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A Study on Performance of Nifty 50 in Relation to Macro Economic Variables

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Abstract: ***The stock market plays a pivotal role in mobilizing the savings, financing the requirement of the corporate, providing liquidity to the corporate sector and to the investors. Liquidity in the market improves the distribution of resources and aids in the economic growth and development of the country. In turn, various economic variables also affect the stock market. Indian capital markets have been receiving global attention and the rapid integration with the world economy has increased India's global competitiveness. The global ratings are awarding India with investment grade ratings, indicating comparatively lower sovereign risks. The Securities and Exchange Board of India (SEBI), the regulatory authority for Indian securities market, was established in 1992 to protect investors. In the same year, Controller of Capital Issues (CCI) was abolished, which removed administrative controls over the pricing of new equity issues. In less than a decade later, the Indian financial markets acknowledged the use of technology (National Stock Exchange started online trading in 2000), which increased the trading volumes by many folds. There is a sharp surge and rapid growth in the stock markets. This paper would study if there is any impact of Macro economic factors like FDI, GDP, Money supply, structure of interest rates, Inflation, gross capital formation, trade balance on Sensex. The tools to study this objective would be descriptive statistics, OLS multiple linear regression model.***

Keywords: Sensex, GDP, inflation, gross capital formation, FDI

1. Introduction

Financial system is the most important institutional and functional vehicle for economic transformation. It helps in the acceleration of rate of savings, mobilization of savings belonging to those who save a part of their income and channelization of the same into the productive activities.

In any economy, financial markets play a pivotal role and in order to boost and capture the world market a country needs to have developed primary and secondary markets. These markets are necessary for providing liquidity to the corporate sector and to the investors. Liquidity in the market improves the distribution of resources and aids in the economic growth and development of the country. In order to maintain their economic and social stability and economic level, every country should focus on its financial system. Economies look at financial markets to finance its BOP (balance of payments) accelerating its development agenda for social and economic stability. Stock market and economy are interrelated and various economic factors influence the financial system of the country directly or indirectly. Many researchers have tried to claim that macro economic variables affect the stock market. In fact, this has been an area of intense interest among academicians, investors and stock market regulators since 1980s. There always has been a debate regarding whether stock price movements are influenced by economic changes or stock market performance helps in promoting economic growth. It has been a subject of empirical research.

The macroeconomic factors are interdependent and influence each other. It describes how the economy as a whole functions and how the level of national income and employment is determined on the basis of aggregate demand and aggregate supply. It helps to achieve the various goals like economic growth, a higher GDP level, and higher level of employment, strong exchange rate, strong financial market performance and so on. Foreign exchange rate is influenced by various macro economic variables like interest rate, inflation rate, the balance of payments, etc. Overall economic performance is also affected by the exchange rate.

The study investigates the relationship between the Indian stock market performance (BSE Sensex), Market capitalization and six macroeconomic variables, namely, index FIIs, consumer price Index, oil prices, real effective exchange rate and the lending rates over the period of 2010 to 2019 using yearly data.

After liberalizing the Indian economy, Indian capital markets have undergone a series of major changes which has resulted in notable improvement in Indian stock market in terms of its size and depth. Due to increase of foreign institutional investment the process of development of domestic stock market has been further accelerated. The stock markets of India is sensitive to factors such as changes in the level of economic activities, changes in political and international economic environment and also related to the changes in other macroeconomic factors which has been revealed by many studies.

2. Literature Review

Various studies have been done in the past to predict the relationship between stock market movement and macroeconomic variables. But in the changing scenario, whether there is a relationship between stock market and macroeconomic variables exist or not should be tested.

According to a study by Chen et al. (1986), it was found that equity returns are significantly explained by a set of macroeconomic variables for developed countries. The study included various macro economic variables like growth in industrial production, changes in the risk premium, twists in the yield curve, measures of unanticipated inflation and changes in expected inflation during periods of volatile inflation.

