

Impact of Macroeconomic Variables on Nifty Private Bank Index and Nifty PSU Index

Dr. M. Jegadeeshwaran¹ and Navitha P²

Assistant Professor, Department of Commerce¹

Research Scholar, Department of Commerce²

Bharathiar University, Coimbatore, India

Abstract: *This study covers the influence of Macroeconomic variables like Inflation rate, Exchange rate of Indian Rupee toward US Dollar and Interest rate on Nifty Private Bank Index and Nifty PSU Index. Data for a period of 10 years from 2012 to 2021 is collected and analysed using Correlation and Multiple Regression. The results of the study shows that Inflation rate is negatively correlated with both Nifty Private Bank Index and Nifty PSU Index; Exchange rate is positively correlated with Nifty Private Bank Index and is negatively correlated with Nifty PSU Index; Interest rate is negatively correlated with Nifty Private Bank Index and positively correlated with Nifty PSU Index. From the regression analysis it is understood that the Macroeconomic variables significantly impact the changes in both Nifty Private Bank Index and Nifty PSU Index.*

Keywords: Inflation rate, Exchange rate, Interest rate, Nifty Private Bank Index, Nifty PSU Index.

I. INTRODUCTION

Now a days, most of the people have started investing their savings in the Stock Market for a wide range of reasons. One main reason among those is the expectation of high returns within a short span of time. Along with this, different investment instruments with varying range of risk and return is available in the stock market. Stock market sometimes provides quick and high returns to investors whereas sometimes it may be sudden downfalls also. There are several factors which affects the performance of the stock market. It is now been said that the stock market of the country is the mirror reflection of the Macro-economic condition of a country.

Many studies were conducted to find out the influence of Macro-economic variables on different stock markets. In a developing country like India, the major Macroeconomic variables play a major role in the performance of stock market. The Indian Stock Market is regulated by the regulatory body named Security Exchange Board of India which was established in 1988.

National Stock Exchange of India Limited (NSE), which is the leading stock exchange in India, was established in the year 1992. NSE is a true indicator of the performance of the Indian Economy. Any changes occurring in the Indian Economy is always reflected in the indices of NSE. In order to analyse the impact of Macroeconomic variables on stock indices, Nifty Private Bank Index and Nifty PSU Index is selected. Among the wide range of Macroeconomic variables, the major ones such as Inflation rate, Interest rate and Exchange rate is selected. This study focuses to study the impact of Inflation rate, Interest rate and Exchange rate on the Nifty Private Bank Index and Nifty PSU Index.

II. REVIEW OF LITERATURE

(Mgammal, 2012) investigated the short term and long term association between stock prices and exchange rates by using monthly and quarterly data of two gulf countries, Kingdom Saudi Arabia and United Arab Emirate for a period January 2008 to December 2009. In the study Exchange Rate is taken as Independent Variable, Stock Prices is taken as Dependent Variable, and Inflation Rate and Interest Rate is taken as Control Variables. For the analysis of data, Pearson Correlation and Regression is used and it was found that in the short term the exchange rate influence positively on the stock market price index for United Arab Emirate and there is no association for them for Kingdom Saudi Arabia; and in the long term the exchange rate influence negatively on stock market price index for the United Arab Emirate and there is no association between these variables in Kingdom Saudi Arabia.



(Syed Imran Sajjad, Haroon Shafi, Saleem Ullah Jan, Madiha Saddat, Ijaz ur Rehman, 2012) examined the relationship between Karachi Stock Exchange and Macro-economic variables like Inflation rate, Exchange rate, Treasury bills and Interest rate for a period from January 2005 to December 2010. It was found that performance of Macro-economic variables somehow affects the stock index and the stock prices in Pakistan do not reflect the macroeconomic condition of the country.

(Indra Ria Safitri & Suresh Kumar, 2014) investigated the impact of Interest rate, Inflation rate, Exchange rate of Indonesia Rupiah toward Dollar and GDP on Plantation sector's Stock price index at the Indonesia stock exchange for the year 2008 to 2012 using Multiple Regression analysis. The results of the study indicates only GDP significantly influences the stock price index of plantation sector; and the other variables such as Interest rate, Inflation rate and Exchange rate of Indonesia Rupiah toward Dollar do not give any significant influence to the plantation sector's stock price index.

(Dr. Chandra Mohan & Mrs. N. Chitradevi, 2014) investigated the impact of inflation and Exchange rate on stock market return in India for a period 2003 to 2013. Inflation and Exchange rate is taken as Independent variables and Price return of NSE NIFTY is taken as Dependent variables. Multiple Correlation and Linear multiple regression tools were used for analysis. The results show that Inflation is negatively influencing the price return of NSE Nifty, and Exchange rate is positively affecting the price return of NSE Nifty.

