IMPACT OF ECONOMIC FACTORS ON INDIAN STOCK MARKET PERFORMANCE

BY

MANASA K L

IV Semester MBA

Reg. No.: 19MB0219

UNDER GUIDANCE OF

Dr. KANTESHA SANNINGAMMANAVARA

Assistant Professor, PG Department of Business Administration

Maharani's Women's Commerce and Management College, Paduvarahalli,

Mysuru – 570 012

Project Report submitted to the University of Mysore in Partial Fulfilment of the Requirements of IV Semester MBA Degree Examinations – 2021

POST GRADUATE DEPARTMENT OF BUSINESS ADMINISTRATION

MAHARANI'S WOMEN'S COMMERCE AND MANAGEMENT COLLEGE

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POST GRADUATE DEPARTMENT OF BUSINESS ADMINISTRATION

GUIDE CERTIFICATE

I hereby certify that the project entitled **"IMPACT OF ECONOMIC FACTORS ON INDIAN STOCK MARKET PERFORMANCE"** is a bonafide research work conducted and completed by **Ms. MANASA K L,** 4th Semester MBA student of this institution, in partial fulfilment of the requirement of MBA programme of 2021 under my guidance and supervision. This is an original work, done as per the regulations of the University of Mysore and the contents of this project work are entirely independent work on the part of the student. The project, either in full or in part, has not been submitted to any other institution or university for the award of any degree or diploma or any recognition before.

Date:

Place: Mysuru

Dr. KANTESHA SANNINGAMMANAVARA
Research Guide

Government of Karnataka
Department of Collegiate Education
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Dr. RAVISHANKAR B
HOD – MBA

Dr. G H MAHADEVASWAMY
Principal

Date:

Place: Mysuru

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POST GRADUATE DEPARTMENT OF BUSINESS ADMINISTRATION

DECLARATION

I, MANASA K L, hereby declare that the Project entitled **"IMPACT OF ECONOMIC FACTORS ON INDIAN STOCK MARKET PERFORMANCE"** has been prepared by me under the guidance of **Dr. Kantesha Sanningammanavara,** Assistant Professor, PG Department of Business Administration, **Maharani's Women's Commerce and Management College,** Mysuru**.**

I also declare that this Project work is towards the partial fulfilment of the university regulations for the award of degree of Master of Business Administration by University of Mysore, Mysuru.

I further declare that this project is based on the original study undertaken by me and has not been submitted for the award of any degree/diploma from any other University/Institution.

(MANASA K L)

Reg. No.: 19MB0219

Date:

Place: Mysuru

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MANASA K L
(Reg. No.: 19MB0219)

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LIST OF ABBREVIATIONS

SENSEX	Sensitivity Index
BSE	Bombay Stock Exchange
NSE	National Stock Exchange
SEBI	Security Exchange Board of India
FDI	Foreign Direct Investment
ADF	Augmented Dickey-Fuller
EXP	Export
IMP	Import
CPI	Consumer Price Index
WPI	Wholesale Price Index
LPG	Liberalization, Privatization and Globalization
GDP	Gross Domestic Product
GP	Gold Price
SP	Silver Price
INF	Inflation
EPS	Earnings Per Share
FII	Foreign Institutional Investment
GDS	Global distribution system
RBI	Reserve Bank of India
IIP	Index for Industrial Production
CSE	Calcutta Stock Exchange
FERA	Foreign Exchange Regulation ACT
SLR	Statutory Liquidity Ratio
CRR	Cash Reserve Ratio
IDB	Industrial Development Bank
WDM	Wholesale Debt Market
CM	Capital Market
DMA	Direct Market Access
LIBOR	London Interbank Offered Rate
CAD	Current Account Deficit

EXECUTIVE SUMMARY

Stock Markets are considered to be important part of financial markets. They provide the investors with a wide range of alternatives to choose from for the purpose of investment and generating returns. At the same time, they also provide a platform to corporates for issuing various securities and arranging funds. Stock market indices not only reflect the situation of stock markets but they also reveal health of the economy. In fact, they are referred to as barometer of an economy.

This study is on Impact of Economic Factors on Indian Stock Market Performance. The aim of the study is to analyze the relationship between selected economic factors and Indian Stock Market price. This study may also facilitate to the investors in buying and selling decisions of securities as in the study the effect of the selected economic variables on the stock market price returns is been analyzed. This study may also be make investors capable to take better decision by viewing the relationship between the dependent (Sensex, Nifty) and independent variables (Economic factors). This study/paper tries to highlights on whether the investor needs to concentrate on the economic factors while investing in the stocks

For this study the monthly data of ten economic variables, namely CPI, WPI, Export, Import, Call money rate, Exchange rate, Gold, Silver, FDI and Crude oil rates have been used along with two stock market index i.e. BSE Sensex and NSE Nifty to attain the objectives of the research. The Descriptive Statistics, Augmented Dickey-Fuller (ADF) Test, Correlation and multiple Regression were used to find out the results. It was found that all independent and dependent variables became stationary after taking log difference (1^{st} difference). This stationary data has been used to run correlation and regression. The correlation analysis reveals that there is a significant relationship exist between Exchange rate, Gold rate and BSE Sensex. Also between Export, Import, Silver, Crude oil and NSE Nifty.

In same way regression analysis also reveals that there is no significant relationship between economic factors and stock market performance since its R-square is not more than 0.5 but some economic variables or factors are in the model and fit into the model since their significance values are less than 0.05.

Also the research methodology has designed to know the type of research (Descriptive in nature) and to know the sample techniques, method and type of data to be used for study.

The various hypothesis has been designed to provide the set of objectives for the study by mentioning the tools used for the study. The study concludes with the summary of findings, conclusion, suggestions and scope for further studies.

CHAPTER - 1

1. INTRODUCTION

The Indian stock market had seen various up-downsince1991, after the government implemented the Liberalization, Privatization and Globalization Model in India. This model has connected every country with other countries and as a result a single market is created. And thus from the economic point of view the importance of stock market is growing as it helps in movement of capital in rising and developed nations, prompting the development of industry and business of the country. There is a significant role of Indian capital market in the Indian economy growth. A small movement in the stock market affects the performance of economy. Investors regardless of whether Indians or outsiders can contribute or take the assets (funds) for capital appreciation in the capital market. An investor considers various factors before and at the time of investing his funds into the stock market.

These various factors may include past performance of a company, return on index or by company, return on assets or equity, free cash flow, internal management, various economic factors /indicators like GDP, inflation, interest rate, unemployment rate etc. It is believed that return on stock market is changed as change or fluctuations in the economic factors. Some economic factors are significantly affecting the return on stock whereas some have mild affect.

The market can be classified into two i.e. Primary market and secondary market. Primary and secondary market both are inter-related to each other as primary market creates secondary market. In the primary market various companies as well as government sell the securities first time in the market and when these securities further sold in the market that market called as secondary market.

The SENSEX, propelled in 1986 is comprised of 30 of the most effectively exchanged stocks in the market. Truth be told, they represent a large portion of the BSE's market capitalization. They speak to 13 areas of the economy and are pioneers in their individual enterprises. The SENSEX is one of the benchmark in India. The SENSEX is considered an essential indicator of the Indian securities exchange because the BSE is the main exchange of the Indian resold market. It is the most as often as possible utilized indicator while giving an account of the condition of the market. The major role of an index is to catch the change in the price. Along these lines, a stock index will mirror the change in

the price of stock, whereas index of bond catches the way in which bond costs go up or down. In the event that the SENSEX rises, it shows the market is doing admirably. Since stocks should reflect what organization shape to earn later on, a rising index demonstrates that investor expect better profit from organizations. Furthermore, it is additionally a measure of the condition of the Indian economy.

TRENDS IN INDIAN STOCK MARKET

The stock market of India has an important position in Asia as well as in the world. Across the world the Bombay Stock Exchange (Sensex) is one of the earliest exchanges whereas if we look at National Stock Exchange is considered to be best in terms of advancement & sophistication of technology. After the globalization Indian stock market pace increased too fast and as a result it becomes a center of attraction for investors over the world. The entire of nineties were utilized to investigation and adjust a productive and successful framework, and from the time of globalization, the stock market began to work proficiently and demonstrated its new statures, at various periods of its advancement. Indian stock market has seen various ups and downs there were times when the Indian stock market accomplishes new statures, breaking its past records and there is time likewise when stock market dives up to its outrageous. As stock market index is an essential piece of the economy, these ups and downs cannot be ignored as an economy is affected by the several policies and other unavoidable situations created in an economy.

ECONOMIC FACTORS

CPI: The consumer price index (CPI) is a measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living. The CPI is one of the most frequently used statistics for identifying periods of inflation or deflation.

WPI: A wholesale price index (WPI) is an index that measures and tracks the changes in the price of goods in the stages before the retail level. This refers to goods that are sold in bulk and traded between entities or businesses (instead of between consumers). Usually expressed as a ratio or percentage, the WPI shows the included goods average price change; it is often seen as one indicator of a country’s level of inflation.

Export Rate (ER): The rate used to check the value of exports of a country rise or fall over the specific period of time. The export rate is one of the major components that make contribution in overall growth or decline in economy of a country.

Import Rate (IMR): The rate used to check the value of imports of a country rise or fall over the specific period of time. The import rate is one of the major components that make contribution in overall growth or decline in economy of a country.

Call Money Rate: It is probably the most observed variable in the daily conduct of monetary practices and frequently used as an operating target for policy creations. An increase in CMR will increase the holding money opportunity cost, thereby causing swap of stocks with interest bearing assets and would decrease the stock prices. It also affects the corporate profits of companies, demand for goods and services, attraction of financial securities like bonds, shares and other fixed interest bearing investments, companies financing modes and borrowing money cost to purchase shares.

Foreign Direct Investment: FDI is an investment made by a firm or individual in one country into business interests located in another country. Generally, FDI takes place when an investor establishes foreign business operations or acquires foreign business assets in a foreign company. However, FDI are distinguished from portfolio investments in which an investor merely purchases equities of foreign-based companies.

Exchange Rate: The other important economic variable used in this study has been the exchange rate, which represents the bilateral nominal rate of exchange of the Indian Rupee (Rs.) against one unit of a foreign currency namely US Dollar ($) has been taken to be the foreign currency against which the Indian Rupee exchange rate is considered. This is because the US Dollar has remained to be the most dominating foreign currency used for trading and investment throughout the period of this study. On an average, export-oriented companies are adversely affected by a stronger domestic currency while import-oriented firms benefit from it.

Gold Price (GP): Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. Therefore, a negative relationship is expected between gold price and stock price. Thus this very important macroeconomic variable has also been included in this study.

Silver Price (SP): silver is an important precious metal. Unlike Gold, nearly half of silvers demand comes from the industrial sector. In addition to being in high industrial demand, silver is also highly valued by investors because it shares many of the same investment characteristics as gold. Some investors have been choosing to buy physical silver- like coins and bars-to benefit from a potential increase in price. However, that option has some negatives, including acquisition, storage and insurance costs. As a result, many investors are choosing to invest in silver stocks.

Crude Oil Prices: The domestic need of India for crude oil is mostly fulfilled by importing it from other countries. So any change in its prices would automatically put an effect on its economy. Therefore, for oil importing countries like India, an increase in oil prices will lead to an increase in production costs, decrease future cash inflows and put a negative impact on the stock market. Therefore, an increase in the price of oil in the international market means lower real economic activity in all sectors which will cause the stock prices to fall.

SECURITIES AND EXCHANGE BOARD OF INDIA

On 12 April, 1988 a Board was set up by the Govt. of India named as "Securities and Exchange Board of India" (SEBI), as a between time administrative body to progress, arrange and sound advancement of securities and for saving and protecting the interest of investors and shareholders. Before getting a statutory status through an announcement as on January 30, 1992 the Securities and Exchange Board of India was to work inside the general definitive control of the Ministry of Finance, Government of India.

