over the course of nine years, from 2013 to 2022. Panel Data is used to investigate the impact of banks profitability on liquidity risk, operational risk and credit risk. This research concluded that in Model 1, the percentage of bank leverage and inflation is negative but significant at a 1 percent level. And, In Model 2, bank leverage, capital adequacy ratio, and inflation are significant at the 1 percent level. In Model 3, deposits significantly impact (Current ratio, Liquidity Ratio, Portfolio Concentration, Capital Adequacy Ratio, and Bank Size) at a different significance level. The findings of this research are pertinent to the impact of performance on various peril faced by banks in growing industry and are probably generalizable. This investigation recommends that commercial banks properly manage their deposits through dividing their investments and deposits over several portfolios that have the potential to generate return. Keywords: Credit Risk, Banks, Operational Risk, Financial Performance, Liquidity Risk,
Revised: 18 Nov 2024	
Accepted: 26 Nov 2024	

Introduction

An essential component of the nation's economic development is the banking system, which serves as an engine of progress. Maintaining a secure banking system is crucial for a well-functioning financial system and is regarded as a measure of the overall health of an economy. Banks are subject to a variety of risks due to their gathering and lending activities. Several risks, including credit risk, interest rate

risk, operational risk, regulatory risk, market risk, foreign exchange risk, insolvency risk, and liquidity risk, are present when banks conduct their business. One of these risks is liquidity risk, which can be exacerbated during financial crises, harming institutions' liquidity. A bank's crucial responsibility is to make sure that both customers and the company have access to liquidity. Liquidity risk is the possibility that one won't have enough money to pay bills on time (Alharbi, 2017) .

1.1 Various risk & Bank profitability:

A profitable bank is generally better able to manage liquidity risk, as it has the financial resources to meet its obligations. However, if a bank becomes too reliant on short-term funding to generate profits, it may become vulnerable to liquidity shocks if the funding sources dry up. It is the possibility that, despite being solvent, a financial establishment will either lack the financial resources necessary to fulfill its obligations as they become due or will only be able to do so at a high cost. Because of its inability to obtain enough reserves, a bank faces increasing liabilities. This becomes even more important in light of the possibility of serious systemic implications in emerging nations where banks serve as the primary source of financial intermediaries in the event of a banking sector liquidity crisis (Trung, 2021). Effective liquidity risk management reduces the chance of a liquidity crisis and ensures that a bank can pay its debts when they become due.

Next Credit risk arises when customers don't pay back their loans or the money, they owe the bank on time and in full. The possibility that a borrower would miss payments on a loan is known as credit risk. (Ameni et al., 2017)

A profitable bank is generally better equipped to manage credit risk, as it has the financial resources to absorb losses from loan defaults. However, if a bank becomes too focused on profitability, it may start taking on excessive risk to generate higher returns, which can lead to higher credit risk. (Asima et al., 2022) this paper shows result non-performing loans, liquidity ratio, cost-efficiency ratio has negative relation with return on assets, return on equity. And, with this capital adequacy ratio & average lending rate have positive relation with financial performance of various bank of Indian banking system.

If bank executives do not properly assess the credit worthiness of the borrowers, this can also result in bank default. Lastly, A profitable bank can invest in better technology, systems, and personnel to manage operational risk effectively. Operational risk is the possibility of suffering a loss as a result of insufficient or unsuccessful systems, personnel, internal processes, or outside events.

The outcomes demonstrate that every macroeconomic factor that was considered for the study proved to be pertinent & to have a negative effect on the financial performance of Indian commercial banks but it can be gap that in our study author takes the consideration other than macro-economic determinants. (Eissa et al ., 2018) However, if a bank prioritizes short-term profits over long-term risk management, it may neglect to invest in the necessary infrastructure to mitigate operational risk, which can result in higher losses. As a result, it is important to determine what factors influence these risks in the Indian banking industry because this information will be crucial for formulating future policies that will increase the sector's general effectiveness (Ameni et al ., 2021) .