(Shadi Yousef Al-Abdallah & Nada Ibrahim Abu ALjarayesh, 2017) covers the influence of interest rate, exchange rate and Inflation on stock returns of ASE Free float index for a time period from 2005 to 2015 using Multiple Regression models. The results of the study indicate that stock returns are negatively correlated to interest rate; positively correlated with Inflation and there is zero relationship between Exchange rate and stock returns.

(Izunobi Anthony Okechukwu, Nzotta Samuel Mbadike, Ugwuanyim Geoffrey & Benedict Anayochukwu Ozurumba, 2019) made an effort to investigate the relationship between stock market volatility and macroeconomic variables such as Exchange rate, Inflation and Interest rate in Nigeria by using monthly series data from 1995 to 2014. Using GARCH Model and EGARCH Model it has been found that Interest rate has a negative relationship with stock market returns, while the Inflation rate and Exchange rate has a positive relationship with stock market returns. The study concluded that there is high and persistent volatility in the Nigerian stock market returns and the Macroeconomic variables like Exchange rate, Interest rate and Inflation rate significantly impact stock market return volatility in Nigeria.

(Fahlevi, 2019) focus on examining the impact of Foreign Exchange rates, Inflation rates and interest rates on stock prices on Indonesia by using monthly data of 5 years ranging from 2013 to 2017. By using Multiple Regression for data analysis it has been found that Exchange rate positively influence stock prices, Interest rate negatively influence stock prices and inflation has a positive relation with stock prices.

(Jefry & Abid Djazuli, 2020) examines the effect of Inflation, Interest rates and Exchange rates on stock prices in basic industrial sector and chemical manufacturing companies on the Indonesia stock exchange for a period from 2013 to 2017 using Ordinary Least Square. The results of the study indicates that there is a significant effect of Inflation, Interest rates and Inflation rates together on stocks in the Basic Industry and Chemical sector Manufacturing companies on the Indonesia stock exchange; there is a significant influence of Inflation on shares in Manufacturing companies in Basic Industry and Chemicals sector on the Indonesia stock Exchange; there is no significant effect of Interest rates on stocks in Basic Industrial sector and chemical manufacturing companies on the Indonesia stock exchange; and there is no significant effect of Exchange rates on shares in Basic Industry and Chemical Manufacturing companies on the Indonesia stock Exchange.

(Ifa Nurmasari & Siti Nur'aidawati, 2021) studies the influence of Inflation, Bank Interest rates and Currency rates on Composite stock price index both partially and simultaneously during the covid-19 period from March 2020 to July 2021 using the analytical methods such as Multiple Linear Regression, Classical Assumption test, Hypothesis test and Determination Coefficient test. It was found that; simultaneously, Inflation, Bank Interest rates and Currency rates had a significant effect on Composite stock price Index, and partially; Inflation is positive and significant to composite stock price index, Bank interest rates and Currency rates negatively and significantly affect Composite stock price Index.

III. STATEMENT OF THE PROBLEM

Stock market is a reflection of the economic condition of the country. Performance of the stock market indicates the prosperous or weakening of the country's economy. Stock market now attracts many investors in terms of returns. These returns in the stock market are influenced by many factors. This study is an attempt to investigate the impact of Macroeconomic variables like Inflation, Interest rate and Exchange rate of Indian Rupee toward Dollar on the sectoral stock indices of NSE like Nifty Private Bank Index and Nifty PSU Index.

IV. OBJECTIVES OF THE STUDY

- To examine the relationship between Macroeconomic variables and Indices of Nifty Private Bank and Nifty PSU
- To study the impact of Macroeconomic variables on Indices of Nifty Private Bank and Nifty PSU

4.1 Hypotheses

- There is no significant relationship between Macroeconomic variables and Indices of Nifty Private Bank and Nifty PSU
- There is no significant impact of Macroeconomic variables on Indices of Nifty Private Bank and Nifty PSU

V. RESEARCH METHODOLOGY

5.1 Source of Data

The source of data for this study is Secondary data. In the study, Macroeconomic variables such as Inflation rate, Interest rate and Exchange rate of Indian Rupee toward US Dollar are taken as Independent variables; and Nifty indices like Nifty Private Bank Index and Nifty PSU Index are taken as Dependent variables. Annual Inflation rate in India is collected from World Bank Database. Bank rate of RBI is collected from the RBI Database. Since the Bank rate is revised several times a year, yearly average is computed and taken as Interest rate. Annual average Exchange rate of Indian Rupee toward US Dollar is collected from International Financial Statistics. Daily Index closing price of Nifty Private Bank Index and Nifty PSU Index is collected from Nifty Indices website and annual average is computed for analysis.