The declaration was later changed by a law of Parliament known as the Securities and Exchange Board of India Act, 1992. Objectives were in concurrence with the formation of SEBI, which were for the improvement of capital market. The capital market had seen an immense advancement in the midst of 1980's was depicted particularly by the growing help of general society. This regularly assists the investors in the market and market itself. Capitalization incited different types of acts of neglect concerning associations, experts in the market, shareholders or investors, and others related with the securities displaying. The powerful instances of these acts of neglect in corporate segment by the self – styled exchange lenders, casual private game plans, device of expenses and casual premium on new issues and non-adherence of game plans of the Companies Act and encroachment of rules and controls of stock exchanges and posting essentials delay in movement with the

offers et cetera. These demonstrations of disregard and out of the line exchanging hones have divided theorist sureness and copied money related pro grievances.

ROLE OF SEBI

The fundamental reason behind Securities and Exchange Board of India was created is to provide a platform to support better exchange of securities through the securities markets. It similarly means to reinforce competition and bolster headway. This state joins the rules and controls associations, their interrelationships, establishments, practices, instruments and approach framework. This state goes for tending to the fundamental necessity of the three social events which essentially constitutes the market, viz., the patrons of securities (Companies), the monetary pros and the market middle people.

- To the investors, it provides to give a business focus in which they can irrefutably suspect bringing responsibility & accountability which they require in an effective and efficient and very simple reasonable way.
- To the various investors it certainly needs to give confirmations for their rights and premiums through adequate, correct and genuine information and revelation of information on a reliable introduce.
- To the mediators, it should offer a centered, professionalized and developing business division with attractive and beneficial nuts and bolts so they can render better help for the examiners and budgetary patrons.

1.1 PROBLEM STATEMENT

Economic factors have its impact on Indian stock market. Unexpected inflation contains new information about future prices and creates higher volatility of stock movements which in turn correlates with higher inflation rates. With the rising inflation people have less to spend and have lesser savings because of rising prices. The investments in the stock market also go downhill because the investors have fewer cash holdings. Therefore, rising inflation creates an adverse on the Nifty and Sensex market. The effect of inflation on stocks that pay dividends or income-generating stock is negative. Since rising inflation makes them less attractive because the dividends are not enough to cope up with the inflation levels and also the taxation levels stay constant which causes a double-negative effect. Another economic factor i.e. Gold Price has the highest impact on the stock price in long-run and short-run, which has important implications for investors. Investors can react against changes in the gold price, by considering that gold is a very good

substitution of stock, because it's more available and they can hedge themselves against inflation, when changes in the gold price happen it has the highest impact in the stock market. Gold is known as a traditional substitute for the stock market. An increase in gold price might cause the investors withdraw their money from the stock market, which leads to a decrease in stock index. Likewise, many other economic factors have its adverse effect on Indian stock market performance.

1.2 RESEARCH OBJECTIVES

The following are the objectives of research.

1. To analyse the Stock Market Performance during the study period.
2. To analyse the Trends of selected Economic Factors.
3. To examine the Impact of Economic Factors on Indian Stock Market Performance.

1.3 RESEARCH METHODOLOGY

The following information is related to research methodology which is used in this research

1.3.1 Research Type

The type of research is descriptive in nature.

1.3.2 Research Hypotheses

Null Hypothesis

H0: CPI does not have an impact on Indian stock market.

H0: WPI does not have an impact on Indian stock market.

H0: Gold prices does not have an impact on Indian stock market.

H0: Exchange rate does not have an impact on Indian stock market.

H0: Export does not have an impact on Indian stock market.

H0: Import does not have an impact on Indian stock market.

H0: Call Money Rate does not have an impact on Indian stock market.

H0: Silver does not have an impact on Indian stock market.

H0: Crude Oil does not have an impact on Indian stock market.

H0: FDI does not have an impact on Indian stock market.

Alternative Hypothesis

H1: CPI does have an impact on Indian stock market.

H1: WPI does have an impact on Indian stock market.

H1: Gold prices does have an impact on Indian stock market.

H1: Exchange rate does have an impact on Indian stock market.

H1: Export does have an impact on Indian stock market.

H1: Import does have an impact on Indian stock market.

H1: Call Money Rate does have an impact on Indian stock market.

H1: Silver does have an impact on Indian stock market.

H1: Crude Oil does have an impact on Indian stock market.

H1: FDI does have an impact on Indian stock market

1.4 SAMPLING TECHNIQUE

The Non-Probability Sampling technique is used in the study as we have selected Economic Factors.

1.4.1 Sample Method

The judgmental sample method will be used to select the respondents.

1.4.2 Sampling Unit

Dependent Variable

- Sensex
- Nifty

Independent Variables

- CPI
- WPI
- Export
- Import
- Call Money Rate
- Exchange Rate

- Gold
- Silver
- FDI
- Crude oil

1.5 DATA

Secondary data is used to analyze the relation between the stock market and economic factors.

1.6 LIMITATIONS OF THE STUDY

The following are the limitations of the study

1. **Reliability:** This study is based on the analysis of the secondary data that has been collected. Secondary data is the data that is already available and has been used for analysis and thus might not be reliable.
2. **Accuracy:** The result and conclusion of this study might not be accurate due to reliability of the secondary data and limitation on the variables selected and the time span considered.
3. **Time period:** The limited time span has been considered for examining the relation between economic variables and Indian stock market.
4. **Limited Variables:** This study does not cover entire factors which is impact on Indian stock market.

CHAPTER - 2

2. LITERATURE REVIEW

In the past two decades, many researchers, financial analysts and practitioners have attempted to predict the relationship between stock market movement and economic variables. They have conducted empirical studies to examine the effect of stock price on economic variables or vice-versa. This section of the paper has discussed some such previous research works and their empirical conclusions that are related to our sector analysis.

2.1 REVIEW OF LITERATURE

Keswani and Wadhwa (2019) conducted research to evaluate the impact of macroeconomic variables on Indian stock market. The study reveals that a strong relationship exists between disposable income, government policies, exchange rate and share prices.

Garg and Kalra (2018) conducted a study on impact of macroeconomic factors on Indian stock market. The study indicates a positive relationship between Sensex and macroeconomic factors except average inflation and unemployment rate as they show negative relationship.

Megaravalli & Sampagnaro (2018) examined the relationship between the macroeconomic factors such as inflation and exchange rates and the stock market of three countries, which are India, China and Japan. Using the Johansen test, it was found that Indian and China's stock market had a long tern association with the inflation of respective countries. Using the Granger causality test, it was found that there lies bidirectional causality from Indian Stock Market to exchange rate. No relation was found between the inflation and the Indian Stock prices and Inflation of Japan and the Japan Stock market. Using the Vector Error Correction Model showed that there exists a positive long run relation between the Indian Stock Market and the exchange rate and also between China's stock market and inflation.

Mishra (2018) explained the effects of macroeconomic variables such as IIP, Inflation, interest rates, Gold Prices, Exchange rate, FIIs and money supply; on the Indian Stock Market. It was concluded with the help of Johannsen Cointegration and VECM that there is a strong long-run relationship between the independent variables of interest rate, IIP,

inflation, gold, exchange rate, money supply, FIIs and stock market. According to the research, the short-run association was found only between inflation, money supply and stock market. Other variables like crude oil prices have been excluded from this research.

Giri & Joshi (2017) tried to ascertain the long and short run relationship between the macroeconomic factors and the stock market of India. It was analyzed that there was a long term relationship existing between the macroeconomic variables and the stock market. Factors like inflation, exchange rate and the economic growth of India, had a positive effect on the stock market while factors like oil prices had a negative effect on the stock prices as increase in oil price affects the investor's expectations regarding the inflation and hence the capital markets are affected. The Vector Error Correction Model also signified that there was both short term and long term directional relation found from Foreign Direct Investment and growth to stock market.

Zelga (2017) explained macroeconomic variables as the major drivers of the stock market irrespective of the country. The researcher took six macroeconomic indicators to find out the relation between the macroeconomic factors and the stock market of the country. It was concluded that the macroeconomic factors had a significant effect, not only on the capital market but also on the businesses, as the factors affects the investment risk in a given country. The research concluded that the effect of these six macroeconomic variables had a different effect depending on the country.

Aanchal (2017) tried to test the stock market of India through this study. For this study; GDP, Inflation, Export, Import and Investments are being taken as performance indicator of the economy of India. It was found that all the independent variables were non-stationary in nature and the market data was also nonstationary. It was also found that none of the variables i.e. both the independent and the dependent variable, had any relationship. Although it was analyzed that exports were affected due to GDP and GDP was affected due to inflation. It was found out that only inflation had a negative correlation with GDP, exports and imports, and all other variables were positively correlated. It can also be said that the stock market of India was positively correlated to all macroeconomic variables used in the research. It can be concluded from the research that, Indian stock market is not all dependent on the variables used in the study and vice versa as there are many other factors which explains the volatility in the Indian stock market.

Kotha and Sahu (2016) conducted research to explore long term and short term relationship between macroeconomic factors and Indian stock market. The study employs monthly data from July 2001 to July 2015 and reveals the presence of long run relation between the BSE Sensex and select macroeconomic indicators viz. Exchange Rate, wholesale price index, T-bill rates and M3. Bhargava et al (2016) conducted a study on Factors Affecting Stock Prices in India: A Time Series Analysis. The research was undertaken to study the relationship between macro variables such as inflation, index of Industrial production (IIP), money supply, oil prices, exchange rates, gold prices and gross domestic product (GDP) and stock prices using time series regression. The study reveals that only exchange rate, oil prices and inflation have significant impact over stock prices and the same time exchange rate and inflation are negatively related to stock prices while oil prices are positively related. The study also reveals that gold price does not have any major impact over the stock prices.

Gay Jr. (2016) has used two macroeconomic variables in his research i.e. the exchange rate and oil prices to study the relationship between the independent variables and the stock market index. For this, the Box Jenkins ARIMA technique was used which analyzed that there was a positive relation found between the exchange rate and the stock market. Also there was a negative relation found between the oil prices and the stock market. The effect of these two variables was not found to be having a significant relationship as other macroeconomic variables also affects the stock market and have a role in determination of stock prices.

Alam, Miah & Karim (2016) explained the effect of some major variables like the EPS, Dividend, inflation, etc. on the stock market of Bangladesh. The researcher has used the stock prices of cement industry as the dependent variable with stocks of 7 companies in its sample. The Pearson's correlation coefficient is used as the research technique and the final analysis has been analyzed by the use of Pooled OLS regression technique. It was found out using the random effect model that under fundamental factors, only EPS was insignificant and other two factors (NAVPS and P/E) were significant to prove the volatility. Fundamental factor i.e. CPI is only significant leaving the other two variables as insignificant. As an emerging economy, DSE's investors should take into consideration, these factors before adding stocks into their portfolio. Apart from these factors, other variables like sentiments also have a significant effect on the stock prices.

Rajesh and Bhaskar (2015) conducted a study to analyze the effect of macroeconomic variables on the movement of share prices. This study indicates that return on stocks show different behavior at firm level and at industry level. The effect of variations in macro-economic factors on stock returns is far more substantial and strong at industry level than at the firm level. Tripathi et al. (2014) studied the impact of various macro-economic variables on Indian sectoral indices. They selected five macro-economic variables namely Crude Oil prices, Current Account Balance, Exchange Rate (USD/INR), Foreign Exchange Reserves and Foreign Institutional Investments and examined their impact on different sectoral indices of National Stock Exchange (NSE) i.e. CNX Auto Index, CNX Bank Index, CNX Energy Index, CNX FMCG Index and CNX IT Index. The study reveals that amongst all the selected macroeconomic variables, Foreign Institutional Investment (FII) affects all these indices however rest of the macroeconomic variables affect different sectoral indices differently.

Gurloveleen & Bhatia (2015) used Augmented Dickey Fuller Test (ADF), Multi regression and Granger Causality test for analyzing the effects of macroeconomic variables on the prices of stocks. Using the ADF test, the data was tested for stationarity and then multiple regression models were used to find the correlation between the independent variable and the stock market. It was found that only exchange rate and FIIs was found to have a significant effect on the volatility of the Indian Stock Market but they had no unidirectional and bidirectional effect on the closing prices of the stock selected for research.

