# A STUDY OF ECONOMIC VARIABLES ASSOCIATED WITH STOCK MARKET FUNCTIONING

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**Abstract:** Stock market indices have also now become an important parameter in defining the financial matrix of any country along with conventional measures of interest rates, exchange rates, GDP growth rates etc. Some of these factors are mutually dependent also. Hence, this study is an attempt to study the relationship between macro-economic variable viz. GDP growth rate, exchange rate, etc. and National Stock Exchange index (NIFTY). For this purpose, the annual data of all the variables as on 31st December every year from 2010 to 2016 are collected from secondary sources. These data were analysed using linear regression analyses and it is found that there is strong significant relationship between the macro-economic variables and NIFTY 50 index.

**Keywords**: *Forex, GDP growth rate, NIFTY, Causal relationship, etc.*

## 1.1 Introduction:

Proponents of economic reforms claim that India, over the last decade and a half, has been undergoing a calculated, continuous, careful, and stable process of discovering the price efficiently for rates of interest, rates of foreign exchange and securities, in the total functioning of the financial markets. While stock markets are subject to market forces for price determination the full liquidity of the rupee on current account and the partial liquidity on capital account should enable the rupee also to discover its price based more on market forces. A great degree of financial integration has also evolved over the past one decade which is expected to strengthen the interrelationship between the different variables of the financial matrix of the country. More importantly Indian markets are increasingly getting recognized as destinations for investment by developed countries demanding greater level of

integration with the global markets. Indian financial markets are not isolated from global happenings nor are they completely insulated from exogenous shocks.

The share price volatility in the Indian capital market is apparently more pronounced since economic reforms kick started the liberalization process and more especially after the rupee was freed from the administered price regime in 1993. Over the last two decades the rupee was subjected to wide fluctuations.

## 1.2 Rationale behind the study:

The progress and stability helped India and her stock market to become one of the preferred destinations for investment. Capital flows from both domestic and international investors to the Indian equity market have become significant post 2000. India now attracts a chunky portion of the global portfolio flows to emerging markets. Mobility of Capital especially invested through portfolio investment seems to traffic between economies all over the Globe, based on competitiveness of prices and returns. Stock prices/indices have also now become an important parameter in defining the financial matrix of any country along with conventional measures of interest rates, exchange rates, GDP growth rates etc. Some of these factors are mutually dependent also. Therefore, this study is an attempt to study the relationship between macro-economic variable and GDP growth rate, exchange rate, etc. and National Stock Exchange index (NIFTY).

## 2. Literature Review:

Duca, Gevit. (2007) conducted a casual research on studying the relationship between stock market prices and GDP. The area of the study was developed market economies. The study reveals that there is positive relationship between the two variables. Hence, in order to identify the reasons for such relationship, this research has been carried out by the researchers. In this paper, Granger's causality test has been applied to examine the direction of the relationship between the two variables. This paper focuses on the long-term trends in the stock market and the impact of GDP on such trends in the work in terms of market capitalisation.

Acikalin S. et. al. (2008) attempted to establish the relationship between returns in Istanbul Stock Exchange (ISE) and macroeconomic variables of Turkish economy. For the purpose of this research, the researcher had applied Co-integration test and a model called Vector Error

Correction Model on a quarterly data set. The results revealed that there was a long-term stable relationship between Istanbul Stock Exchange and all the four macroeconomic variables viz., GDP, Rate of exchange, rate of interest, and balance of current account. There results show that there is a positive relationship between ISE index and GDP, Rate of exchange and balance of current account. However, rate of interest is negatively correlated with ISE index.

  Nazir, Mian Sajid & Nawaz, Muhammad & Gilani, Usman. (2010) makes and attempt to explore the relationship between economic growth in Pakistan and development of stock market. The study was conducted during the period of 1986 to 2008. The researchers found that size of the market and liquidity prevailing in the market is responsible to develop a positive relationship with stock market development. Hence, it is concluded in the research that country can achieve economic growth by expanding the stock market of the country, also there is need to expand the market capitalization in the economy.

## 3. Objective of the study:

With the above background & keeping in view the available literature on the subject matter, the research has been done keeping in mind the following objectives:

a. To understand the fluctuation in GDP growth Rate of India for the period 2010-2016
b. To examine the movement in Foreign Exchange Rate of India for the period 2010-2016
c. To study the relationship between Macro-economic variables viz., GDP growth Rate and Foreign Exchange Rate and National Stock Exchange index (NIFTY)

## 4. Hypothesis of the study:

  H0: There is no significant relationship between NIFTY-50 and Macro-economic Variables.

## 5.1 Research Design:

  In this research causal research design has been used to study the relationship between macro-economic variable and NIFTY-50.