The effect of bank profitability on credit risk, operational risk & liquidity risk is a complex issue that depends on various factors. Generally, Positive and negative effects on a bank's risk profile might result from its profitability (Ahmed et al., 2020) . These paper's primary goal is to investigate how various risk affect financial performance. For this purpose, a research model has been developed for representing the various risk determinants and their impact on financial performances and defined control variables also (Minh, 2021) . It will be easier for regulators to create stronger banking regulatory mechanisms for controlling and regulating banks if they have a better understanding of the risk-taking activities that banks engage in, especially those impacted by credit risk, operating risk & liquidity risk (Amirul et al., 2022) .

The article is structured as follows: The first section is an introduction. Section 2 presents the existing literature review and theoretical framework, starting with theories related to the various variables and risks. This is divided into separate parts, including liquidity risk and profitability, operational risk and profitability, and credit risk and profitability. Section 3 highlights the adopted research model. Section 5 discusses variable measurement and the research methodology incorporated in the study, while Section 6 focuses on the variables and evaluation technique (Björn et al., 2014). Finally, Section 7 presents the results, conclusions, and limitations of the study.

Theoretical Framework \

Financial intermediation theory is an economic concept that explains how banks, insurance providers, and investment firms, among other financial organisations, help the money move between lenders and borrowers in the financial system.

According to this theory, financial intermediaries such as banks, investment banks & insurance companies play a crucial role in the economy by connecting savers & investors. They collect funds from individuals and institutions with surplus funds and then lend these funds to those who need them, such as businesses and individuals seeking to invest or borrow (Berger et al., 2016). In doing so, they help to allocate resources efficiently and reduce information and transaction costs associated with direct lending.

Financial intermediaries also provide a range of other services, such as insurance services, settlement and clearing services, risk management, liquidity provision, and financial advice. By pooling funds from many different sources, they can diversify risk and offer more favourable terms to borrowers than would be possible through direct lending. Overall, financial intermediation theory highlights the importance of it in promoting economic growth and stability. However, it also recognizes the potential risks linked with intermediation, such as the risk of financial crises and the need for effective regulation to mitigate these risks.

Literature Review:

(Kaur et al., 2019) researcher states that both public sector & private sector banks' liquidity risk & credit risk have been greatly impacted by the size and profitability of their respective banks. Data were extracted from the annual accounts of 50 scheduled commercial banks, which included foreign, private, and public sector banks, over a 17-year period, from 2000 to 2016. E-Views 9 looks into how bank-specific factors affect credit risk and liquidity using a panel data regression model.

(Ameni et al., 2017) researcher aims to ascertain the impact of market, credit, and liquidity risks on the profitability of foreign exchange banks located in Indonesia. This investigation employed a causal study methodology. The findings indicated that the NIM variable in this study had a major impact on the Return on equity while the NPL variable, return on equity variable, and LDR variable did not significantly impact on ROE.

(Tamimi & Hassan, 2015) researcher categorize Credit, capital, liquidity risk & organizational risk in four types of financial risk. Regression analysis shows that there are three important negative relationships between the performance, capital risk, and operational risk of the Gulf Cooperation Council Islamic Institutions. The results show a considerable negative correlation between the Gulf Cooperation Council and Islamic bank performance.

According to the findings, capital risk is the most significant form of risk, followed by operational risk (Samad & Abdus, 2015). The results demonstrate the significance of bank-specific parameters such as the loan-deposit ratio, the loan-loss provision relative to total assets, the equity capital ratio to total assets, and the operational expense ratio to total assets. Earnings are not impacted by macroeconomic variables or bank size.

