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MACROECONOMIC VARIABLES AND PERFORMANCE OF COMMERCIAL BANKS IN INDIA

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Abstract- This paper examines the Impact of Macroeconomic Variables on the Return on Assets (ROA) of selected Commercial Banks in India for the period of 2018-2024. The study uses secondary quantitative data extracted from annual financial reports of the banks from the period investigated. The study employs multivariate linear regression to determine the relationship between ROA and three independent variables, namely Real Gross Domestic Product (GDP) Growth Rate, Inflation Rate, and Unemployment Rate.

Keywords: Macroeconomic Variables, Gross Domestic Product (GDP) Growth Rate, Inflation Rate, and Unemployment Rate.

1. INTRODUCTION

The overall strength and stability of an economy are significantly influenced by the performance of banks. Banks are key players in providing credit to individuals and businesses, promoting investment, creating job opportunities, and supporting financial stability in an economy. Macroeconomic factors such as Inflation Rate, Unemployment Rate and Real GDP, Growth Rate may have a significant impact on the performance of banks, and consequently, the performance of the entire economy. Therefore, it is important to analyze the effect of macroeconomic factors on bank performance to ensure economic stability, make well-informed investment decisions, and effectively manage the risks associated with changes in these macroeconomic factors.

The performance of banks worldwide has experienced significant fluctuations in recent times, largely attributed to major global issues, including the pandemic. Developing economies have been disproportionately affected compared to developed economies, highlighting the necessity to examine the relationship between macroeconomic factors and bank performance in these regions to facilitate economic and financial recovery. This research paper will focus on analyzing the performance of banks in India, a developing country located in Southeast Asia. India has faced economic challenges such as inflation, the balance of payment deficits, and a weakening currency in recent years, which have impacted the country's financial stability.

The COVID-19 outbreak resulted in large amounts of unprecedented spending in developed economies, consequently causing the interest rate to jump from 2% to 7%. This resulted in a deficit in the Balance of Payments of India, which ultimately led to a depreciation of the Rupee and a rise in domestic prices. Furthermore, the outbreak of war in Ukraine has worsened the balance of payments and increased inflationary pressures, mostly due to the disruption of global energy markets. As part of Indian Bank’s efforts to keep the Rupee from depreciating, there was an insufficient supply of dollars to satisfy import demand.

The study draws on previous research on the impact of macroeconomic variables on bank performance, including in the United Kingdom, Kenya, and the Gulf Cooperation Council countries. The results of these studies have varied, with some finding positive impacts of interest rates and GDP growth rate on bank performance, while others find negative impacts of inflation and foreign exchange rates. Additionally, previous research has shown that the impact of macroeconomic variables on bank performance can vary between domestic and foreign banks. Based on the previous research, the study formulates hypotheses regarding the relationship between macroeconomic variables and ROA in India. The report concludes with a hypotheses formulation, which states that there is a significant negative relationship between the Unemployment Rate and ROA.

2. REVIEW OF LITERATURE

Saeed, 2014 demonstrated that interest rates had a positive impact on bank performance in the United Kingdom. At the same time, he found that GDP and inflation rates had a negative impact.

These results were concluded by carrying out an econometric-based regression analysis using a panel of 73 commercial banks in the United Kingdom. However, a similar study on commercial bank performance in Kenya, carried out by (Kiganda, 2004), found that GDP and inflation rate had a positive effect on bank performance. In addition, this study also showed that foreign exchange rates had a negative effect on the performance of banks. These results were also found using econometric- based regression methods. Ongore, 2013 on the other hand, used panel

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data analysis and reported empirical findings showing macroeconomic factors had little impact on Kenyan bank performance.

Pasiouras & Kosmidou, 2007 examined how the overall banking environment affected the profitability of commercial domestic and foreign banks operating in 15 European Union countries. Their paper concluded that both GDP and inflation had significant impacts on bank performance but opposing effects on foreign and domestic banks. They argued that this could be related to differences in the knowledge regarding macroeconomic conditions in the different countries.

Abdullah & Husam, 2019 studied the effects of industry-specific and macroeconomic variables on commercial bank performance in the Gulf Cooperation Council (GCC) countries. They employed the panel-corrected standard error (PCSE) approximation to investigate fundamental links considering the stable panel statistics of 62 commercial banks in the region. Their findings on macroeconomic variables revealed the inflation rate to be statistically insignificant and have a negative impact on bank performance. Furthermore, they also considered oil prices, a major consideration in the GCC, as a variable which proved to have a significant and positive impact on bank functioning.