Lyndon M. Etale and Philomena I. Tabowei mentioned in their study the effect of selected macroeconomic variables on market capitalization in Nigeria. The study adopted Nigerian stock market capitalization as the dependent variable, while macroeconomic variables such as gross domestic product, interest rate, inflation and exchange rate were used as the independent variables. The results of their study showed that gross domestic product has significant positive effect on market capitalization, exchange rate has significant negative effect on market capitalization; while interest rate and inflation have insignificant negative association with market capitalization in Nigeria.

Gjrde and Saettem (1999) examined the causal relation between stock returns and macroeconomic variables in Norway. They found a positive link exists between oil price, real activity and stock returns.

According to one of the studies by GIRI A. K. And JOSHI Pooja confirm a long run relationship among the macro economic variables and stock market. It was mentioned that Economic growth, inflation and exchange rate influence stock prices positively. According to this study crude oil price influences the stock price negatively.

As per Cheng and Ng (1998) and Sharma (2002) who established the long - run relationship between the fundamental macroeconomic variables and stock prices and the results suggested that in the long run, stock prices would be positively related to growth and output.

Data:
For this present study the data has been considered from 2010 to 2019. The reason for not including 2020 in the data set because of the exceptional situation of covid and non - availability of data for some variables.

Description of Variables

Sensex: A figure indicating the relative prices of shares on the Mumbai (Bombay) Stock Exchange. It is our dependent variable. In many studies, Analysts, Investors and Traders use it to gauge the behaviour of the Economy. We have considered BSE, It is a free - float market - weighted stock market index of 30 well - established and financially sound companies listed on Bombay Stock Exchange. The 30 constituent companies which are some of the largest and most actively traded stocks, are representative of various industrial sectors of the Indian economy. S&P BSE SENSEX, is the country's first equity index launched (Base Year: 1978 - 79 =100) so considered for present study.

Market Capitalization: It refers to the total value of shares traded on the stock market. It is defined as the number of shares to be multiplied by the share prices. As per market cap, companies can be divided into Large market cap, Mid market cap and Small market cap. This is also one of the dependent variable in our study

Oil Prices: Changes in the international crude oil prices are often considered an important factor for understanding fluctuations in stock prices. For the purpose of study, international crude oil prices per 1000 barrels have been used.

GDP: It represents economic growth and economic growth is the increase in the inflation - adjusted market value of the goods and services produced by an economy over time. Various studies have tested Gross domestic product (GDP) and has often been used to measure the growth of real economic activity. It is regarded as one of the important determinants of stock market performance which needs to be tested again in the changing scenario.

FII: Foreign Institutional investment is an investor or investment fund investing in a country outside of the one in which it is registered or headquartered. The term foreign institutional investor is probably most commonly used in India, where it refers to outside entities investing in the nation's financial markets. The levels of FIIs have the capacity to impact the stock market.

Inflation CPI: here inflation is measured taking into consideration the consumer price index.

Lending rate: The lending rates at which borrowings can be availed

Exchange Rate: The exchange rate is the value of a country's currency vs. that of another country.

DISCUSSION & ANALYSIS:

DEPENDENT VARIABLE: NIFTY 50

INDEPENDENT VARIABLES: FDI, DII, GOLD PRICES, GCF, TRADE BALANCE

FDI: FOREIGN DIRECT INVESTMENT, DII: DOMESTIC INSTITUTIONAL INVESTMENT, GCF: GROSS CAPITAL FORMATION

Descriptive Analysis:

Variables	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
FDI IN $	37.17832	2.729277298	23.99568501	50.61064735
DII	19053.5	18886.27976	- 72370	96645
Gold Prices	28584.7	1439.732638	18500	36220
GCF	35.2	1.271918935	30	41
Trade Balance	- 9020.7	673.4979015	- 12869	- 5405
Nifty 50	7866.9	761.5249679	4642	11843

Table 1:
Here table 1 shows descriptive analysis of dependent and independent variables. In these descriptive statistics, we include, mean which measures average of variables for 10 years, standard deviation which measures the variation from the central value and also including extreme values. In case of all the variables, standard deviation is lesser than the mean value which suggests the reasonable variation over the period of these 10 years.