(Qais & Boris, 2018) researcher examine & results demonstrate that, except for the liquidity variable, internal bank factors significantly affect a bank's profitability while, at a 5% degree of confidence, external economic factors are negligible. As a result, management effectiveness rather than the macroeconomic component of GDP determines the profitability of Afghan banks (Xinting et al., 2021). Liquidity risk is attributed to both decreased information precision and market risk tolerance and serves as the link between credit and liquidity. Then, we extend the traditional bond pricing model with only credit risk by include liquidity risk in the framework where the probability of the two risk occurrences is modelled by a joint distribution. The occurrence of a bond death spiral seen in a financial crisis is explained by the variable correlation between default and liquidity. (Haddad et al., 2022) researcher shows that the bank's revenue is positively and significantly impacted by the size of its assets and non-interest income. However, extent of credit portfolio & the loans that are being reviewed have a significant detrimental effect on the bank's profitability. so, banks' performance is only favorably impacted by the real interest rate.

1.2 Liquidity risk and Profitability: -

(Hamid et al., 2021) researcher use FRED annual statistics, so this paper examines the impact of macroeconomic and variables (NIM, ROE & ROA) on profitability of banks in Ghana. The estimates were performed concurrently using the SURE model by the author. The outcome shows that both internal variables and changes in the macroeconomic environment significantly affect the profit made by Ghana's commercial banks. While KA, MEFFI, LMGT, and Z-score have a favourable impact on banks' profitability, AQR (NPLs) has been shown to possess the opposite effect. While currency had a positive effect on the profitability of commercial banks in this case, GDP significantly adversely impacts the profitability of Ghana's commercial banks, and CPI inflation has no impact on the profitability of Ghana's commercial banks. (Awad & Ahmad, 2020) researcher claims that the econometric findings shows that while profitability has a positive effect on liquidity risk, efficient management has a negative impact on it. Ultimately, the impact of credit and capital on liquidity risk was unclear due to the interplay of the many components.

The results show that, of the bank variables, LQD is significantly positively impacted by the deposits ratio, bank size, operational efficiency ratio, CAR, and ROA ratio, and negatively impacted by the assets quality ratio, assets management ratio, return on equity ratio, and net interest margin ratio. (Yahaya et al., 2022) researcher findings regarding macroeconomic factors showed that interest rates & exchange rates have significant influences on LQD. Additionally, a significant and unfavorable relationship between liquidity risk and bank performance as well as between nonperforming loans and bank performance is revealed by the study's results. Furthermore, for the two proxies for bank performance, it is discovered that the interaction impact of liquidity risk and nonperforming loans on bank performance is substantially negative.

Ho: Liquidity risk have significant impact on bank profitability.

1.2.1 Credit risk and Profitability: -

(Sopan & Dutta, 2018) researcher analyze how the results of the empirical research show that bank-specific factors, size, asset quality, funding cost, and profitability level, have banks' liquidity risk. The capitalization and deposit rates, however, have a favorable impact. The inflation rate is having a positive effect on bank liquidity whereas the GDP growth rate is among the macroeconomic factors that are proven to have a negative relationship with bank liquidity.

(Chenga et al., 2020) researcher shows considerable positive relationship exists between credit risk and bank profitability. Similarly, a strong and positive correlation exists between bank profitability and liquidity risk. On the other hand, Operational risk has a bad relationship with bank profitability. The credit, operational, and liquidity risks have all been positively and significantly correlated with the bank-specific risk. Its connection to profitability was minimal. (Boahene et al., 2012) researcher

concluded that bank size, bank growth, and bank debt capital all positively and substantially impact bank profitability. (Khan et al., 2022) researcher shows that the relationships are weakened under the tails of the risk measure's conditional distribution. To get the results, the research used panel quantile models and the dynamic panel generalized method of moments (GMM). (Biswas et al., 2021) researcher analyze five credit risk indicators, CAR, NPL, and bank size were the most crucial indicators of the profitability of the CB.

Ho: Credit risk does not have a significant impact on bank profitability.