**5.2 Data Collection:**

For the purpose of this research the secondary data collection technique has been used to collect the data of GDP growth rate has been collected from the official website of world bank, the rate of foreign exchange has been collected from the official website of RBI and the historical annual data of NIFTY index has been collected from the website of NSE.

**6. Data Analysis**

In order to study the relationship between macro-economic variable and NIFTY-50, in this research GDP growth rate and Foreign Exchange rates USD/INR are considered at macro-economic variables. The data has been collected from the official website of world bank and RBI for GDP growth rate and Foreign Exchange rates respectively.

**a.  Foreign Exchange Rate:**

In this research, the exchange rate between US dollar and Indian Rupee has been calculated on year end data from 2010 to 2016 i.e. for the period of 7 years. The collected data has been represented using a graph below:
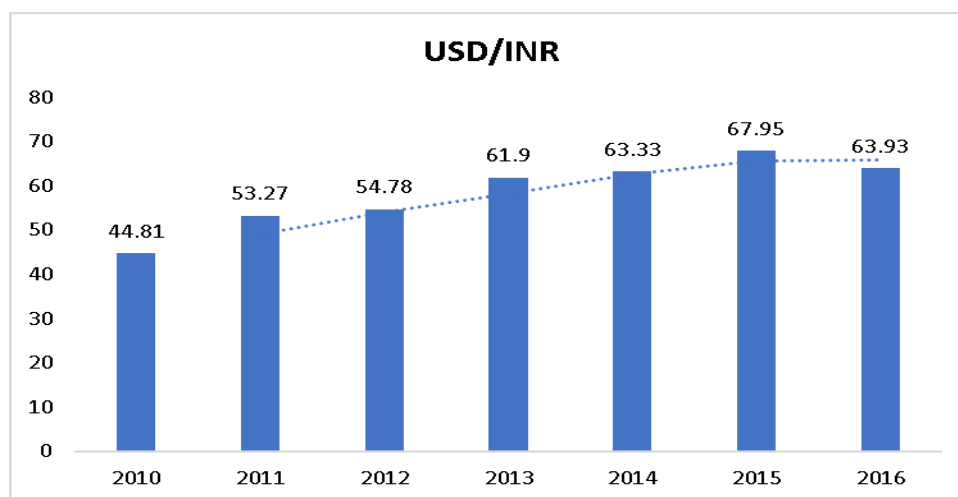


Fig. 1 Exchange Rate between US Dollar and Indian Rupee

(Source: RBI press releases)

From the above fig. 1 it is found that the exchange rate of USD/INR has increased gradually from Rs. 44.81/$ in 2010 to Rs. 67.95/$ in 2015. In the year 2016 the exchange rate was bit improved and it came down to Rs. 63.93/$. This indicated the increasing demand for the dollars from India due to its increasing Import and deficit Balance of Payment situation.

**b. GDP growth Rate:**

In this research the GDP growth rate (Annual %) data from 2010-2016 has been collected from databank of world bank and the data has been graphically represented below:
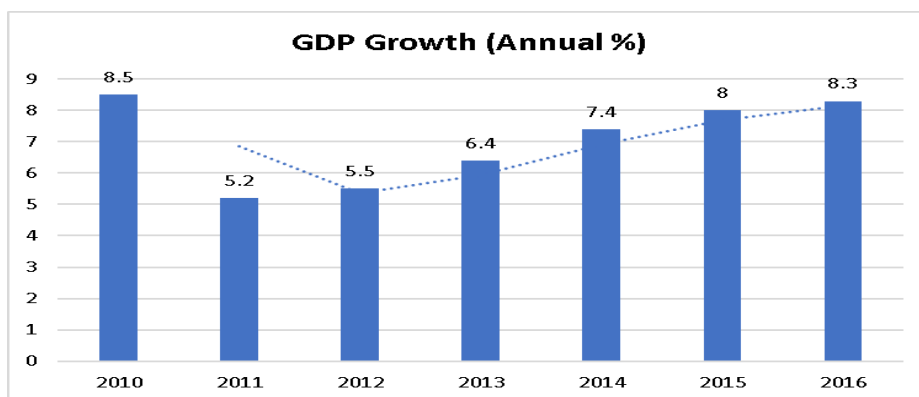


Fig. 2 GDP growth (Annual %) of India
(Source: Databank World bank)

It is found from fig. 2 that the GDP growth rate of India was highest in the year 2010 i.e. 8.5% it then suddenly fell to 5.2% in the year 2011 due to political instability and then it again started rising up to 8.3% in the year 2016. This indicates a slow economic growth of the country.