Singh (2014) has used independent variables like Industrial Production, Wholesale Price Index, Money Supply, Interest rates, Trade deficit, Foreign Institutional Investment, Gold Price, Crude Oil Prices, Exchange rates to study the effect of macroeconomic variables on the Indian Stock Market. Using the Pearson's correlation technique, it was found out that there was a strong positive correlation for Wholesale price index, Money Supply, Foreign Institutional Investments, and Exchange rate with the stock market. Using the stepwise regression model, it was analyzed that macroeconomic variables that are significant, affects the BSE and NSE indices. The Granger test was used to signify that there was unidirectional causal relationship found from exchange rate and money supply to stock market and also there was causal relationship running from index to trade deficit and FIIs. It was concluded that gold investment is the best alternative investment other than stock market that affects the performance of Indian Stock Market.

Kantesha Sanningammanavara and Kiran Kumar K V (2014) carried research on "An empirical relation on macro – economic forces and Indian stock market". The research was carried from 1998-2014 in order to find the effect mean, standard deviation, correlation and multiple regression tools were used. The researchers found that except GDP, GCF and GDS no other indicators have positive influence on the SENSEX performance.

Mishra and Gupta (2014) studied the major factors responsible for up-down movement in Indian stock market. The relationship between Sensex and macroeconomic variables - IIP, WPI, Interest Rate and Morgan Stanley Capital International Index of India during the period from 2006 to 2012. Multiple correlation and multiple regressions is used to analyze the relationship among variables. This study shows highly positive correlation of Sensex with macroeconomic variables and is significant during the period of study. Kumar (2014) has performed study including exchange rate and crude oil prices to understand its impact on Indian stock market through including S&P CNX Nifty. The study brings significant positive impact of exchange rate and crude oil prices on stock market. The positive relationship is surprisingly interesting in this study.

Malhotra and Tandon (2013) conducted a study of 95 companies listed at National Stock Exchange to determine various factors that influence stock prices. They concluded that Book Value of Firm, EPS and P-E Ratio have significant positive relationship with the stock price of the firm while dividend yield has significant negative relationship with the stock prices of the firm. Kumar (2013) conducted a study to examine the impact of macro-economic factors on stock market performance in India. He took 12 macroeconomic variables in his study which were grouped in three factors named as Macro Environment, Industrial Performance and Policy Rates. The study concludes that industrial performance plays more important role in affecting the stock market. Although policy rates also have some impact but this impact does not appear to be sustainable.

Naik (2013) investigated the effect of selected macro-economic variables on Indian stock market. Results of the study indicate that stock market index and macroeconomic variables are co-integrated. At the same time there exists a long run association between the index and these variables. The Indian stock market is directly related to the money supply and index of industrial production but it is inversely related to inflation. It was also

found that exchange rate and short term interest rate had an insignificant relationship with stock prices.

Sangmi, Mohi-u-Din (2013) studied on the topic "Macroeconomic Variables on Stock Market Interactions: The Indian Experience" to examine the effect of macroeconomic variables on the stock price movement in Indian Stock Market. They used selected macroeconomic variables inflation, exchange rate, Industrial production, Money Supply, Gold price, interest rate as independent variables. Sensex, Nifty and BSE 100 were indicated as dependent variable. The monthly time series data were gathered from RBI handbook over the period of April 2008 to June 2012. They used multiple regression analysis to construct a quantitative model showing the relationship between macroeconomics and stock price. The result of this paper found that significant relationship is occurred between macroeconomics variables and stock price in India.

Sireesha Bhanu. P (2013) carried a research on "Effect of selected macro-economic variables on stock returns in India". The study was run for 20 years and NSE market was studied. Five Macro economic factors were considered and the returns of stock gold and silver were identified. It was found that stock gold and silver are inversely related with inflation, IIP and money supply.

Tripathi K L (2013) carried a research on "Impact of Macroeconomic Variables on Sectoral Indices in India". They studied the data of 8 years from April 2011 to March 2018. Crude Oil price Exchange Rate, Foreign Institutional Investment, Current Account Balance and Foreign Exchange Reserves were the determinants that were studied with stock market indices- NSE. They found that all these factors had a significant impact on all the indices except the CNX banks, which are independent to the crude oil prices and foreign exchange rate.

Sireesha (2013) examined the impact of macroeconomic factors upon the movements of the Indian stock market index Nifty, gold and silver prices through linear regression technique. Gold returns, Silver returns are selected for the analysis as they are important now a days and are studied along with the stock returns. The performance of internal variables shows the interdependence between these variable with returns on stock, gold and silver. Stock return is significantly influenced by GDP and inflation while gold return is significantly influenced by money supply. External variables show significant impact on dependent variables.

Ray (2013) examined the relationship between macroeconomic variables and stock prices. The Industrial production presents a measure of overall economic activity in a country and moves stock prices through its influence on expected future cash flows. Thus, it is expected that an increase in industrial production index is positively related to stock price. The causal relationship between industrial production and stock price in India is covered for a period, 1990-91 to 2010-11. The findings specified that there exists no significant causal relationship between industrial production and share price in India. The result of regression, of course, suggests that there may have been positive relation between stock price and real industrial production. The increase in production of industry can enhance stock price and vice versa.

Joseph Tagne Talla (2013) had taken monthly data over the period of 1993 to 2012 to analyse the impact of macroeconomic factors on the stock market returns, a case of Stockholm Stock Exchange. For the study secondary data was used of four macroeconomic variables i.e. exchange rate, consumer price index, money supply, and interest rate. Multivariate Regression Model, unit root test and Granger causality test were used to find the relationship. The results show that both currency depreciation and inflation have significant negative impact on stock market returns. Whereas interest rate do not have any significant relationship but it affect the stock market returns negatively. Money supply has positive relationship with the stock market returns though not significant. No unidirectional, using Granger Causality, is found between the selected macroeconomic variables and the stock market returns.

Naik and Padhi (2012) examined the association between Indian share market index (BSE Sensex) and five different macro-economic variables i.e. exchange rates, industrial production index, money supply, treasury bills rates and wholesale price index. This study reveals that macroeconomic variables and BSE Sensex are co-integrated. The study also indicates that prices of stocks are directly associated to industrial production and money supply but negatively associated to whole price index. At the same time, Treasury bill rates and exchange rates are not found to be significant in deciding stock prices. Singh (2012) examined the nature of relationship between Nifty and key macroeconomic variables. The study indicates that the volatility of stock market index i.e. Nifty is due to the behavior of key macroeconomic variables along with the change in other macro factors in the economy. Anoruo (2011) studied the linkages between change in crude oil price and returns in stock market with reference to USA. He concluded that crude oil

prices and stock markets are integrated and there exists a feedback relationship between these two variables.

Ahuja, Makan, & Chauhan (2012) tried to find a relation between the macroeconomic variables like Industrial production, inflation, Call rate, exchange rate, Gold price, Oil prices, FIIs and the stock market of India. Various sectoral indices were also taken into account for the purpose of studying the relation between the macroeconomic variables and the capital markets. Using the regression and correlation technique, it was found out that exchange rate, call rate and FIIs were more significant to the Indian Stock Market than the other macroeconomic variables taken in the study. Except the exchange rate, both FIIs and the call rate affected the stock market positively. It can be concluded by the study that the stock market is significantly affected by some macroeconomic variables and should be taken into account by the investors for revenue generation.

Ramanujam& Leela (2011) examined the effect of various macroeconomic variables like GDP, exchange rate and Industrial Production; on the stock market. For the dependent variables, CNXNIFTY was taken into study and summary statistics was derived. It was found out that IIP and exchange rate had a significantly negative effect on the stock market while on the other side, GDP had a significantly positive effect on the capital market. As the GDP of a country increases, the demand increases which effects the stock prices. Using the Wald test, the results were proved that these variables have a long term effect on the stock market.

Kumar (2011) studied the relationship between key macroeconomic variables representing real as well as financial sector of Indian economy and prices of stock. This study reveals that boom periods of share market were not supported by real economic fundamentals. It implies that stock market return does not depend on real economic activity rather it depends on some other external factors. Sahu and Dhiman (2011) studied the causal relationship between selected macro-economic factors and Indian stock market indicator. The study indicates that no causal relationship exists among stock market indicator Sensex and real gross domestic product of India. Tripathy (2011) explored the relationship between Indian share market and the selected macroeconomic factors. Results indicate that share market in India is influenced by many macroeconomic variables e.g. exchange rate, inflation rate and the prevailing interest rate in the economy.

So, we can infer that these macroeconomic variables can be used as predictor to variations in Indian stock market.

Srivastava (2010) conducted a study on relevance of macroeconomic factors for the Indian stock market. The study reveals that, in long run, emerging economies e.g. India are more affected by domestic macroeconomic factors rather than global factors. Wholesale price index, Industrial production and interest rate are the main domestic macroeconomic factors that affect the stock market in long run. Mukhopadhyay and Sarkar (2003) studied the effect of macro-economic factors in explaining the variation in Indian stock market. They found that factors such as growth in money supply, real economic activity, foreign direct investment, inflation and foreign capital market activity have significant impact on stock markets in post liberalization period. On the other hand, only exchange rate had significant effect on Indian stock market in pre-liberalization period.

Agrawal (2010) conducted a study on exchange rates movement and stock market volatility. They tried to analyse the relationship between Indian rupee-US Dollar Exchange Rates and Nifty returns. In the study, the Correlation between exchange rates and Nifty returns was found to be negative. The study also indicated unidirectional relationship between return on Nifty and exchange rates running from the first one to the second. Singh (2010) examined the causal relationship between Sensex and the three macro-economic variables i.e. wholesale price index (WPI), exchange rate and index of industrial production (IIP). The study reveals that Sensex has a strong correlation with IIP and WPI but not with Exchange rate. Sensex and IIP showed a bilateral causal relationship which means that movements of Sensex can be predicted by IIP results.

Benaković & Posedel (2010) analyzed the strength of association of independent variables like inflation, industrial production, interest rates, and oil prices with the dependent variable which is the stock prices of fourteen stocks chosen. It was based on Arbitrage Pricing Theory (APT). It was analyzed that the market index was proved to be the most significant followed by interest rates, oil prices and industrial production which had a positive impact. Inflation had a negative impact on the stock prices as proves in the research. Using the sensitivity analysis, the market index was again proved to be the most sensitive affecting stock prices, having a positive risk premium. Inflation had a positive risk premium in 2008 but was negative in 2004 as analyzed by the research. Apart from

these variables, stock prices are affected significantly by investor's expectations as expectations about the futures of macroeconomic variables, affects investor's decision.

Pilinkus (2010) tried to emphasize on the dependence of stock market on the macroeconomic indicators of the economy. For the analysis, the researcher has used various techniques i.e. Granger causality test, Vector auto-regression test and the Johansen Co-integration test. On analyzing, it was found that Granger causality existed between the stock market and some macroeconomic variables. Johansen Co-integration test signified that the stock market and the factors had a long term relationship and the stock market is somewhat dependent on the macroeconomic variables of the economy. Different states showed different results in case of short term relationship as explained by the Vector auto-regression test. Test showed that the macroeconomic variables had a multi effect on the stock market index which differed in different states.

2.2 RESEARCH GAPS

The following are Research Gaps that have been identified through literature survey-
Based on literature review it was concluded that there exists a relation between economic variables and performance of the Indian stock market. However, the present study seeks to extend the extant literature in the Indian context. The study endeavors to investigate the link that exists, if any, between BSE Sensex, NSE Nifty, and economic variables such as CPI, WPI, Export and import, Call money rate, FDI, Gold, Silver, Exchange rate and Crude oil. In addition, the strength of relationship be determined between the economic drivers and Sensex, nifty based on stationary test, correlation analysis and multiple regression analysis. The findings of the study will have important and key policy implications.