1.3 Operational risks and profitability: -

(Kirimil et al., 2022) researcher states that strong proof supporting ownership structures as the cause of the variations in commercial banks' financial performance was discovered through regression analysis. (Gadzo et al., 2019) researcher states that the financial success of Ghana's universal banks is adversely impacted by operational risk. Banks should be encouraged to lower their lending rates in order to lower the chance of default and thereby increase profitability.

After reviewing numerous research papers, the researcher concluded that, The performance of the banking industry has received a lot of attention nowadays. There is currently a sizable corpus of studies looking at the impact of resource management on bank success. Effective resource management is largely considered as being the most important factor affecting bank success. Numerous studies on the various risk of banks have been conducted globally. It may be concluded by looking at these studies & a survey of other pertinent literature on bank liquidity, creditability, and operations that bank risk depends on both internal & external factors. The external factors are macroeconomic causes and are unrelated to the bank, whereas the internal ones are bank-specific. Deposits, ROE, Capital Adequacy Ratio, ROA, and Net Interest Margin are among the bank-specific characteristics. The macroeconomic determinants are inflation rate, economic cycle & size of the banks. (Harbi & Ahmad, 2019) researcher analyzed the one risk at a time but this research is outcome of different risk factors affect bank profitability and filled the gap between liquidity risk, operational risk & credit risk with bank profitability in the literature.

Ho: Operational risk does not have a significant impact on bank profitability.

Research Objective

- I To examine the impact of liquidity risk on bank profitability.
- II To examine the impact of operational risk on bank profitability.
- III To examine the impact of credit risk on bank profitability.

Research Methodology

In this section, data sources, specifications of variables, methodology, and estimation technique are presented. The study confines NSE-listed 11 commercial banks which held by the Indian banking sector. The study intends to analyse the impact of credit risk, liquidity risk, and operational risk on banks' financial performance during a 9-year period, between 2013 and 2022, with 99 firm-year of observation. Data was acquired based on market capitalisation within the study period. Financial Data about specific banks are extracted from the prowess database and RBI annual reports. Economic data is collected from an economic outlook. This type of database uses various times in previous academic literature also. Researcher summarise, the research employs a panel data model that integrates time-series and cross-sectional data over the OLS model. Details of the banks are presented in Appendix A1.