**c. NIFTY-50:**

Here, in this research the closing values as on 31$^{st}$ December every year from 2010 to 2016 has been collected which is represented through following graph:
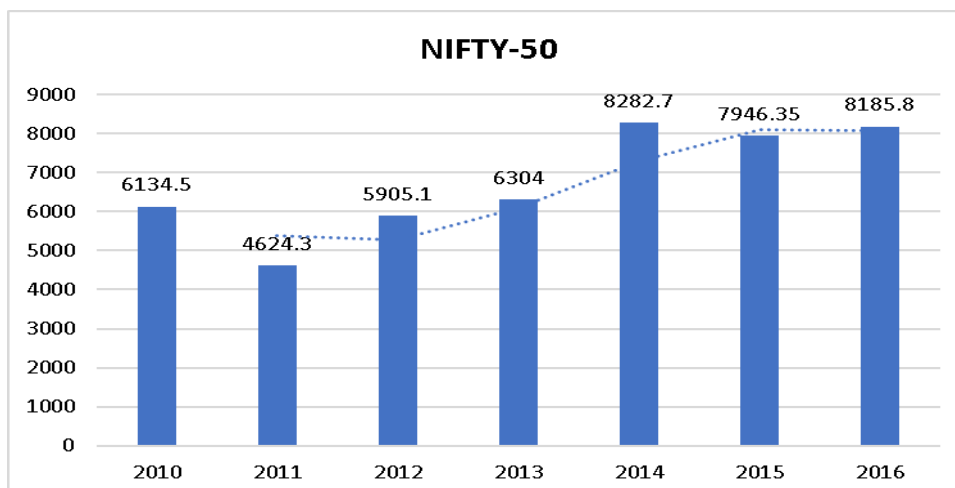


Fig. NIFTY 50 closing data as on 31$^{st}$ December every year

(Source:

https://www1.nseindia.com/products/content/equities/indices/historical_index_data.htm)

### d. Relationship between Macro-economic Variables and NIFTY 50

In order to study the relationship between macro-economic variables and NIFTY 50 regression analysis has been applied taking GDP growth rate and Foreign Exchange Rate USD/INR as macro-economic variables and NIFTY 50 as dependent variable.

#### Table 1.1 Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .782[a] | .611 | .500 | 1734.84913 |

a. Predictors: (Constant), GDP growth rate (Annual %), Foreign Exchange Rate USD/INR

Above Table 1.1 gives the co-efficient of correlation of 0.782 between macro-economic variable and NIFTY 50 which states there is strong relationship between the two variables. R Square value obtained from Table 1.1 indicates that the two indicators contribute 61.1% impact on volatility in national stock exchange and remaining 38.9% is contributed by other factors. Hence, this model is considered as a strong model and the relationship is also considered to be a strong relationship.

#### Table 1.2 ANOVA[a]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 33075283.374 | 2 | 16537641.687 | 5.495 | .037[b] |
| | Residual | 21067910.443 | 5 | 3009701.492 | | |
| | Total | 54143193.817 | 7 | | | |

a. Dependent Variable: NIFTY 50

b. Predictors: (Constant), GDP growth rate (Annual %), Foreign Exchange Rate USD/INR

Table 1.2 i.e. ANOVA table is used to study the significance of the relationship between the two variables. F-value obtained from table 1.2 is 5.495 and the sig. value i.e. p-value obtained is 0.037 which is less than the alpha value of 0.05 (F=5.495, $p < 0.05$), which indicates that there is significant relationship between the two variables. Hence, the hypothesis i.e. " There is no significant relationship between NIFTY-50 and Macro-economic Variables"  is **rejected**.

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**Table 1.3 Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -5322.623 | 5596.681 | | -.951 | .373 |
| | Foreign Exchange Rate USD/INR | 226.560 | 70.594 | .771 | 3.209 | .015 |
| | GDP growth rate (Annual %) | -84.920 | 411.432 | -.050 | -.206 | .842 |

a. Dependent Variable: NIFTY 50

Above table 1.3 gives the beta co-efficient of the factors representing macro-economic variables. The beta of Foreign exchange rate is found to be 226.560, with t-value of 3.209 and sig. value i.e. p-value of 0.015, which is less than the alpha value of $0.05 (p < 0.05)$. This indicates a significant relationship between Forex and NIFTY 50. The beta of GDP growth rate is -84.920 with t-value -0.206 and sig. value i.e. p-value of 0.842 which is greater than alpha value of 0.05 $(p > 0.05)$, this indicates no significant relationship between the GDP growth rate and NIFTY 50. However, together they show a significant relationship with NIFTY 50. Bused on above data a linear equation model is formed which is as follows:

*NIFTY 50 = -5322.623 + 226.560 Forex – 84.920 GDP growth rate*

**7. Conclusions:**

On the basis of data collected and analysed it is concluded that there is significant impact of foreign exchange rate on National Stock Exchange index, however the impact of GDP growth rate on NIFTY is not significant. The combined impact of both the macro-economic variables is found to be significant with strong co-efficient of correlation. Hence, it can be concluded that the volatility in stock market is depended on macroeconomic variables like foreign exchange rate and GDP growth rate.

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