2.3 THEORETICAL BACKGROUND

2.3.1 Indian Stock Market

Stock Market is one of the most versatile sectors in the financial system, and Stock Market plays an important role in economic development. Stock Market is a hub where facilities are provided to the investors to purchase and sell their Shares, Bonds and Debenture etc. In other words, Stock Market is a platform for trading various securities and derivatives without any barriers. In Stock Market various companies are listed to their business venture through public issues. In the current scenario, long term investors are investing in the companies through Stock Market to attain profit. In India listed Stock

Market are Bombay Stock Exchange (BSE), the National Stock Exchange (NSE) and the Calcutta Stock Exchange (CSE). These three are largest Indian Stock Market.

As a part of the process of economic liberalization, the stock market has been assigned an important place in financing the Indian corporate sector. Besides enabling mobilizing resources for investment directly from the investors, providing liquidity for the investors and monitoring and disciplining company managements are the principal functions of the stock markets. The main attraction of the stock markets is that they provide entrepreneurs and governments a means of mobilizing resources directly from the investors, and to the investors they offer liquidity. It has also been suggested that liquid markets improve the allocation of resources and enhance prospects of long term economic growth. Stock markets are also expected to play a major role in disciplining company's managements. In India, Equity market development received emphasis since the very first phase of liberalization in the early 'eighties. Additional emphasis followed after the liberalization process got deepened and widened in 1991 as development of capital markets was made an integral part of the restructuring strategy. Today, Indian markets conform to international standards both in terms of structure and in terms of operating efficiency.

Stock Market – At Indian Perspective

The concept of stock markets came to India in 1875, when Bombay Stock Exchange (BSE) was established as 'The Native Share and stock brokers Association a voluntary non -profit making association. We all know it, the Bhaji (Sabji) market in your neighbourhood is a place where vegetables are bought and sold. Like Bhaji (Sabji) market, a stock market as a place where stocks shares are bought and sold. The stock market determines the day's price for a stock through a process of bid and offer. You have right to bid and buy a stock shares and offer to sell the stock shares at a valuable price. Buyers compete with each other for the best bid and got their highest price quoted to purchase a particular Stock Market Shares. Similarly, sellers compete with each other for the lowest price quoted to sell the stock. When a match is made between the best bid and the best offer a trade is executed. In automated exchanges high-speed computers do this entire job. Stocks of various companies are listed on stock exchanges. Presently there are 23 stock markets In India. The Bombay Stock Exchange (BSE), the National Stock Exchange (NSE) and the Calcutta Stock Exchange (CSE) are the three large stock

exchanges. There are many small regional exchanges located in state capitals and other major cities.

Evolution of Indian Stock Market

The first stock trading in India can be traced back to the trading of securities by the East India Company in the 18th century. Soon after, in the 1830s corporate shares began to be traded in Bombay starting with the stock of Bank and Cotton presses. Like elsewhere, the stock trades in the beginning were simple and informal. One of the earliest stock exchanges took place when 22 stockbrokers began trading under a banyan tree opposite the Town Hall of Bombay in the 1850s, in a place now known as the Horniman Circle. Soon after, the location for trading stocks moved to the banyan trees at the Meadows Street junction, now known as the Mahatma Gandhi Road. They continued shifting places for years to come and finally came to a stop when they settled in 1874 at the place now known as the Dalal Street. They called themselves the Native Share and Stockbrokers Association but they were still unorganized. Finally, in 1875, they organized as the Bombay Stock Exchange (BSE).

The Bombay Stock Exchange was the first stock exchange to be set up in Asia and the First to be recognized under the Securities Contract Regulation Act, 1956. To measure the Overall performance of the exchange, the BSE developed its own stock market index Called the BSE Sensex (Sensex=sensitivity index). The index covered the top 30 Companies enlisted at the exchange and proved to be an effective measure of the overall Performance of the Exchange. Soon other stock markets emerged, the one set up after the BSE being the Ahmedabad Stock Exchange in 1894. Ahmedabad Stock Exchange mostly limited itself to trading in shares of textile mills. After this the Calcutta Stock Exchange Appeared in 1908 which traded shares of plantations and jute mills. The Madras Stock Exchange began its operations in 1920.

By the early 1980s the economy began showing a strong tendency for adopting free market economy and continued to sabotage state intervention and public sector dominance claiming that it would not achieve sustained economic growth. Also towards the end of the 1980s a strong need for modernization of the financial sector was felt as a result of the new economic forces and currency crisis. Moreover, the BSE during this period operated with the minimum level of transparency and an unreliable clearing and

settlement mechanism. All these factors led the government to establish the Securities and Exchange Board of India (SEBI) in 1988.

In 1991 the stage was set for the liberalization procedure in India as dictated by the World Bank. The years prior to the reform (1947-1991) was characterized by public sector dominance, high tax rates, and restrictions on foreign trade, finance, capacity creation, administered prices and industrial licensing. Administered interest rates, capital controls and direct credit programs persisted in the financial sector as it was under the direct control of the public sector. The public sector managed the financial sector under the provisions of the Industries (Development and Regulation) Act, 1951; Monopolies Restrictive Trade Practices Act 1969 and Foreign Exchange Regulation Act (FERA), 1973. The controls dictated by these legislative mechanisms brought about low productivity in manufacturing, a slow economic growth rate, stagnant employment rate, high inflation, mounting fiscal deficit and growing debt. The financial sector was also severely damaged as it had poorly developed money and capital markets, banking sector, inadequate prudential regulations and lack of financial innovation.

The New Economic Policy of 1991 addressed these concerns by liberalizing and privatizing the economy. It abolished the industrial policy, removed the controls on private sector, brought about fiscal reforms and opened up the economy for foreign trade and investment. A series of financial reforms were also introduced to resolve the stagnancy of the financial sector. The first generation reforms included the policy measures to reduce the statutory liquidity ratio (SLR) and cash reserve ratio (CRR) and to introduce operational flexibility in banks. The Capital Issues (Control) Act 1947 which had imposed restrictions on the resource mobilization capacity of the firms was repealed. The new era brought forth immediate changes in the financial set up by the pricing of financial assets being set free to be managed by the market, establishment of new stock exchanges and private mutual funds being enabled. All these culminated in the setting up of the Securities and Exchange Board of India (SEBI) in April 1992 which would continue to manage the Indian capital market for years to come.

The BSE continued to remain the unchallenged power in the Indian stock market scenario. But the Harshad Mehta scam incited the then Finance Minister Dr. Manmohan Singh to set up another stock exchange that would be a rival to the BSE. He urged the Industrial Development Bank (IDB) to take up the project for the establishment of the

National Stock Exchange (NSE) that would serve as a competitor to the BSE. Thus the National Stock Exchange (NSE) was established in November 1992 as the first electronically traded stock exchange in India. Following this, BSE also automated its operations in 1995 although it could hardly catch up with the NSE spot market turnover. The establishment of the three segments of the NSE trading platform followed each other in quick succession. The Wholesale Debt Market (WDM) was set up in June 1994 and the Capital Market (CM) segment began its operations by the end of 1994. The third Futures and Options segment opened up in 2000. The NSE holds the 14th position in the top 40 future exchanges in the world. The stock market index of NSE was launched in 1996 by the name of S&P CNX Nifty (Nifty= national 50) which represents 50 stocks of 25 different economy sectors and is largely a diversified index.

The NSE set the standards for many other exchanges by bringing innovative changes in products, trading, clearing, settlement and regulations. All these made the NSE a market leader which helped set international standards for the Indian stock markets. A majority of the developments in Indian stock markets like the 19 corporatized, demutualized and fully automated Indian stock exchanges owe its origin to NSE. Thus the establishment of the NSE was a landmark in the Indian stock market scenario. Another feather to its cap is that NSE was the first stock exchange in the world to use the satellite communication technology for trading. From 2000, web-based Internet trading was introduced in both NSE and BSE.

The NSE and BSE over the years have introduced several new financial products and many new indices. Index options, index futures, single stock futures and individual stock options were the different derivative instruments launched between 2000 and 2001. Alongside this, SEBI has also ensured the efficiency of stock trading and protection of investors being the regulatory authority. It has undertaken several regulatory and procedural changes by permitting the foreign institutional investment (FII) into Indian markets and approved short selling. SEBI has also made provisions for direct market access (DMA) to institutional investors. All these collectively resulted in better transparency and efficiency of Indian stock markets.

Stock Exchanges in India

There are two main stock exchanges in India, Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). These two make up the stock market scene in India.

There are other regional stock exchanges like Madras Stock Exchange, but the level of trade and listings are far lower than these two.

Functions of Stock Exchange

Following are some of the most important functions that are performed by stock exchange

- **Role of an Economic Barometer:** Stock exchange serves as an economic barometer that is indicative of the state of the economy. It records all the major and minor changes in the share prices. It is rightly said to be the pulse of the economy, which reflects the state of the economy.
- **Valuation of Securities:** Stock market helps in the valuation of securities based on the factors of supply and demand. The securities offered by companies that are profitable and growth-oriented tend to be valued higher. Valuation of securities helps creditors, investors and government in performing their respective functions.
- **Transactional Safety:** Transactional safety is ensured as the securities that are traded in the stock exchange are listed, and the listing of securities is done after verifying the company's position. All companies listed have to adhere to the rules and regulations as laid out by the governing body.
- **Contributor to Economic Growth:** Stock exchange offers a platform for trading of securities of the various companies. This process of trading involves continuous disinvestment and reinvestment, which offers opportunities for capital formation and subsequently, growth of the economy.
- **Making the public aware of equity investment:** Stock exchange helps in providing information about investing in equity markets and by rolling out new issues to encourage people to invest in securities.
- **Offers scope for speculation:** By permitting healthy speculation of the traded securities, the stock exchange ensures demand and supply of securities and liquidity.
- **Facilitates liquidity:** The most important role of the stock exchange is in ensuring a ready platform for the sale and purchase of securities. This gives investors the confidence that the existing investments can be converted into cash, or in other words, Stock exchange offers liquidity in terms of investment.
- **Better Capital Allocation:** Profit-making companies will have their shares traded actively, and so such companies are able to raise fresh capital from the equity

market. Stock market helps in better allocation of capital for the investors so that maximum profit can be earned.

- **Encourages investment and savings:** Stock market serves as an important source of investment in various securities which offer greater returns. Investing in the stock market makes for a better investment option than gold and silver.

Who are the participants in the Indian Stock Market?

- Indian Retail Participants- These are Indian citizens like me and you buying or selling for individual gain.
- NRI and OCI- These are Indians living abroad.
- Indian Institutions- Large Indian companies like LIC invest in large sums in various stocks. It also includes corporate bodies and banks.
- Indian Asset Management Companies- These are mainly companies that invest pooled money through mutual funds. Their business day-in and out is investment management.
- Foreign Investors: Large foreign asset management companies also invest in Indian stock market.

All the participants are looking to make money and in the race to make the most they could adopt wrongful practices. To watch over these fraudulent practices, India has an apex body.

The regulator of Indian Stock Market

The Securities and Exchange Board of India is the body regulating the Indian stock Market.

The functions of SEBI include

- Development of Stock Exchanges and see to it that they are conducting fair business.
- To moderate practices of all the participants.
- To protect interest of small investors
- To watch if investors with large capitals aren't manipulating the market
- To see to it that corporates do not use the stock market to make selfish gains

The SEBI has various entities that follow the rules specified by it. The entities include credit rating agencies, stock brokers, depositories, etc. They help in the smooth and controlled functioning of the stock market activities.

2.3.2 Consumer Price Index (CPI)

The Consumer Price Index (CPI) is a measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food, and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living. The CPI is one of the most frequently used statistics for identifying periods of inflation or deflation.

The Consumer Price Index measures the average change in prices over time that consumers pay for a basket of goods and services. CPI is the most widely used measure of inflation and, by proxy, of the effectiveness of the government's economic policy.

The CPI statistics cover professionals, self-employed, unemployed, people whose incomes are below the federal poverty threshold, and retired people in the country but excludes non-metro or rural populations, farm families, armed forces, people who are currently incarcerated, and those in mental hospitals.

How CPI is used

CPI is an economic indicator. It is the most widely used measure of inflation and, by proxy, of the effectiveness of the government's economic policy. The CPI gives the government, businesses, and citizens an idea about prices changes in the economy, and can act as a guide in order to make informed decisions about the economy.