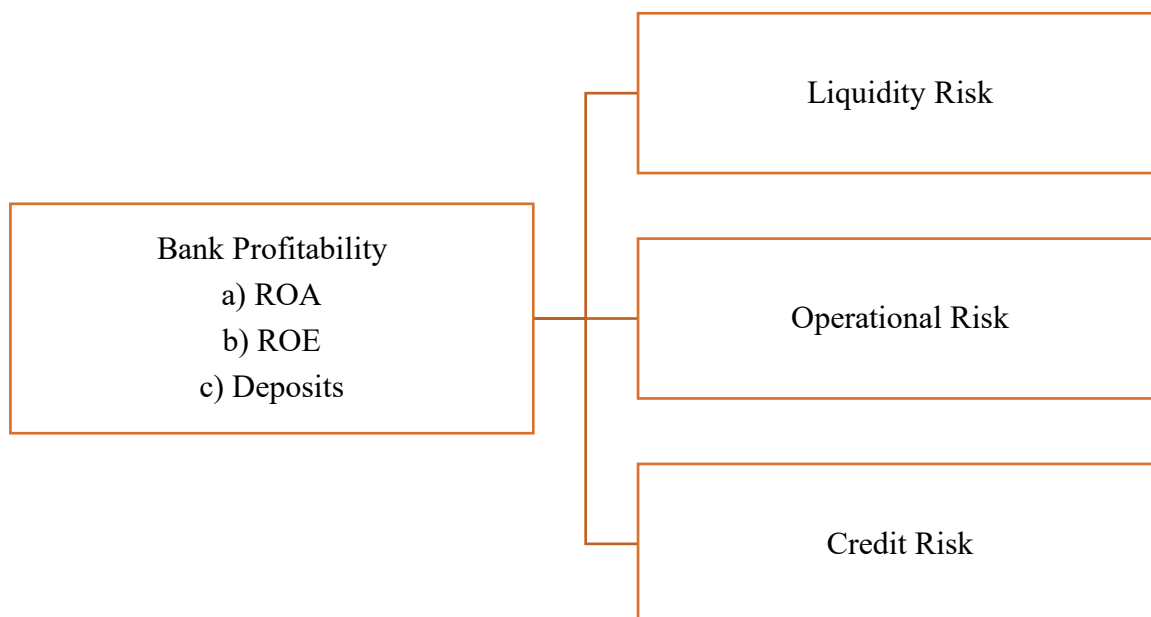


Figure 1 – Conceptual framework

Table: 1 Scale of Measurement

Types of variables	Name of variables	Measures
Dependent variable (Bank profitability)	a) Return on assets (ROA) b) Return on equity (ROE) c) Deposits	ROA is measured as Net profit divided by Total asset. ROE is net profit is divided by Total equity. Deposits is measured as Total deposits divided by Total assets or Deposits multiply by 100 & divided by Total liabilities.
Independent variable	a) Liquidity risk (LR) b) Operational risk (OR) c) Credit risk (CR)	Liquidity risk 1) Acid test ratio is Total liquid asset divided by Total asset. 2) Current ratio is Current assets divided by Current liability. Operational risk 1) Bank leverage is Reserve divided by Shareholder's equity. 2) Portfolio Concentration is addition of Bond, Common stock, Preferred stock, Mortgage loan, Real estate. Credit risk

		1) Leverage ratio is Total loans divided by Total assets. 2) Capital adequacy ratio is Total equity divided by Total assets 3) Net interest margin is Earning before tax divided by Total revenue
Control variable/ macroeconomic variable	a) Inflation b) Economic cycle c) Bank size	a) it is measured by Annual CPI b) it is measured by GDP growth rate c) it is measured by Log of total assets

1.4 Variables and Evaluation technique

The proxy of bank profitability is ROA, ROE, Deposits, CAR, and NIM. The main independent variables are liquidity risk, operational risk, credit risk & bank size. Control variables are inflation and the economic cycle. Net income is measured by the difference between profit after tax and provision for tax which is also called profit before tax. Total assets in rupees are converted by millions of 10,00,000 which is calculated for log value. Liquid assets are equal to cash and cash equivalent. Log 10 is calculated for bank size by total assets.

$$ROA_{it} = \alpha_1 + \beta_1 LR_{it} + \beta_2 OR_{it} + \beta_3 CR_{it} + \beta_4 INF_{it} + \beta_5 GDPG_{it} + \beta_6 Size_{it} \quad (1)$$

$$ROE_{it} = \alpha_1 + \beta_1 LR_{it} + \beta_2 OR_{it} + \beta_3 CR_{it} + \beta_4 INF_{it} + \beta_5 GDPG_{it} + \beta_6 Size_{it} \quad (2)$$

$$Deposits_{it} = \alpha_1 + \beta_1 LR_{it} + \beta_2 OR_{it} + \beta_3 CR_{it} + \beta_4 INF_{it} + \beta_5 GDPG_{it} + \beta_6 Size_{it} \quad (3)$$

The intercept & slope coefficient of explanatory variable are represented by the symbols α and β , respectively. i symbolize the bank size and t denotes years of observation. Additionally, GDP and INF reflect how macroeconomic factors like economic cycles and the current price level affect bank liquidity risk.

In this study, researcher adopts panel data over OLS because it combines both the dimensions of cross section & time series analysis. Firstly, descriptive statistics is used to ascertain the mean, kurtosis, standard deviation, skewness for checking the normality of distribution.

When choosing between fixed effects (FE) and random effects as the best model, econometricians treat cross-section effect term & time series. So, Hausman test is best fitted for choosing in FE (fixed effect) and RE (random effect). Additionally, to assure dataset normality and reduce high data fluctuation in particular variables. By taking their natural logarithms, a few of the variables utilised in the model have been log-transformed. As a result, the variables' notation is altered to LNIM, which stands for net interest margin logarithm, LBSZ for bank size logarithm, LINF for inflation logarithm, and LECO for economic cycle logarithm.

