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A study of the relationship between public sector bank NPAs and external factors

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Abstract: *This study delves into the relationship between external factors and Non-Performing Assets (NPAs) in public sector banks in India. A robust financial system plays a crucial role in poverty alleviation and enhancing living standards. However, the emergence of NPAs poses a significant challenge to the banking sector's stability and performance. Through a comprehensive review of literature, various macroeconomic and bank-specific factors influencing NPAs are identified. The research methodology combines exploratory and descriptive approaches, utilizing secondary data from prominent public sector banks over a ten-year period. Multiple regression analysis is employed to quantify the influence of external determinants such as GDP, inflation, and industrial production on NPAs. The findings reveal significant relationships between GDP and NPAs, emphasizing the importance of economic growth in mitigating NPAs. However, inflation and industrial production show insignificant impacts on NPAs. Overall, the study provides valuable insights for policymakers and stakeholders in formulating effective strategies to address NPAs and strengthen the resilience of the banking sector.*

Keywords: *Non-Performing Assets (NPAs), GDP, Inflation, Industrial Production etc.*

I. INTRODUCTION

A robust financial system serves as a potent tool in alleviating poverty and enhancing the overall standard of living. The banking industry, through its intermediary functions, facilitates the production, distribution, exchange, and consumption processes within an economy. By effectively moving money throughout the economic system, banks support its expansion and contribute to economic growth. As noted by Reddy (2002), the efficacy of the banking system significantly influences the pace of economic development. A well-developed banking sector fosters economic growth by enabling efficient savings and investment mechanisms. Moreover, Bartaria and Parveern (2014) emphasize that enhancing access to banking and financial services can bolster growth rates across global economies. Policymakers recognize the pivotal role of India's banking system in nurturing sustained economic progress, as highlighted by Ibrahim and Thangavelu (2014). They underscore the importance of a robust financial system in poverty reduction and enhancing living standards. Yadav (2014) further accentuates the banking industry's significance as a catalyst for economic growth and development. However, the emergence of non-performing assets (NPAs) poses a significant challenge to the Indian banking system. NPAs directly impact banks' financial performance by reducing earnings, investable funds, and other key financial metrics. Shalini (2013) identifies three primary reasons for NPAs: wilful default, improper utilization of borrowed funds, and inadequate pre-loan assessments. The magnitude of NPAs serves as a critical indicator of a banking system's health, affecting liquidity, profitability, asset quality, and overall viability of banks, as highlighted by Upadhyay (2010). The current study aims to address this gap by conducting macro-level research, analyzing the

relationship between NPAs in public sector banks and external factors. Through this research, insights into effective strategies for mitigating NPAs and strengthening the resilience of the banking sector can be gleaned.

II. REVIEW OF LITERATURE

Factors influencing Non-Performing Assets (NPAs) are typically categorized into macroeconomic factors and bank-specific factors. Macroeconomic factors encompass a range of variables such as GDP per capita, inflation rates, interest rates, and business cycles (Rajput, Arora, & Kaur, 2012; Stuti & Bansal, 2013; Abid et al., 2014). Many researchers have investigated the relationship between macroeconomic variables like GDP and inflation with NPAs (Selvarajana & Vadivalagan, 2013; Kauko, 2012; Louzis, Vouldis, & Metaxas, 2012). Waweru (2009) highlighted the detrimental impact of non-performing loans on the financial stability of institutions in Kenya since 1986. The survey identified the national economic crisis as a major external influence, alongside deficiencies in debt collection policies. Additionally, the rate of unemployment has been identified as another macroeconomic variable affecting NPAs (Tripathi, Parashar, & Mishra, 2014). Research has also demonstrated a relationship between inflation rates and default rates (Pradhan, 2012), with post-demonetization studies focusing on the impact of government policies on Indian banks' NPAs (Kotnal, Ahmed, & Naikwadi, 2012). Studies like Ramu (2008) have scrutinized the management of NPAs in Urban Cooperative Banks (UCBs), revealing concerning NPA ratios despite their pivotal role in credit distribution. Kaur and Saddy (2011) observed a decrease in loan assets as a share of total NPAs over time, highlighting risks associated with NPAs in the agriculture industry and disparities between priority and non-priority sector NPAs. Satpathy, Patnaik, and Pradhan (2010) conducted comparative analyses across different types of banks, uncovering negative associations between net profit and NPAs and positive correlations between NPAs and total advances. Chaudhary and Sharma (2011) delved into a comparative study of NPAs in public and private sector banks, revealing significantly higher levels of NPAs in public sector banks. Furthermore, the Master Circular (2013) aimed to assess the performance of selected banks in managing NPAs and their impact on profitability, utilizing statistical methods such as two-way ANOVA. The circular focused on nationalized banks like Bank of Baroda, Bank of India, Bank of Maharashtra, Central Bank of India, Dena Bank, and Punjab National Bank. Overall, these studies collectively contribute to a comprehensive understanding of the multifaceted dynamics influencing NPAs in the banking sector, aiding policymakers and stakeholders in formulating effective strategies to address them.