Naceur, 2003 investigated the determinants of profitability in the Tunisian banking industry. In this case, both a fixed effects and random effects model were considered for the regression. However, the paper concluded that macroeconomic indicators such as growth and inflation rate had no impact on banking profitability.

Hasan & Bashir, 2005 did a study to investigate the profitability of Islamic Banks all over the world. They used data from Islamic banks worldwide, over 6 years and carried out regression analysis. Their study revealed that increasing GDP had a strong positive impact on bank performance, whereas the inflation rate did not seem to have a significant impact. Furthermore, they found that the size of the banking system has a negative impact on bank profitability.

Islam & Islam, 2022 carried out a study to determine the impact of macroeconomic factors on bank performance in India. The research utilized random effect regression using data from 35 commercial banks. The regression results revealed that GDP and unemployment rate have a significant impact on the return on assets for banks. On the contrary, it was concluded that inflation did not have a significant impact.

Gautam, 2021 found in his study that interest rate, inflation rate, and GDP had a significant impact on bank performance in Nepal. The methodology included using the Hausman test to examine endogeneity issues in predictor variables and using the OLS estimation to validate the effect of predictors on financial performance.

Baba & Nasieku, 2016's empirical study offered empirical support for the effect of macroeconomic factors on bank performance. According to empirical findings, the exchange rate, interest rate, and unemployment rate have a negative impact on bank performance in Nigeria.

3. OBJECTIVE OF THE STUDY

- To analyze the factors and identify their relationship with bank performance.

4. DATA COLLECTION

The research carried out is both qualitative and quantitative in nature. Interpretations are made based on both statistical data and subjective information. All the gathered data is accordingly presented in a logical manner for the purpose of attaining the objectives of this paper. Mainly, secondary data is used in this report which has been collected through the annual report of the banks, related websites, and journals.

5. RESEARCH METHODOLOGY

The research carried out was both qualitative and quantitative in nature. This report is based on secondary quantitative data, so the design is Quantitative where the relationship between the dependent variable and the independent variables are measured to find the correlation among them and how significant these relations are. Interpretations were made based on both statistical data and subjective information. All the gathered data are accordingly presented in a logical manner for the purpose of attaining the objectives of this paper.

The Multivariate Regression Model equation is:

$y = \beta 0 + \beta 1\ X1 + \beta 2\ X2 + \beta 3X3 + \ldots\ldots\ldots + \in$

Where,

- y is the predicted value of the dependent variable (y) for any given value of the independent variable (Xn).
- $\beta 0$ is the intercept, the predicted value of y when the Xn is 0.
- βn is the regression coefficient, or how much we expect y to change as Xn increases.
- Xn is the independent variable.
- $\in$ is the error of the estimate, or how much variation there is in our estimate of the regression coefficient.

The Regression Model equation for this study is as follows:

$$\boldsymbol{ROA} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}\ \boldsymbol{GDP} + \boldsymbol{\beta 2}\ \boldsymbol{INF} + \boldsymbol{\beta 3}\ \boldsymbol{UN} + \in$$

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The model aims to analyze the effect of the macroeconomic variables predicting the Return on Asset (ROA). A multivariate regression model was developed with the collected data.
Furthermore, Data Analysis Tool Pak was used to obtain the descriptive statistics & ANOVA.

6. MULTIVARIATE LINEAR REGRESSION ANALYSIS

Multivariate Linear Regression is employed to determine the relationship between two or more independent variables and a single dependent variable. As there was more than one regressor (independent variables), a multivariable regression model was developed. The Regression Model considers Return on Asset (ROA) as the dependent performance indicator of banks, which is dependent upon three external independent variables. The Regression Model equation for this study is as follows:

$$\boldsymbol{ROA} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}\ \boldsymbol{GDP} + \boldsymbol{\beta 2}\ \boldsymbol{INF} + \boldsymbol{\beta 3}\ \boldsymbol{UM} + \in$$

Where,

- ROA = Return on Asset
- GDP = Real Gross Domestic Product Growth Rate
- INF = Inflation Rate
- UM = Unemployment Rate