Results:

This section addresses the determinants of bank-specific risk and their performances with regard to Indian commercial banks as well as showed the estimation results.

1.5 Diagnostic Test:

Before conducting regression analysis, a few preliminary diagnostic tests must be carried out to choose the best method and determine whether the suggested models have satisfied the regression assumption. The outcome has been provided in table 5. Firstly, the Normality test is checked in which P-Value is 0.0008 implies data is not normally distributed. Thereafter, when homodestacity is absent, it is

assumed that the disturbances do not have heteroskedasticity, which is the property of uniform variance.

Table 2 Diagnostic test of all Model

	Model 1	Model 2	Model 3
Normality Test P-value	0.0008	0.0008	0.0008
Breusch-Pagan for heteroscedasticity P-value	0.000	0.000	0.0029
Autocorrelation P-value	0.128	0.3592	0.0000
VIF Test	1.85	1.85	1.85
Ramsey Test	0.0011	0.000	0.000

Note: This table provides an overview of the testing results for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NIM.

1.6 Descriptive analysis

The author considered 99 firm-level observations for a period starting from 2013 to 2022 for the study. The summary statistics for variables— dependent, independent & control variables are compiled in Table 1. The mean of dependent variables ROA is 0.006, ROE is 0.127, and Deposit is 0.85 whereas the CR, LR, PC, Bank Leverage, CAR and LNIM for the sample's financial performance are 4.836, 0.098, 0.094, 1, 0.54, 1.494 respectively. The following section contains descriptive statistics for control variables, with mean values of 0.822 for bank size, 0.738 for inflation, and 0.821 for economic cycle. (Almekhlafi et al., 2016)

Table 3 Descriptive Statistics

Variable	Count	Mean	Std. Dev.	Min	Max
ROA	110	.006	.005	0	.033
ROE	110	.127	.135	.006	1.096
Deposits	110	.85	.032	.733	.905
CR	110	4.836	2.301	1.658	12.492
LR	110	.098	.039	.043	.236
PC	110	.094	.044	.034	.231
B LEV	110	1	.217	-.02	1.209
CAR	110	.054	.009	.026	.108
LNIM	110	1.494	.08	1.291	1.672
LBSZ	110	.822	.026	.771	.886

LINF	110	.738	.148	.533	1.002
LECO	110	.821	.101	.573	.939

Note: This table provides an overview of the descriptive variables results for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NIM.

Source: Author's own analysis

The correlation matrix (shown in Table 3) demonstrates the degree of correlation between the regressors as well as the relationship between the commercial bank profitability i.e. dependent variable & the explanatory factors. Researcher shows the degree of correlation between the regressors is noticeably low and is below for all the variables, as can be seen. It demonstrates that the explanatory variables in the all model are not affected by the multicollinearity issue. ROA is positive correlated with ROE (0.96), deposits (0.00), CR (0.08), LR (0.15), PC (0.12) & all log variable. This is highly related with past studies. (Ramesh, 2019)

Table 4 Correlation matrix

Variabl es	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ROA	1.000											
(2) ROE	0.962	1.000										
(3) Deposits	0.006	0.052	1.000									
(4) CR	0.082	0.110	0.429	1.000								
(5) LR	0.158	0.168	0.166	0.699	1.000							
(6) PC	0.121	0.175	-0.324	0.316	0.240	1.000						
(7) B LEV	-0.190	-0.126	-0.092	-0.022	-0.029	0.003	1.000					