5.2 Period of the Study

The study is conducted for a period of ten years starting from 2012 to 2021.

5.3 Tools for Analysis

Correlation is used to find out the relationship between Macroeconomic variables and Nifty Indices. Multiple Regression model is used to find out the impact of Macroeconomic variables on Nifty Private Bank Index and Nifty PSU Index.

VI. ANALYSIS AND INTERPRETATIONS

Table 1 : Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Inflation Rate	10	3.33	10.02	5.87	2.32
Interest Rate	10	4.25	9.25	7.00	1.83
Exchange Rate	10	53.44	74.10	64.63	7.56
Nifty Private Bank Index	10	4858.14	18590.28	11362.28	4614.53
Nifty PSU Index	10	1573.97	3460.10	2876.35	569.68

Table 1 shows the descriptive statistics of variables. The average Inflation rate for 10 years is 5.87 percentage with a standard deviation of 2.32, with a minimum and maximum of 3.33 percentage and 10.02 percentage respectively. The mean value of Interest rate for 10 years is 7.00 percentage and standard deviation is 1.83. The lowest Interest rate for the 10 years is 4.25 percentage and the highest Interest rate is 9.25 percentage. Average Exchange rate for 10 years is



64.637 percentage along with a standard deviation of 7.56 and minimum value is 53.44 percentage and maximum value is 74.10 percentage. The average value of Nifty Private Bank Index for 10 years is 11362.28 with a standard deviation 4614.53. Minimum value of Nifty Private Bank Index for 10 years is 4858.14 and the maximum value is 18590.28. The mean value of Nifty PSU Index for 10 years is 2876.35 and the standard deviation is 569.68. The Minimum value of Nifty PSU Index is 1573.97 and the maximum value is 3460.10.

Table 2: Correlation between variables

		Inflation Rate	Exchange Rate	Interest Rate
Nifty Private Bank Index	Pearson Correlation	-.750*	.841**	-.898**
	Sig. (2-tailed)	.012	.002	.000
	N	10	10	10
Nifty PSU Index	Pearson Correlation	-.103	-.714*	.697*
	Sig. (2-tailed)	.776	.020	.025
	N	10	10	10

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 indicates the correlation between independent variables and dependent variables. The relationship between Inflation rate and Nifty Private Bank Index is negative and significant; the relationship between Exchange rate and Nifty Private Bank Index is highly positive and significant and; the relationship between Interest rate and Nifty Private Bank Index is highly negative and significant. Inflation rate and Nifty PSU Index is negatively correlated and not significant; Exchange rate and Nifty PSU Index is negatively correlated and is significant and; Interest rate and Nifty PSU Index is positively correlated and is significant.

Table 3: Regression statistics between Macroeconomic variables and Nifty Private Bank Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.947 ^a	.897	.845	1816.99882

a. Predictors: (Constant), InterestRate, InflationRate, ExchangeRate

Table 3 shows that the R Square value is 0.897. This means that 89.7 percentage variation in the Dependent variable - Nifty Private Bank Index is explained by the Independent variables – Inflation rate, Exchange rate and Interest rate.

Table 4: ANOVA^a Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	171836648.980	3	57278882.993	17.349	.002 ^b
	Residual	19808908.166	6	3301484.694		
	Total	191645557.146	9			

a. Dependent Variable: NiftyPrivate Bank Index

b. Predictors: (Constant), InterestRate, InflationRate, ExchangeRate

Significance level : 0.05

ANOVA shows that the overall model is significant with F value of 0.002. The result of ANOVA table confirmed that the predicted model is significant at 5 percentage significance level.

Table 5: Regression statistics between Macroeconomic variables and Nifty PSU Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.933 ^a	.871	.806	250.77595

a. Predictors: (Constant), InterestRate, InflationRate, ExchangeRate

Table 5 shows that the R Square value is 0.806. This means that 80.6 percentage variation in the Dependent variable - Nifty PSU Index is explained by the Independent variables – Inflation rate, Exchange rate and Interest rate.

Table 6: ANOVA^a Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2543568.800	3	847856.267	13.482	.004 ^b
	Residual	377331.466	6	62888.578		



	Total	2920900.265	9			
--	-------	-------------	---	--	--	--

a. Dependent Variable: NiftyPSU Index

b. Predictors: (Constant), InterestRate, InflationRate, ExchangeRate

Significance level : 0.05

ANOVA shows that the overall model is significant with F value of 0.004. The result of ANOVA table confirmed that the predicted model is significant at 5 percentage significance level.