6.1 Estimating the Parameters

Table-6.1 Multiple Variate Linear Regression

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.0330	0.0330	1.0001	0.3265
Real GDP Growth Rate	-0.0253	0.0496	-0.5094	0.6148
Inflation Rate 0.9240	0.0504	0.5229	0.0963	0.9240
Unemployment Rate	-0.5177	-0.2103	2.4617	0.0208

Therefore, the estimated model using Excel results as follows:

$$\boldsymbol{ROA} = 0.033 + (-0.025)\ \boldsymbol{GDP} + (0.050)\ \boldsymbol{INF} + (-0.518)\ \boldsymbol{UM} + \in$$

The table shows the estimated coefficients for each independent variable, along with their corresponding standard errors, t-statistics, and p-values. From this model, we can estimate the value of $\beta 0$ to be 0.033, $\beta 1$ stands at (-0.025), $\beta 2$ stands at 0.050 and $\beta 3$ is estimated to be (- 0.0518). The first row of the table refers to the intercept or the constant term in the regression equation. The coefficient of 0.0330 suggests that the expected value of the dependent variable when all the independent variables are zero is 0.0330.
The second row shows the estimated coefficient for the independent variable "Real GDP Growth Rate." The negative coefficient of -0.0253 suggests that the dependent variable is expected to decrease by 0.0253 units for every one-unit increase in the Real GDP Growth Rate. The t-statistic of -0.5094 and p-value of 0.6148 suggest that this coefficient is not statistically significant at the 5% significance level.
The third row shows the estimated coefficient for the independent variable "Inflation Rate." The positive coefficient of 0.0504 suggests that the dependent variable is expected to increase by 0.0504 units for every one-unit increase in the Inflation Rate. However, the large standard error of 0.5229 and the high p-value of 0.9240 suggest that this coefficient is not statistically significant at the 5% significance level.
The fourth row shows the estimated coefficient for the independent variable "Unemployment Rate." The negative coefficient of -0.5177 suggests that the dependent variable is expected to decrease by 0.5177 units for every one-unit increase in the Unemployment Rate. The t-statistic of -2.4617 and the low p-value of 0.0208 suggest that this coefficient is statistically significant at the 5% significance level. The only significant parameter is the Unemployment Rate as the P-value is less than 0.05. Therefore, the Return on Asset (ROA) and Unemployment Rate have a significant negative relationship. The unemployment rate refers to the percentage of the population of the labour force who are willing and able to work but are unable to do so. As the unemployment rate increases, people have less disposable income at hand as they are out of work, which results in lower deposits in banks. The interest income is the principal source of revenue for most commercial banks. It is earned by pulling funds from depositors who do not require their funds immediately. In exchange for their deposits, depositors receive a specified interest rate and protection for their funds. The bank can then lend the deposited funds to borrowers with immediate cash needs. The borrowers must repay the borrowed funds at a higher interest rate than depositors receive. The bank can profit from the interest rate spread, which is the difference between the amount of interest paid and received. Therefore, it is evident why the Return on Asset and Unemployment Rate has an inverse relationship.

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CONCLUSION

The primary purpose of the study was to identify the relationship between macroeconomic conditions on the financial performance of five Private Commercial Banks (PCBs) in India using annual data from 2016 to 2021. Using a multivariate linear regression model, the report examines the impact of the Real Gross Domestic Product (GDP) Growth Rate, Inflation Rate (INF), and Unemployment Rate (UM) on the Return on Asset (ROA) of banks. The null hypothesis asserts that there are no relationships between ROA, GDP, INF, and UM, while the alternate hypothesis asserts that there are such relationships. The coefficient for GDP in the multivariate linear regression analysis is negative, indicating that an increase in GDP is associated with a decrease in ROA. A positive coefficient for INF indicates that a rise in inflation is associated with a rise in ROA. A negative coefficient for UM indicates that an increase in unemployment is related to a decline in ROA. The p-value for GDP is greater than the significance threshold of 0.05, indicating that there is no statistically significant relationship between GDP and ROA. However, the p-value for UM is less than 0.05, indicating that the relationship between UM and ROA is statistically significant. Banks should therefore consider these factors when making investment decisions and managing their portfolios.

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