(8) CAR	- 0.06 6	- 0.27 5	- 0.15 9	- 0.151 5	- 0.00 9	- 0.25 6	- 0.15 3	1.00 0				
(9) LNIM	- 0.01 4	- 0.14 3	- 0.17 6	- 0.13 1	0.19 6	- 0.22 6	- 0.22 6	0.60 6	1.00 0			
(10) LBSZ	- 0.15 2	- 0.16 7	- 0.46 9	0.06 6	0.47 2	0.15 2	0.22 5	0.25 3	0.47 9	1.00 0		
(11) LINF	- 0.13 8	- 0.13 1	- 0.07 5	- 0.38 9	- 0.25 7	- 0.19 8	- 0.08 2	0.11 3	- 0.02 4	- 0.07 0	1.00 0	
(12) LECO	- 0.08 3	- 0.12 7	0.11 3	0.22 2	0.21 3	0.08 4	0.08 6	0.02 6	0.08 2	0.09 5	- 0.23 6	1.00 0

Spearman rho = -0.236

Note: This table provides an overview of the correlation matrix between variables for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NIM.

Source: Author's own analysis

In the study, the choice between the fixed and random effects models was made using the Hausman test. The null hypothesis of the Hausman test is random effect model is consistent. The results of the Hausman test are shown in Table 3 for Models 1, 2, 3, and 4, respectively, with the dependent variables ROA, ROE, Deposit on independent variable Liquidity risk, Operational risk, and Credit risk. It shows a p-value is more than 0.05 for model 1 and model 2. Hence, null hypotheses were accepted and the random effect model is applicable in model 1 and model 2. And, the P-value is less than 0.05 for model 3. Therefore, null hypotheses were rejected and the fixed effect model was applied in model 3.

Table 5 Hausman's (1978) specification test

	Model 1	Model 2	Model 3
Chi-square test value	9.191	7.427	25.174
P-value	0.326	0.593	0.003

Table 6 Matric of Regression outcome

ROA	Coef.		St. Err.	t- value	p- value	[95% Conf	Interval]	Sig
CR	0		0	-1.38	.167	-.001	0	

LR	.028		.02	1.42	.156	-.011	.068	
PC	.008		.012	0.70	.484	-.015	.031	
B LEV	-.009		.003	-3.58	0	-.015	-.004	***
CAR	-.081		.059	-1.38	.167	-.197	.034	
LNIM	-.001		.008	-0.18	.856	-.018	.015	
LBSZ	-.038		.028	-1.39	.163	-.092	.016	
LINF	-.009		.004	-2.39	.017	-.016	-.002	**
LECO	-.006		.005	-1.28	.202	-.015	.003	
Constant	.064		.02	3.15	.002	.024	.104	***

Note: This table provides an overview of the regression result of variables for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NIM.

Source: Author's own analysis

Table 7 Matrix of Regression

ROE	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
CR	-.012	.008	-1.50	.133	-.028	.004	
LR	.52	.478	1.09	.276	-.416	1.457	
PC	.076	.28	0.27	.787	-.472	.623	
B LEV	-.193	.063	-3.08	.002	-.316	-.07	***
CAR	-5.624	1.407	-4.00	0	-8.381	-2.867	***
LNIM	.133	.196	0.68	.499	-.252	.518	
LBSZ	-1.07	.659	-1.62	.104	-2.362	.221	
LINF	-.238	.088	-2.72	.007	-.41	-.067	***
LECO	-.104	.113	-0.92	.36	-.326	.118	
Constant	1.565	.487	3.21	.001	.61	2.52	***

Note: This table provides an overview of the regression results for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR

is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NIM.