VII. FINDINGS

- Inflation rate and Nifty Private Bank Index is negatively correlated.
- The relationship between Exchange rate and Nifty Private Bank Index is a strong positive one.
- Correlation between Interest rate and Nifty Private Bank Index is strong negative correlation.
- Inflation rate and Nifty PSU Index is negatively correlated.
- The relationship between Exchange rate and Nifty PSU Index is negative.
- Correlation between Interest rate and Nifty PSU Index is positive correlation.
- Macroeconomic variables such as Inflation rate, Exchange rate and Interest rate are highly impacting the changes in Nifty Private Bank Index.
- Macroeconomic variables such as Inflation rate, Exchange rate and Interest rate are strongly influencing the variations in Nifty Private Bank Index.

VIII. CONCLUSION

This study investigated the impact of Macroeconomic variables on Nifty Private Bank Index and Nifty PSU Index. Inflation rate has negative correlation with both Nifty Private Bank Index and Nifty PSU Index. Exchange rate is positively correlated with Nifty Private Bank Index whereas Exchange rate is negatively correlated with Nifty PSU Index. The relationship between Interest rate and Nifty Private Bank Index is negative, and Interest rate is positively correlated with Nifty PSU Index. Macroeconomic variables are strongly impacting on the variation of both Nifty Private Bank Index and Nifty PSU Index.

Stock market indices get influenced by the Macroeconomic factors and the performance of stock market indicates the economic situation of a country. The Government and the Central Bank should take measures to control the Macroeconomic variables as it has an impact on the stock market indices. Private sector Banks as well as Public sector Undertakings should always keep an eye on various Macroeconomic indicators since the changes in macroeconomic variables will affect the functioning of the firms. Investors are also recommended to keenly watch the movements in the macroeconomic variables as well as movement in the stock market indices before investing their savings.

REFERENCES

1. Dr. Chandra Mohan & Mrs. N. Chitradevi. (2014). Impact of Inflation and Exchange Rate on Stock Market Performance in India. *INDIAN JOURNAL OF APPLIED RESEARCH*, 230-232.
2. Fahlevi, M. (2019). The Influence of Exchange Rate, Interest Rate and Inflation on Stock Price of LQ45 Index in Indonesia. *Advances in Social Science, Education and Humanities Research*, 157-163.
3. Ifa Nurmasari & Siti Nur'aidawati. (2021). The Effects of Inflation, Interest Rates and Exchange Rates on Composite Stock Price Index During the Covid-19 Pandemic. *Jurnal MANDIRI: Ilmu Pengetahuan, Seni, dan Teknologi*, 77-85.
4. Indra Ria Safitri & Suresh Kumar. (2014). The Impact Of Interest Rates, Inflation, Exchange Rates And Gdp On Stock Price Index Of Plantation Sector: Empirical Analysis On Bei In The Year Of 2008–2012. *Global Illuminators Full Paper Proceeding TMBER*, 55-61.
5. Izunobi Anthony Okechukwu, Nzotta Samuel Mbadike, Ugwuanyim Geoffrey & Benedict Anayochukwu Ozurumba. (2019). Effects of Exchange Rate, Interest Rate, and Inflation on Stock market returns volatility in Nigeria. *International Journal of Management Science*, 38-47.

6. Jefry & Abid Djazuli. (2020). The Effect of Inflation, Interest Rates and Exchange Rates on Stock Prices of Manufacturing Companies in Basic and Chemical Industrial Sectors on the Indonesia Stock Exchange (IDX). *International Journal of Business, Management & Economics Research*, 34-49.
7. Mgammal, M. H. (2012). The Effect of Inflation, Interest Rates and Exchange Rates on Stock Prices Comparative Study Among Two Gcc Countries. *International Journal of Finance and Accounting*, 179-189.
8. Shadi Yousef Al-Abdallah & Nada Ibrahim Abu ALjarayesh. (2017). INFLUENCE OF INTEREST RATE, EXCHANGE RATE AND INFLATION ON COMMON STOCK RETURNS OF AMMAN STOCK EXCHANGE, JORDAN. *International Journal of Economics, Commerce and Management*, 589-601.
9. Syed Imran Sajjad, Haroon Shafi, Saleem Ullah Jan, Madiha Saddat, Ijaz ur Rehman. (2012). Exploring the Nexus; Stock Market, T. Bills, Inflation, Interest Rate and Exchange Rate. *Journal of Economics and Behavioral Studies*, 384-389.