III. RESEARCH METHODOLOGY

The research methodology combines exploratory and descriptive approaches to examine the relationship between external factors and Non-Performing Assets (NPAs) in public sector banks in India. The study begins with an exploratory phase aimed at understanding the various factors influencing NPAs. This phase lays the groundwork for subsequent analysis. Following the exploratory phase, the research adopts a descriptive approach where hypotheses are developed based on insights gained. These hypotheses are then statistically evaluated using available data to draw conclusions in line with predetermined objectives. Secondary data from public sector banks and various macroeconomic variables like inflation, GDP etc are collected over a ten-year period from 2013-2014 to 2022-2023. Five prominent public sector banks; SBI, Bank of Baroda, PNB, Canara Bank and Union Bank of India are chosen based on their high yearly earnings in 2023, serving as representative samples. Various secondary sources are utilized, including Annual Reports and Accounts of banks, Bank Economist Proceedings, Reserve Bank of India (RBI) publications such as bulletins, reports, and handbooks, as well as doctoral dissertations, and RBI speeches and press releases. Financial statements from 2013–2014 through 2022–2023 are analyzed to identify trends and patterns in NPAs across selected public sector banks.

IV. FINDINGS

“Multiple regression analysis” has been used to quantify the influence of outside influences. In the multiple regression study, the Net NPA of public sector banks for the previous ten years was used as the dependent variable, while the four main

external determinants GDP, General Industrial Production, Inflation, and Gross Capital Formation were used as the independent variables. This section provides a detailed study of the regression analysis & findings and their interpretation.

Table 1: Model Summary for multiple regression

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.892 ^a	.797	.695	15371.21789	1.339
a. Dependent Variable: Gross NPA of Public sector Banks					
b. Predictors: (Constant), General Industrial Production, Inflation, GDP at current Prices					

The regression model depicts an R value of 0.892, R Square value of 0.797, and adjusted R square value of 0.695. R value shows a high correlation between the GDP, General Industrial Production, Inflation and Gross NPA of public sector banks. R-square shows that 79 percent of the variation is caused by the independent variables in the dependent variables, while rest of the 21 percent is caused by the unknown factors.

Table 2: ANOVA table for multiple-regression analysis

Table 4.28: ANOVA table for multiple-regression analysis ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5549801910.093	3	1849933970.031	7.830	.017 ^b
	Residual	1417646035.629	6	236274339.271		
	Total	6967447945.722	9			
a. Dependent Variable: Gross NPA of Public sector Banks						
b. Predictors: (Constant), General Industrial Production, Inflation, GDP at current Prices						

The results of ANOVA test depict that the f-value i.e 7.830, is significant at 95 percent confidence level. Hence, the regression model between the independent variables; General Industrial Production, Inflation, GDP at current Prices, and the dependent variable i.e. Gross NPA of Public sector Banks, was found to be significant.

Table 3: Coefficients for multiple-regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10614.229	96364.360		.110	.916
	Inflation	-4881.017	2687.287	-.350	-1.816	.119
	GDP at current Prices	457.113	184.444	.730	2.478	.048
	General Industrial Production	.993	80.839	.004	.012	.991
a. Dependent Variable: Gross NPA of Public sector Banks						

Null Hypothesis (H₀₁): Inflation has a significant impact on Gross NPA of Public sector Banks

Regression coefficient of the “Inflation” variable was -0.350 (standardized) and, with a t-value of -1.816, and corresponding p-value of .119. Since, the p-value or significant value was more than .05. Thus the null hypothesis “Inflation has a significant impact on Gross NPA of Public sector Banks” got rejected. Hence, it can be said that Inflation has insignificant impact on the Gross NPA of Public sector Banks.

Null Hypothesis (H₀₂): GDP at current Prices has a significant impact on Gross NPA of Public sector Banks

Regression coefficient of the “GDP at current Prices” variable was .730 (standardized), with a t-value of 2.478, and corresponding p-value of .048. Since, the p-value or significant value was less than .05. Thus the null hypothesis “**GDP at current Prices has a significant impact on Gross NPA of Public sector Banks**” got accepted. Hence, it can be said that GDP at current Prices has a positive (the value of beta i.e. 457.113 was positive) and significant impact on the Gross NPA of Public sector Banks.

Null Hypothesis (H₀₃): General Industrial Production has a significant impact on Gross NPA of Public sector Banks

Regression coefficient of the “General Industrial Production” variable was .004 (standardized) with a t-value of .012, and corresponding p-value of .991. Since, the p-value or significant value was more than .05. Thus the null hypothesis “**General Industrial Production has a significant impact on Gross NPA of Public sector Banks**” got rejected. Hence, it can be said that General Industrial Production has no significant impact on the Gross NPA of Public sector Banks.

V. CONCLUSION

The study sheds light on the intricate dynamics influencing NPAs in public sector banks in India. Through a robust research methodology combining exploratory and descriptive approaches, the relationships between external factors and NPAs are examined. The findings underscore the critical role of economic growth, as reflected by GDP, in mitigating NPAs. However, inflation and industrial production exhibit insignificant impacts on NPAs. These insights highlight the importance of implementing policies and measures to promote sustainable economic growth and enhance the banking sector's stability. Policymakers can leverage these findings to develop targeted interventions aimed at reducing NPAs and fostering a conducive environment for banking sector growth. Overall, the study contributes to a deeper understanding of NPAs and provides a foundation for future research in this area.

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