The CPI and the components that make it up can also be used as a deflator for other economic indicators, including retail sales, hourly/weekly earnings. Additionally, it can be used to value a consumer's dollar to find its purchasing power. Generally, the dollar's purchasing power declines when the aggregate price level increases and vice versa.

The index can also be used to adjust people's eligibility levels for certain types of government assistance including Social Security and it automatically provides the cost-of-living wage adjustments to domestic workers. According to the BLS, the cost-of-living adjustments of more than 50 million people on Social Security, as well as military and Federal Civil Services retirees are linked to the CPI.

The formula used to calculate the Consumer Price Index for a single item is as follows:

CPI = Cost of Market Basket in Given Year / Cost of Market Basket in Base Year * 100

CPI Components

The market basket is made up of more than 200 categories of goods and services, organized into eight groups: food and beverages, housing, apparel, transportation, medical care, recreation, education and communication, and miscellaneous goods and services including tobacco and smoking products, haircuts and other personal services and funeral expenses. The CPI also includes taxes that are associated with the purchase of these goods and services as well as government fees such as water and sewerage charges, auto registration fees and vehicle tolls. As a gauge of the cost of living, it gives a good idea of how the consumer's lifestyle is being affected by the prices of common purchases. When the consumer is spending more each month on basics, it is likely he will moderate savings and spending on large-ticket items. This is why the stock market watches the CPI. If the consumer cuts back spending because basic expenses are too high, a recession usually follows and this means lower earnings for public companies and lower prices for their stocks.

Impact of CPI on Stock Market

Increase in CPI data indicates that Inflation will increase. As a result, the price of a retail item will increase. It also increases spending and reduces the saving of people each month. At that time the consumer cuts back spending because basic expenses are too high, a recession usually follows. It means lower earnings for public companies and lower prices for their stocks. Ultimately this will show a negative impact on the stock market.

On the other hand, decrease in CPI data indicates that Inflation will ease. As a result, the price of a daily household item will fall. It decreases spending and increases the saving of people each month. It means higher earnings for public companies and higher prices for their stocks. Ultimately this will show a positive impact on the stock market

Consumer Price Index (CPI) vs. Inflation

There are many ways to calculate inflation but the Consumer Price Index is the most common way used to measure it. The other methods used for calculating inflation include Gross Domestic Product Deflator, Cost-of-living indices, Producer price indices (PPIs), Commodity price indices and Core price indices. The Consumer Price Index measures the

inflation of household items used by people in their day-to-day life. In simple word you can say that CPI is one of the basic tools to measure Inflation.

Uses of CPI

- To serve an economic indicator: The consumer price index is a measure of the inflation faced by the end user. It can determine the purchasing power of the dollar. It is also a proxy for the effectiveness of a government's economic policy.
- To adjust other economic indicators for price changes: For example, components of national income could be adjusted using CPI.
- Provides cost-of-living adjustments for wage earners and social security beneficiaries and prevents and inflation induced increase in tax rates.

Limitations of the CPI

- The consumer price index may not be applicable to all population groups. For example, CPI-U (Urban) better represents the U.S. urban population but does not reflect the status of the population in rural areas.
- CPI does not produce official estimates for subgroups of a population.
- CPI is a conditional cost of living measure and does not measure every aspect that affects living standards.
- Two areas can't be compared. A higher index in one area compared to the other does not always mean that prices are higher in that area.
- Social and environmental factors are behind the definitional scope of the index.

2.3.3 Wholesale Price Index (WPI)

A wholesale price index (WPI) is an index that measures and tracks the changes in the price of goods in the stages before the retail level. This refers to goods that are sold in bulk and traded between entities or businesses (instead of between consumers). Usually expressed as a ratio or percentage, the WPI shows the included goods' average price change; it is often seen as one indicator of a country's level of inflation.

How Wholesale Price Index (WPI) works

Wholesale price indexes (WPIs) are reported monthly in order to show the average price changes of goods. The total costs of the goods being considered in one year are then compared with the total costs of goods in the base year. The total prices for the base year

are equal to 100 on the scale. Prices from another year are compared to that total and expressed as a percentage of change.

To illustrate, imagine 2013 is the base year. If the total price of the goods under consideration in 2013 was $4,300, and the total for 2018 is $5,000, the WPI for 2018 with the base year of 2013 is 117 (5000 – 4300 = 700/6 years), indicating an increase of 17 percent.

A WPI typically takes into account commodity prices, but the products included vary from country to country. They are also subject to change, as needed, to better reflect the current economy. Some small countries only compare the prices of 100 to 200 products, while larger countries tend to include thousands of products in their WPIs.

When calculating the WPI, the U.S. included commodities at various stages of production, and as a result, many items were counted more than once. For example, the index included cotton prices for raw cotton, cotton yarn, cotton grey goods, and cotton clothing. In addition, the U.S. also included crude materials, consumer goods, fruit, grains, and apples. The U.S. also created indexes for nearly 100 subgroups.

What is the difference between WPI and CPI inflation?

While WPI keeps track of the wholesale price of goods, the CPI measures the average price that households pay for a basket of different goods and services. Even as the WPI is used as a key measure of inflation in some economies, the RBI no longer uses it for policy purposes, including setting repo rates. The central bank currently uses CPI or retail inflation as a key measure of inflation to set the monetary and credit policy.

How to calculate Wholesale Price Index?

- The monthly WPI number shows the average price changes of goods usually expressed in ratios or percentages.
- The index is based on the wholesale prices of a few relevant commodities available.
- The commodities are chosen based on their significance in the region. These represent different strata of the economy and are expected to provide a comprehensive WPI value.
- The advanced base year 2011-12 adopted recently uses 697 items.

Major Components of WPI

- Primary articles is a major component of WPI, further subdivided into Food Articles and Non-Food Articles.
- Food Articles include items such as Cereals, Paddy, Wheat, Pulses, Vegetables, Fruits, Milk, Eggs, Meat & Fish, etc.
- Non-Food Articles include Oil Seeds, Minerals and Crude Petroleum
- The next major basket in WPI is Fuel & Power, which tracks price movements in Petrol, Diesel and LPG
- The biggest basket is Manufactured Goods. It spans across a variety of manufactured products such as Textiles, Apparels, Paper, Chemicals, Plastic, Cement, Metals, and more.
- Manufactured Goods basket also includes manufactured food products such as Sugar, Tobacco Products, Vegetable and Animal Oils, and Fats.

Impact of WPI on Stock Market

Increase in WPI data indicates that Inflation will increase. As a result, the price of Wholesale item will increase. It also increases spending and reduces the saving of people each month. At that time the consumer cuts back spending because basic expenses are too high, a recession usually follows. It means lower earnings for public companies and lower prices for their stocks. Ultimately this will show a negative impact on the stock market.

On the other hand, decrease in WPI data indicates that Inflation will ease. As a result, the price of the daily household item will fall. It decreases spending and increases the saving of people each month. It means higher earnings for public companies and higher prices for their stocks. Ultimately this will show a positive impact on the stock market.

Wholesale Price Index vs. Inflation

There are many methods to calculate the inflation but the Wholesale Price Index is the most important method used to measure it. The other methods used for calculating inflation include Gross Domestic Product Deflator, Cost-of-living indices, Producer price indices (PPIs), Commodity price indices and Core price indices.

The Wholesale Price Index measures the inflation of wholesale items sold by wholesalers across the country. In simple word WPI is one of the basic and important tools to measure Inflation.

Uses of WPI

- As earlier mentioned in the definition, WPI is a measure of inflation. Hence the governments and the Banking regulatory authority can use them for fiscal and monetary policies.
- It helps to forecast the future selling price of a product affected due to inflation; hence the business can estimate the demand for the product at the inflated effected price and make suitable modifications to the production and distribution strategies and plans.
- The foreign exchange rates are affected due to inflation; hence they can be used to Purchasing power parity.

Limitation of WPI

- WPI considers the impact of only a sample of goods that are supposed to represent the entire population of goods. Always an inherent risk of business exists.
- Since it is representative of the population, the inflation calculated as a whole using the weighted average may not be accurate.
- Different countries use different products to calculate the WPI. Therefore, it is not always comparable to other countries.
- It does not serve as the right benchmark for countries dominated by the service sector.

2.3.4 Import and Export

Imports are the goods and services that are purchased from the rest of the world by a country's residents, rather than buying domestically produced items. Imports leads to an outflow of funds from the country since import transaction involve payments to sellers residing in another country.

Exports are goods and services that are produced domestically, but then sold to customers residing in another country. Exports leads to an inflow of funds to the seller's country since export transactions involve selling domestic goods and services to foreign buyers.

Positive net exports indicate economic growth while imports are a drag on the economy since imports represent outflow of funds.

The exchange rate is a determinant of the volume of rupees earned per dollar of exports and currency paid per dollar of imports. Hence it determines the competitiveness of imports in the domestic market and competitiveness of exports in the foreign market.

Devaluation in rupee indicates that more local currency is required to purchase imported items. As for as exports are concerned, the exporters get more local currency in exchange if their goods or services. In other words, devaluation of currency makes imports more expensive and exports cheaper.

In the same way an appreciation in rupee will indicate that less local currency is required to make the import purchases and exports now get less currency for their sales. Thus, it makes imports cheaper and exports expensive.

Trade Deficit

A trade deficit also referred to as net exports, is an economic condition that occurs when a country is importing more goods than it is exporting. The trade deficit is calculated by taking the value of goods being imported and subtracting it by the value of goods being exported.

If a country has a trade deficit, it imports (or buys) more goods and services from other countries than it exports (or sells) internationally. If a country *exports more* goods and services than it imports, the country has a balance of trade surplus.

Trade Deficit and its impact on Stock Market

A trade deficit can impact a stock market albeit indirectly since it can be a positive sign that a country is growing and needs more imports or a negative sign that a country is struggling to sell its goods internationally.

A sustained trade deficit could have adverse effects on a country and its markets. If a country has been importing more goods than exporting for a prolonged period, it could be going into debt (much like a household would).

Over time, investors could notice the decline in spending on domestically produced goods hurting domestic companies and their stock prices. As a result, investors could experience fewer investment opportunities domestically and begin to invest in more favourable

opportunities in foreign stock markets. The result would be a lower stock market as investors sell domestically-held stocks and sending capital flows overseas.

Conversely, trade deficits can occur when a country is expanding and growing. Emerging markets traditionally have had to run trade deficits as they build up their infrastructure, factories, and housing to support a growing economy. Once the industries have been established, an emerging market could import less and instead, domestically source its needs from its manufacturing sector.

Also, if a country is exporting more, those industries are selling more goods globally, which can lead to a rise in the stock market. However, a rise in exports is not mutually exclusive to changes in imports. In other words, countries could experience both an increase in exports and imports simultaneously as the country's economy grows-all while still running a trade deficit.

The imports could be needed as input goods for the production of the country's exports or sales overseas. A rise in exports contributes positively to economic growth since it would essentially be in an increase in foreign sales for domestic companies. Higher economic growth could lead to a rise in consumer spending resulting in more purchases of imports. The growing economy would lead to a higher Stock Market. As a result, a trade deficit could coexist during times of economic expansion and a rising stock market.

Why Trade Deficits occur

A trade deficit can occur for a number of reasons, but typically a country has a deficit when it's unable to produce enough goods for its consumers and businesses.

For example, a country might have a limited amount of natural resources and as a result, needs to import raw materials such as lumber or oil to satisfy the country's demand for those commodities. Countries might also specialize in specific goods or industries.

For example, Canada exports seafood, oil, and lumber, while China exports electronics, clothing, footwear, and steel. A land-locked country would have no access to the sea and would need to import seafood to satisfy its' consumer demand.

As a result, a trade deficit isn't necessarily a bad sign for an economy. On the contrary, a deficit could be a signal that a country’s consumers are wealthy enough to purchase more goods than their country produces.

Pros of Importing

- **High quality:** If you choose your business on importing products, it's a good chance that you will produce with high-quality products, in fact that most of the companies are aware their reputation depends on their quality of the items.
- **Lower costs:** By expanding worldwide beyond the domestic market and production levels will increase and costs per product depending on the process will reduce.
- **Becoming a leader in your industry:** One of the main advantages of importing products is becoming a market leader in the industry, many companies are trying to introduce a new product in import market, before come about by competitors. The very first company import a high-quality product that can facilitate you to become a leader in the industry.