Source: Author's own analysis

Table 8 Matrix of Regression outcomes

Deposits	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
CR	.005	.001	3.44	.001	.002	.007	***
LR	.164	.086	1.92	.055	-.003	.332	*
PC	-.306	.056	-5.47	0	-.416	-.197	***
B LEV	-.013	.013	-0.94	.347	-.039	.014	
CAR	-.727	.239	-3.05	.002	-1.195	-.259	***
LNIM	.013	.038	0.35	.729	-.062	.089	
LBSZ	-.398	.186	-2.13	.033	-.763	-.032	**
LINF	.001	.013	0.10	.919	-.025	.028	
LECO	.02	.017	1.17	.243	-.013	.053	
Constant	1.181	.128	9.25	0	.931	1.431	***

Note: This table provides an overview of the regression results for the sample of public sector banks in India. Control variable such as inflation measured by Annual CPI, economic cycle measured by GDP growth rate, Bank size is measured by log of total assets. Bank profitability is measured by 3 variables. Firstly, ROA is measured as division of net profit by total asset. Furthermore, ROE is measured as division of net profit by total equity & deposit is measured by division of total deposit by total liabilities. LR is analyse through acid test ratio which is measured by total liquid asset divided by total asset. current ratio measured by division of current assets by current liability. OR is measured by bank leverage and portfolio concentration. CR is measured by leverage ratio, capital adequacy ratio & NI. Here, *** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author's own analysis.

Findings & Discussion:

Researchers applies use random effect in model & model 2 but use fixed effect in model 3. The author presented the empirical results of hypothesis 1. Table 6, and Table 7 presented the result of REM regression analysis to inspect the effect of different types of risk which are classified as LR, OR, and credit risk on ROA. And, table 8 presented the result of FEM regression analysis to examine the impact of risk determinants on Deposit. Leading to the same conclusion positive impact of risk determinants on deposits. (Andrew Levin, 2002) The R^2 value of *model 1* is 0.756. It is indicated as the degree to which the dependent variable is affected by the independent variables. In this study, ROA was influenced by 70 percent of the risk determinants. This implied that there is a significant effect of bank profitability on commercial bank performance. The R^2 value of *model 2* is 0.850 which also implied a significant impact on bank performance. The R^2 value of *model 3* is 0.648 which signifies deposit is affected by risk determinants.

According to the findings, the research found that profitability is unaffected by market capitalization, bank size, or GDP per capita. Additionally, the findings indicated that the long-term profitability of banks in the study nations will rise due to loans & banking sector growth. However, the research also found that deposits reduce profitability.

In Model 1, the percentage of bank leverage and inflation is significant at a 1%, 5% respectively which means that there is an impact of bank leverage and inflation on ROA. In Model 2, bank leverage, capital adequacy ratio, and inflation are significant at the 1 percent level which means these have impact on ROA. In Model 3, CR, Portfolio Concentration, Capital Adequacy Ratio, and Bank Size at 1 percent significance level, bank size at 5% and LR at 10% significant level. (Dutta & Abhijit, 2018) The findings of the current study aligned with the predictions made in previous studies regarding Indian commercial Banks (Badawi 2017).

It can be concluded from this research that indicates the effect of firm-specific risk, (credit risk, liquidity risk & operational risk) on the bank profitability of 11 commercial banks on National Stock Exchange (NSE). The panel data facts indicates that Deposits measured as division of total deposits by total assets, and deposits multiplied by 100 and divided by total liabilities outcomes a positive link with profitability proxied by ROA, ROE, and Deposit. This study's conclusion is that bank management have adequate processes in place to keep surveillance on parties' funds. In conclusion, bank profitability can have both positive and negative impacts on credit risk, operational risk, and liquidity risk. To effectively manage these risks, banks must strike a balance between profitability and risk management, investing in the necessary infrastructure to mitigate risks while generating sustainable returns.

Banks can improve their liquidity situation with the aid of liquidity risk management. Each bank maintains a healthy amount of liquidity for managing various risk in order to avoid bank failure. Thus, if the banking management implements these policies well, they should be able to mitigate the adverse consequences of credit, liquidity, and operational risks while also improving their financial performance.

Furthermore, since our focus is concentrating on developing countries, it could be interesting to compare the hazards faced by developed and emerging countries in a future study. Other risk measures, such as market risk, could be used in future studies to evaluate bank risk. While using the same variables, a comparison between private and public banks might result in distinct results.

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