Correlation Analysis:

	FDI IN $	*DII*	*GOLD PRICES*	*GCF*	*TRADE BALANCE*	*Nifty*
FDI IN $	1					
DII	0.801389611	1				
GOLD PRICES	0.465450754	0.211147	1			
GCF	- 0.723440866	- 0.67469	- 0.54542414	1		
TRADE BALANCE	- 0.32368037	- 0.43831	- 0.78692648	0.505043	1	
Nifty 50	0.770410176	0.646406	0.63294127	- 0.91749	- 0.594106079	1

Table 2:

Here table 2 represents the correlation coefficient which measures the impact of each independent variables FDI, DII, Gold Prices, GCF and Trade Balance on the dependent variable Nifty 50 and also measures the correlation within themselves. From this analysis we find that FDI has more positive impact on Nifty 50 compared to DII, Gold Prices which also has positive impact on Nifty 50. GCF and Trade Balance, both have negative impact on Nifty 50 but the negative impact of GCF is more pronounced compared to Trade Balance on Nifty 50. Among the set of independent variables, we find that FDI and DII are related to each other up to some extent. Otherwise, these independent variables are not influencing each other.

Regression Analysis:
Dependent Variable: NIFTY 50

Independent Variables: FDI, DII, GOLD PRICES, GCF, TRADE BALANCE

	Coefficients	*Standard Error*	*t Stat*	*P - value*
Intercept	16835.00607	6698.277256	2.513334	0.065822858
FDI IN $	255.2117527	135.3363342	1.885759	0.132397323
DII	0.032307862	0.020933285	- 1.54337	0.197614049
GOLD PRICES	0.342625578	0.269282818	- 1.27236	0.272176689
GCF	- 453.5765322	130.8015619	- 3.46767	0.025637969
TRADE BALANCE	- 0.877855607	0.521173124	- 1.68438	0.167391799
R Square	0.933056242			
Significance Value	0.018310515			

Table 3:

The table 3 shows the impact of all the independent variables on the dependent variable Nifty 50. We find R^2 = 0.9330 which suggest that almost 93.3% variation in Nifty 50 is completely explained by the set of independent variables which are considered here. So, we infer that over this period of 10 years, FDI, DII, Gold Prices, GCF, Trade Balance have more impact on Nifty 50 compared to other macroeconomic indicators which are not considered under this study. From all p - value of independent variables, we find that in the case of GCF, it is significant as it is less than the level of significance 5%. It suggest that GCF has more impact on Nifty 50 compared to other independent variables of study. We also find the overall significance value = 0.018310515 for our regression model which indicates the model is fit to the data. Thus, the regression model is given by,

Nifty 50 =16835.00607+ 255.2117527 (FDI) + 0.032307862 (DII) + 0.342625578 (Gold Prices) - 453.5765322 (GCF) - 0.877855607 (Trade Balance)

Overall Findings:

1) GCF has been found significantly influential, found to have a negative influence on Nifty 50 which means with the rise in GCF there has been a decrease on Nifty 50.
2) GDP, Lending Rates and Exchange Rates have been found significantly influential. GDP and lending rates are negatively influencing the Sensex which means with the rise in GDP and lending rates there has been decrease in the value of Sensex. In a low interest rate scenario, there is hardly any incentive for fixed instruments, investors are more inclined towards stock market to gain from even speculative activities. Investing in stock market can generate high returns. On the other hand, exchange rates has a positive and significant impact on Sensex. From this we can infer that when INR is getting stronger the Sensex is also moving up.
3) In the second model of Market Capitalization, Lending rate is found to be influential which clearly states that investors more inclined towards investment in stock market due to less attractive interest rates.
4) In general, no other macroeconomic variable has been found having a significant impact on market capitalization.
5) Since most of the companies are involved in international business the favourable exchange rate will impact the profitability of companies and hence its performance which will ultimately have impact on the market capitalization.

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