Cons of Importing

- **Balance of payments:** During a given period, the balance of payment (BOP) records all monetary transactions made between residents of a country. Paying the down payment puts additional pressure on their balance of payments and this can be make matters even worse in some case. In future, it will become a prerequisite for them to take out additional loans to pay off their old debts/loans.
- **Less reach for a potential domestic investment:** It will reduce the scope of potential domestic investment. It is doubtful that foreign capital is limited to the development of Exim business industries. Fluctuations in foreign capital pose a challenge to the stability of the domestic market.

Pros of Exporting

- **Increased competitiveness:** Exporting can allow you to expose yourself to a new idea. It contains management practices, marketing techniques, modes of competition, etc. This can help you better position your business to increase competitiveness.
- **Increase profits:** Exporting products can go a long way in increasing your profits because local customers buy a few products, overseas companies product, leading to increased profits. If your products are unique, your profits can increase in no time.

- **Increase sales:** While importing products can help businesses reduce costs, exporting products can increase sales. Making money selling their offerings in the local market, these companies focus on finding new ways to showcase their work. Exporting products is beneficial for large companies-those that have developed in the local market. Exporting can be a way to scan for overseas franchising or even production time.

Cons of Exporting

- **Product modification:** In order to meet some requirements in the export market, your product should modify. Some companies may not have the technical know-how regarding these changes. It may have to bear the costs joined with hiring an expert. To modify your product can stretch the human resource of the company.
- **Payment:** Besides, the risk of non-payment involved in the collection of the payments. Using multiple methods like a letter of credit, consignment, etc. can be time consuming.

2.3.5 Foreign Direct Investment (FDI)

A foreign direct investment (FDI) is an investment made by a firm or individual in one country into business interests located in another country. Generally, FDI takes place when an investor establishes foreign business operations or acquires foreign business assets in a foreign company. However, FDIs are distinguished from portfolio investments in which an investor merely purchases equities of foreign-based companies.

FDIs are actively utilized in open markets rather than closed markets for investors. Horizontal, vertical, and conglomerate are types of FDI's. Horizontal is establishing the same type of business in another country, while vertical is related but different, and conglomerate is an unrelated business venture. Apple's investment in China is an example of an FDI

In other words, Foreign Direct Investment (FDI) refers to the long-term direct investment made by a foreign entity, in the production and management of an entity in another country either by buying a company in the that country or by expanding the operations of existing business in that country, with the objective of establishing a lasting interest in the management of the latter entity. Along with the inflow of funds, it also involves participation in the management, joint venture, transfer of technology and expertise.

How a Foreign Direct Investment Works

Foreign direct investments are commonly made in open economies that offer a skilled workforce and above-average growth prospects for the investor, as opposed to tightly regulated economies. Foreign direct investment frequently involves more than just a capital investment. It may include provisions of management or technology as well. The key feature of foreign direct investment is that it establishes either effective control of or at least substantial influence over the decision-making of a foreign business.

Special consideration

Foreign direct investments can be made in a variety of ways, including the opening of a subsidiary or associate company in a foreign country, acquiring a controlling interest in an existing foreign company, or by means of a merger or joint venture with a foreign company.

The threshold for a foreign direct investment that establishes a controlling interest, per guidelines established by the organisation of Economic Co-operation and Development (OECD), is a minimum 10% ownership stake in a foreign-based company. However, that definition is flexible, as there are instances where effective controlling interest in a firm can be established with less than 10% of the company's voting shares.

Types of Foreign Direct Investment

Foreign direct investments are commonly categorized as being horizontal, vertical or conglomerate.

A horizontal direct investment refers to the investor establishing the same type of business operation in a foreign country as it operates in its home country, for example, a cell phone provider based in the United States opening stores in China.

A vertical investment is one in which different but related business activities from the investor's main business are established or acquired in a foreign country, such as when a manufacturing company acquires an interest in a foreign company that supplies parts or raw materials required for the manufacturing company to make its products.

A conglomerate type of foreign direct investment is one where a company or individual makes a foreign investment in a business that is unrelated to its existing business in its home country. Since this type of investment involves entering an industry in which the

investor has no previous experience, it often takes the form of a joint venture with a foreign company already operating in the industry.

Impact of FDI on Stock Market

As FDI increases, the growth rate of the economy increases, as the growth rate increases this in turn leads to stability needed for the growth of the financial sector hence the development of stock market. On one hand, when there are FDI flows, some of the investors invest directly in equity; this will lead to an increase in the equity price permanently. Also the buying and selling of these equities also could lead to internationalization of the stock market. Finally, those who invest directly in physical capital and new areas of the economy and those firms are expected to be listed on the stock market. When this listing take place it increases the number of listed companies on the stock market and this is expected to lead to stock market development.

2.3.6 Exchange Rate

An exchange rate is the value of one nation's currency versus the currency of another nation or economic zone. Most exchange rates are free-floating and will rise or fall based on supply and demand in the market. Some currencies are not free-floating and have restrictions.

For example, how many U.S. dollars does it take to buy one euro? As of July 31, 2020, the exchange rate is 1.18, meaning it takes $1.18 to buy €1.

Exchange rate is the price of one country's currency to that of another country. This implies that exchange rate has two components, i.e. the domestic and foreign component and hence indicating that it can be expressed directly or indirectly (Akong'a, 2014). Direct expression of exchange rate is where the exchange rate is expressed based on domestic currency. On the other hand, indirect expression is where the rate of exchange is expressed in foreign currency terminologies. In direct expression, local currency is termed as the counter currency, while the foreign currency, and becomes base currency.

Globally, most exchange rates are expressed in terms of United States Dollar (USD), and in some cases, the Euro and other currencies from the common wealth including: British pound, and Australian dollar (Akong'a, 2014). There are two exchange rate regimes; the floating (flexible) and fixed. In the fixed exchange rate regime, the rates of exchange are determined by central banks, while in the floating regime, forces of demand and supply determine exchange rates.

Exchange Rate and Stock Market performance

Existence of the relationship between the exchange rates and stock markets is not in doubt. Firms listed on the stock exchange determine share prices based on their net profits (Adjasi & Biekpe, 2005). The share price of a firm thus depends on the profit and especially, how much the company expects to earn in the long-term. The price of a given security is more likely to increase if based on speculation, the firm anticipates getting more profit in future. On the other hand, if the company anticipates a downward trend in its future revenue, then its share price is likely to decline.

Both theory and empirical findings indicate the relationship exist between exchange rates and stock market prices. Dombusch and Fischer (1980) proposed that any change in exchange rate affect competitiveness of companies because exchange rate volatility impacts on the income values and costs of operations because many firms borrow in terms of foreign currencies for investment and day to-day operations. A devaluation of domestic currency, makes a country's exports more competitive, and hence more demand for local exports by foreigners. This ultimately leads to increase in firm's profits and stock prices, and increase of the domestic currency produces contrary results.

How Exchange Rates work

John is traveling to Germany from his home in New York and he wants to make sure he has 200 dollars' worth of euros when he arrives in Germany. He goes to the local currency exchange shop and sees that the current exchange rate is 1.20. It means if he exchanges $200, he will get €166.66 in return.

In this case, the equation is: dollars ÷ exchange rate = euro

$200 ÷ 1.20 = €166.66

John has returned from the trip, and he now wants to exchange his euros for dollars. He never used his €166.66 and now sees the exchange rate has dropped to 1.15. He exchanges his €166.66, and because the rate fell when he was away, he receives only $191.67. The reason he gets less despite having the same value of euros is that the euro weakened versus the dollar during his time away.

In this case, the equation is the opposite: euros x exchange rate = dollars

€166.66 x 1.15 = $191.66

However, not all currencies work the same way. For example, the Japanese yen is calculated differently. In this case, the dollar is placed in front of the yen, as in USD/JPY.

The equation for USD/JPY is: dollars x exchange rate = yen

Let's say someone traveling to Japan wants to convert $100 into yen, and the exchange rate is 110. The traveler would get ¥11,000. To convert yen back into dollars one needs to divide the amount of the currency by the exchange rate.

$100 x 110 = ¥11,000.00

Or

¥11,000.00/110= $100

Factors affecting the change of Exchange Rate

- **Balance of payments:** When a country has a large international balance of payments deficit or trade deficit, it means that its foreign exchange earnings are less than foreign exchange expenditures and its demand for foreign exchange exceeds its supply, so its foreign exchange rate rises, and its currency depreciates.
- **Interest rate level:** Interest rates are the cost and profit of borrowing capital. When a country raises its interest rate or its domestic interest rate is higher than the foreign interest rate, it will cause capital inflow, thereby increasing the demand for domestic currency, allowing the currency to appreciate and the foreign exchange depreciate.
- **Inflation factor:** The inflation rate of a country rises, the purchasing power of money declines, the paper currency depreciates internally, and then the foreign currency appreciates. If both countries have inflation, the currencies of countries with high inflation will depreciate against those with low inflation. The latter is a relative revaluation of the former.
- **Fiscal and monetary policy:** Although the influence of monetary policy on the exchange rate changes of a country's government is indirect, it is also very important. In general, the huge fiscal revenue and expenditure deficit caused by expansionary fiscal and monetary policies and inflation will devalue the domestic currency. The tightening fiscal and monetary policies will reduce fiscal expenditures, stabilize the currency, and increase the value of the domestic currency.

- **Venture capital:** If speculators expect a certain currency to appreciate, they will buy a large amount of that currency, which will cause the exchange rate of that currency to rise. Conversely, if speculators expect a certain currency to depreciate, they will sell off a large amount of the currency, resulting in speculation. The currency exchange rate immediately falls. Speculation is an important factor in the short-term fluctuations in the exchange rate of the foreign exchange market.
- **Government market intervention:** When exchange rate fluctuations in the foreign exchange market adversely affect a country's economy, trade, or the government needs to achieve certain policy goals through exchange rate adjustments, monetary authorities can participate in currency trading, buying or selling local or foreign currencies in large quantities in the market. The foreign exchange supply and demand has caused the exchange rate to change.
- **Economic strength of a country:** In general, high economic growth rates are not conducive to the local currency's performance in the foreign exchange market in the short term, but in the long run, they strongly support the strong momentum of the local currency.

Types of Exchange Rate

- **Fixed exchange rate:** It means that the exchange rate between a country's currency and another country's currency is basically fixed, and the fluctuation of exchange rate is very small.
- **Floating exchange rate:** It means that the monetary authorities of a country do not stipulate the official exchange rate of the country's currency against other currencies, nor does it have any upper or lower limit of exchange rate fluctuations. The local currency is determined by the supply and demand relationship of the foreign exchange market, and it is free to rise and fall.

2.3.7 Gold Price

Of all the precious metals, gold is the most popular as an investment. Investors generally buy gold as a way of diversifying risk, especially through the use of futures contracts and derivatives. The gold market is subject to speculation and volatility as are other markets. Compared to other precious metals used for investment, gold has been the most effective safe haven across a number of countries.

Gold has traditionally been considered an attractive investment in India and its excellent performance in recent years has substantially confirmed the wisdom of that tradition. When markets are volatile and investors panic they tend to move out the risky assets such as stock and invest into assets such as gold.

Moreover, many researchers have also identified the long-run and short-run relationships between stock price index and gold price in developed and developing nations. The research also explicates that the gold prices can influence the stock market to a great extent (Yahyazadehfar and Babaie, 2012) The investment in the gold mainly becomes appealing and radiant, when investors have to otherwise bear diminishing stock market returns in times of upset stock market conditions. Gold was one of the first metals excavated by humans.

Theoretically there is an inverse relationship between the stock market and gold prices. There have been circumstances where the stock markets rise and gold prices fall. Gold prices may also rise in sympathy with the fall in stock prices. The reason lies in the perception of the market by investors. Investors who foresee a bearish market, usually take positions in gold futures to safe guard their investments.

The following are the Reasons for Gold has high demand in India

The domestic gold price in India is continuously increasing due to its heavy demand in the country. There are several reasons gold has high demand in India. The first reason is security; gold offers full security as long as it is retained by central banks. There is no credit risk attached to gold. Secondly, gold is able to maintain its liquidity even at times of crisis situations like high global inflation or political turbulence. The third reason for holding gold is to build a diversified portfolio (Narang and Singh, 2013).

Price of Gold and Stock Market correlation

When gold price is up, stock is down. Is there a correlation between price of gold and stock market? Gold is often referred as safe investment heaven. But when we refer gold as ‘safe’ we are talking about safety with respect to what?

Gold works as a safety cushion for investors against stock market. We are comparing gold and stock market. Gold and stock market correlation cannot be established directly. But when we see the historical performance of ‘gold’ and ‘stock market’ we can understand the correlation better. In general, gold and stock correlation is inversely proportional. Which means, when gold price goes up, prices in stock market will fall.

Historically it has been observed that when stock market is most pessimistic, gold performs very well. This gold and stock market correlation is valid for all world economies. Sale of gold coins, gold bars, and gold ETF are maximum when stock market is performing badly. It has also been observed that gold demand picks up fast when country's GDP growth rate is faltering. In such situations people prefer to park their money in hard assets like gold. Currency based investment options are left alone. Stock market is one such investment option that is left during financial crisis of world. But this information that gold is negatively correlated with stock market is a valuable information. It helps in creation of a diversified investment portfolio.

Factors that affect Gold Price

- **Consumption demand:** Demand for gold in India is interwoven with culture, tradition, the desire for beauty and the desire for financial protection. According to a study by World Gold Council commissioned by the World Gold Council and Federation of Indian Chambers of Commerce and Industry (FICCI), Indian consumers view gold as both an investment and an adornment. When asked why they bought gold, almost 77 per cent of respondents cited safety of investment as a factor, while just over half cited adornment as a rationale behind their purchase of gold.

- **Protection against Volatility:** People want to invest or buy gold to protect themselves from volatility and uncertainty. The preference for physical assets makes Indian households view gold as a safe haven, an asset to buy when other assets are losing value. Underlining gold's attraction as an asset for good times and bad, most investors would buy gold whether the domestic economy was growing or in recession.

- **Gold and inflation:** When inflation rises, the value of currency goes down and therefore people tend to hold money in the form of gold. Therefore, in times when inflation remains high over a longer period, gold becomes a tool to hedge against inflationary conditions. This pushes gold prices higher in the inflationary period.

- **Gold and interest rates:** According to some industry experts, under normal circumstances, there is a negative relationship between gold and interest rates. Rising yield indicates an expectation of strong economy. Strong economy gives rise to inflation and gold is used as a hedge against inflation. Also, when rates rise,

investors flock to fixed-income investments that yield a fixed return unlike gold which does not carry any such return.

- **Good monsoon:** Rural demand plays an important role in the demand for gold in the country which depends primarily on monsoons. India annually consumes 800-850 tons of gold and rural India accounts for 60 percent of the country's gold consumption. Therefore, monsoon plays a big part in gold consumption because if the crop is good, then farmers buy gold from their earnings to create assets. On the contrary, if there is deficient monsoon, farmers tend to sell gold to generate funds.

- **Impact of rupee-dollar equation:** The rupee-dollar equation has a role to play in Indian gold rates although it does not impact global gold prices. Gold is largely imported and hence if the rupee weakens against the dollar, gold prices will likely appreciate in rupee terms. So, a deprecating rupee may dent the demand of gold in the country. However, remember the change in rupee-dollar rates has no impact on gold rates denominated in dollars.

- **Correlation with other asset classes:** It is believed by some economists that gold is a highly effective portfolio diversifier due to its low to negative correlation with all major asset classes. Still, as a rule, gold shows no statistically significant correlation with mainstream asset classes. However, some suggests that there is evidence that when equities are under stress, in other words when shares are falling rapidly in value, an inverse correlation can develop between gold and equities.

- **Weakening dollar:** Under normal circumstances, gold and dollar share an inverse relationship. Since international gold is dollar denominated, any weakness in the dollar pushes up gold prices and vice versa. The inverse relationship is because firstly, a falling dollar increases the value of currencies of other countries. This increases the demand for commodities including gold. It also increases the prices. And secondly, when the US dollar starts to lose its value, investors look for alternative investment sources to store value and gold is an alternative for those investors.

- **Future gold demand:** According to some estimates, global demand for gold is 1,000 tones more than the supply. With no new mining capacity coming through, most of the gold is being recycled. Therefore, less of supply is another factor for

changes in gold rates. Inflationary pressures in the world economy are positive drivers of gold prices.

2.3.8 Call Money Rate

The call money rate is the interest rate on a type of short-term loan that banks give to brokers, who in turn lend the money to investors to fund margin accounts. For both brokers and investors, this type of loan does not have a set repayment schedule and must be repaid on demand. The investor who owns the margin account pays their broker the call money rate plus a service fee in return for using the margin capabilities offered by the broker.

There is an inverse relation between the rate of interest of call money and other securities such as commercial paper and certificates of deposit. When this rate increases, the other securities may become more attractive. Thus, movement of call rates, too, has an impact on policy rates.

Call money is minimum 5% short-term finance repayable on demand, with a maturity period of one to fourteen days or overnight to a fortnight. It is used for inter-bank transactions. The money that is lent for one day in this market is known as "call money" and, if it exceeds one day, is referred to as "notice money".

Example of Call Money Rate

The current call money rate is 2% as of April 2020. In April 2019 the call money rate was 4.25%. Broker ABC is looking to purchase 1,000 shares of Apple Inc. for a large client that's looking to buy the shares on margin. The client will pay the broker in full within 30 days.

The broker will then borrow the needed money from a bank so that the client can buy shares now. The bank can call the loan at any time and charges a call money rate of the London Interbank Offered Rate (LIBOR) plus 0.1%. If the broker chooses to collect the money before the 30 days is up they'll do a margin call. Or if the value of the securities falls below the maintenance margin requirement they'll call the loan.

2.3.9 Crude Oil Prices

Crude oil is a naturally occurring petroleum product composed of hydrocarbon deposits and other organic materials. A type of fossil fuel, crude oil is refined to produce usable products including gasoline, diesel, and various other forms of petrochemicals. It is a non-

renewable resource, which means that it can't be replaced naturally at the rate we consume it and is, therefore, a limited resource.

Impact on Stock Market

Now, if research and history are to be believed, then there is an inverse relationship between the oil price and the Indian equity market. This is because the Indian oil industry is majorly an importer of oil. Therefore, industries like tyre, lubricants, logistics, refinery, airlines, paints, etc. are directly affected by a change in oil prices.

Further, as we are aware, energy stocks have nearly 12.5% weightage in Nifty 50 and nearly 15% weightage in Sensex. So, strength in crude oil prices adversely affects these oil-dependent industries and weakness in oil prices, usually signals strength in these companies' stock prices. If we were to take an example of the paint industry, companies like Asian paints, Kansai Nerolac, etc. use oil as a major ingredient in their paint. So, any movement in oil prices directly impacts their performance in the stock market.

Here are a few points that explain the impact of crude oil prices on the Indian Stock Markets.

- **Current Account Deficit (CAD) and Rupee depreciation:** Every U$10/bbl. increase in oil price leads to a 0.55% or 55 bps increase in the current account deficit. Crude oil is one of the most important commodities in recent time. India is one of the largest importers of oil in the world. It imports more than three-fourths of its oil needs. Therefore, a fall in the price of crude oil will have a positive impact on India's current account deficit situation. Lower CAD will mean reduced stress on foreign currency outflows. This, in turn, may lead to rupee appreciation. If the value of rupee appreciates, the imports become cheaper. This will affect the companies who depend on import crude oil and other raw materials, for their business. The price of stocks of these companies will thus experience a rise.

- **A rise in the cost of production:** Companies like tyre, lubricants, logistics, footwear, refinery, and airlines hugely depend on crude oil prices. Further, products like paints too will benefit from reduced crude oil prices. This is because; most paints used today are oil-based. A fall in crude-oil prices affects the input cost of producing these goods. Thus, a fall crude oil prices have a positive impact on the stocks of these companies.

- **A rise in the transportation cost:** A rise or fall in crude oil prices affects the transportation cost of goods. Crude oil prices have a considerable impact on the prices of consumer durables. These products are manufactured in industrial units and then sold in various cities across India. A fall in the logistics cost of these goods will bring down their final price. A fall in prices of consumer goods raises its demand and thus its stock price.

- **Inflation:** Every USD 10/bbl. increase in oil price will result in a 0.3% or 30 bps increase in CPI. Crude oil has an impact on the prices of all goods and services. Agricultural commodities or manufactured goods, oil prices affect their MRP. A considerable fall in prices of goods and services will ease inflation. Inflation is often perceived negatively by an investor. Thus, a comparatively lower inflation level will be beneficial for the stock market.

CHAPTER - 3

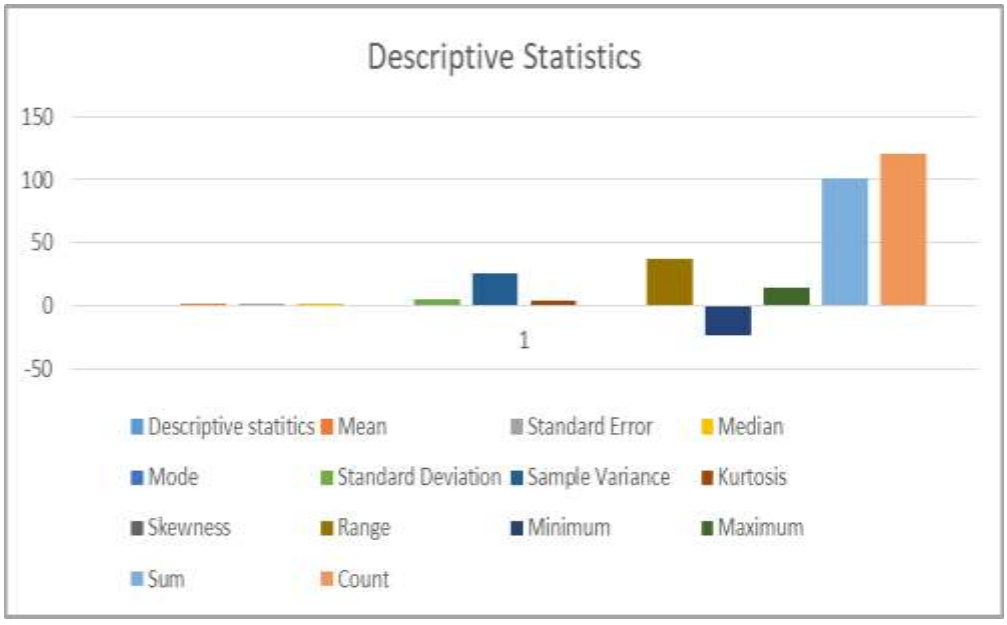
3. DATA ANALYSIS AND INTERPRETATION

3.1 STOCK MARKET PERFORMANCE DURING STUDY PERIOD

Table 3.1 - Showing the Descriptive Statistics of BSE Sensex

Descriptive Statistics of BSE Sensex	
Mean	0.84
Standard Error	0.47
Median	0.77
Mode	-
Standard Deviation	5.10
Sample Variance	25.96
Kurtosis	3.32
Skewness	-0.66
Range	37.47
Minimum	-23.05
Maximum	14.42
Sum	100.60
Count	120

Figure 3.1 - Showing the Descriptive Statistics of BSE Sensex



The above table and figure presents a summary of descriptive statistics of BSE Sensex. The table shows the value of Mean, Standard Error, Median, Mode, and Standard

Deviation, sample Variance, Kurtosis, Skewness, Range, Minimum, Maximum, Sum and Count for the BSE Sensex monthly returns. The average return for the above time series data is 0.84, Standard Error is 0.47, the another average in this time series data is Median i.e. 0.77, the deviation of the returns from the mean return is 5.10 i.e., standard deviation and the sample variance is the square of the standard deviation i.e., 25.96. The basic condition for the time series data is it should be normally distributed, so kurtosis and Skewness is used to check the normality test, usually the kurtosis should be less than 3 and Skewness must be zero then only we can conclude that data series is normally distributed but the above result shows that the time series data is not normally distributed since the kurtosis is more than 3 and Skewness is not equal to zero. The range is the difference between the minimum (-23.05) and maximum (14.42) i.e., 37.47. The sum and count is 100.60 and 120.00 respectively.

Table 3.2 - Showing Stationarity Test for BSE Sensex

	Augmented Dickey-Fuller Unit Root Test	
Variable	**'P' Value**	**'P' Value**
	Before taking	**After taking**
	log difference	**Log difference**
BSE Sensex	**0.9705**	**0.000**

Empirical research in stock market is based on time series data. And the stationarity of a data series is a prerequisite for drawing meaningful inferences in a time series analysis and to enhance the accuracy and reliability of the models constructed. If the variable is not stationary means, there is no meaningful relationship between the variables.

One of the common methods to find whether a time series is stationary or not is the unit root test. One of the most popular among them is the Augmented Dickey-Fuller (ADF) test. Augmented Dickey-Fuller (ADF) is an extension of Dickey-Fuller test.

According to ADF unit root test the data series has no unit root means it is stationary, if the data series has unit root means it is non stationary. If the selected data series is stationary means its 'P' value (significance value) must be less than 0.05, if it is more than 0.05 means the data series is non stationary. Hence from above result it can be concluded that BSE Sensex variable is non stationary since its 'P' value (0.9705) is more than 0.05, but after taking log difference using ADF unit root test its 'P' value is less than

0.05 i.e., 2.644e -024. Therefore, the above variable can be used for run correlation and regression.

Hypothesis for Stationarity Test of BSE Sensex

Null Hypothesis (H0): The Data series of Monthly Returns of Sensex is Non-Stationary

Alternative Hypothesis (H1): The Data series of Monthly returns of Sensex is Stationary

Table 3.3 - ADF Level

Null Hypothesis	P value	Null Hypothesis	Result
Sensex is not stationary	**0.9705**	**Accept**	**Variable is Not Stationary**

From the table it can be concluded that the BSE Sensex variable not attains stationarity as the 'P' value (0.9705) of these variable is greater than the critical P-value at 5% (0.05). Thus the null hypothesis of that variable is not stationary was accepted.

Now in order to do analysis it is important to make these variable stationary. Thus we have calculated the first differencing (log difference) of that variable. ADF test result for BSE Sensex variable with first differencing are given below.

Table 3.4 - ADF 1st difference

Null Hypothesis	P value	Null Hypothesis	Result
Sensex return is not stationary	**0.000**	**Reject**	**Variable is Stationary**

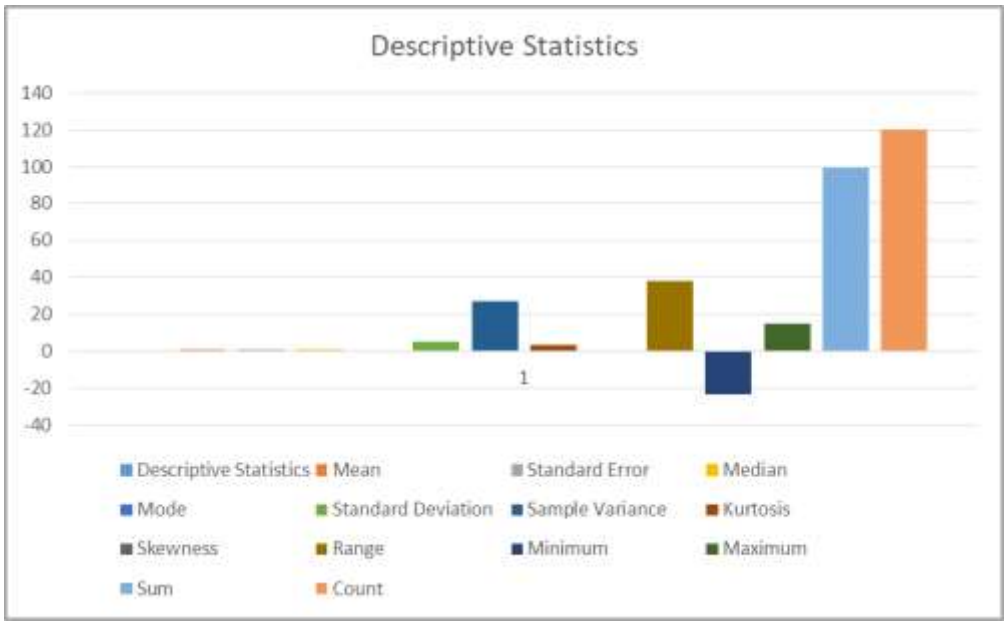
Thus first differencing of the variable BSE Sensex is stationary at 5% (0.05) as the P value (2.644e- 024) is less than the critical P value thus rejecting the null hypothesis and accepting the alternative hypothesis that the variable is stationary.

Table 3.5 - Showing Descriptive Statistics of NSE Nifty

Descriptive Statistics of NSE Nifty	
Mean	0.83
Standard Error	0.48
Median	0.5
Mode	-
Standard Deviation	5.2
Sample Variance	27.08
Kurtosis	3.12
Skewness	-0.6
Range	37.93
Minimum	-23.25

Maximum	14.68
Sum	99.1
Count	120

Figure 3.2 - Showing Descriptive Statistics of NSE Nifty



The above table and figure presents a summary of descriptive statistics of NSE Nifty. The table shows the value of Mean, Standard Error, Median, Mode, and Standard Deviation, sample Variance, Kurtosis, Skewness, Range, Minimum, Maximum, Sum and Count for the NSE Nifty monthly returns. The average return for the above time series data is 0.83, Standard Error is 0.48, the another average in this time series data is Median i.e. 0.50, the deviation of the returns from the mean return is 5.20 i.e., standard deviation and the sample variance is the square of the standard deviation i.e., 27.08. The basic condition for the time series data is it should be normally distributed, so kurtosis and Skewness is used to check the normality test, usually the kurtosis should be less than 3 and Skewness must be zero then only we can conclude that data series is normally distributed but the above result shows that the time series data is not normally distributed since the kurtosis (3.12) is more than 3 and Skewness (-0.60) is not equal to zero. The range is the difference between the minimum (-23.25) and maximum (14.68) i.e., 37.93. The sum and count is 99.10 and 120.00 respectively.

Table 3.6 - Showing Stationarity Test for NSE Nifty

	Augmented Dickey-Fuller Unit Root Test	
Variable	'P' Value	'P' Value
	Before taking	After taking
	Log difference	Log difference
NSE Nifty	0.954	0.000

Empirical research in stock market is based on time series data. And the stationarity of a data series is a prerequisite for drawing meaningful inferences in a time series analysis and to enhance the accuracy and reliability of the models constructed. If the variable is not stationary mean, there is no meaningful relationship between the variables.

One of the common methods to find whether a time series is stationary or not is the unit root test. One of the most popular among them is the Augmented Dickey-Fuller (ADF) test. Augmented Dickey-Fuller (ADF) is an extension of Dickey-Fuller test.

According to ADF unit root test the data series has no unit root means it is stationary, if the data series has unit root means it is non stationary. If the selected data series is stationary means its 'P' value (significance value) must be less than 0.05, if it is more than 0.05 means the data series is non stationary. Hence from above result it can be concluded that NSE Nifty variable is non stationary since its 'P' value (0.954) is more than 0.05, but after taking log difference using ADF unit root test its 'P' value is less than 0.05 i.e., 5.368e -024. Therefore, the above variable can be used for run correlation and regression.

Hypothesis for Stationarity Test of NSE Nifty

Null Hypothesis (H0): The Data series of Monthly Returns of Nifty is Non-Stationary

Alternative Hypothesis (H1): The Data series of Monthly returns of Nifty is Stationary

Table 3.7 - ADF Level

Null Hypothesis	P value	Null Hypothesis	Result
Nifty is not stationary	0.954	Accept	Variable is Not Stationary

From the table it can be concluded that the NSE Nifty variable not attains stationarity as the 'P' value (0.954) of these variable is greater than the critical P-value at 5% (0.05). Thus the null hypothesis of that variable is not stationary was accepted.

Now in order to do analysis it is important to make these variable stationary. Thus we have calculated the first differencing (log difference) of that variable. ADF test result for NSE Nifty variable with first differencing are given below.

Table 3.8 - ADF 1st difference

Null Hypothesis	P value	Null Hypothesis	Result
Nifty return is not stationary	**0.000**	**Reject**	**Variable is Stationary**

Thus first differencing of the variable NSE Nifty is stationary at 5% (0.05) as the P value (5.368e -024) is less than the critical P value thus rejecting the null hypothesis and accepting the alternative hypothesis that the variable is stationary.

3.2 THE TRENDS OF SELECTED ECONOMIC FACTORS

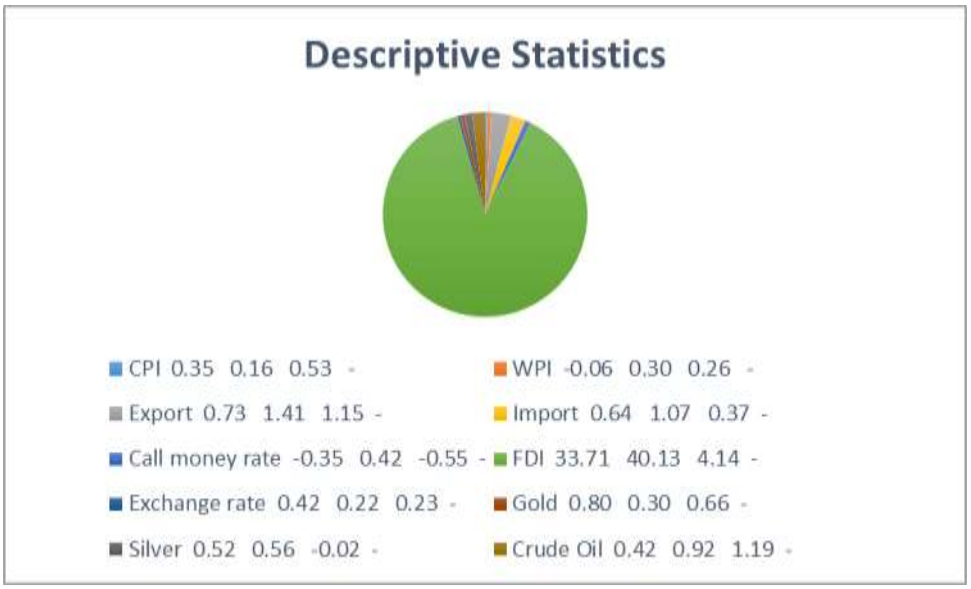
Table 3.9 - Showing Descriptive Statistics of selected Economic Factors

	CPI	WPI	Export	Import	Call money Rate
Mean	0.35	-0.06	0.73	0.64	-0.35
Standard Error	0.16	0.3	1.41	1.07	0.42
Median	0.53	0.26	1.15	0.37	-0.55
Mode	-	-	-	-	-
Standard Deviation	1.7	3.29	15.43	11.75	4.63
Sample Variance	2.89	10.83	238.03	138	21.43
Kurtosis	86.65	108.71	13.37	7.21	13.53
Skewness	-8.6	-10.18	-0.19	-1.13	2.13
Range	18.96	36.71	165.94	94.43	43.37
Minimum	-16.72	-34.97	-81.36	-60.9	-15.79
Maximum	2.25	1.74	84.58	33.53	27.58
Sum	42.3	-7.53	87.89	76.57	-42.59
Count	120	120	120	120	120

	FDI	Exchange Rate	Gold	Silver	Crude oil
Mean	33.71	0.42	0.8	0.52	0.42
Standard Error	40.13	0.22	0.3	0.56	0.92
Median	4.14	0.23	0.66	-0.02	1.19
Mode	-	-	-	-	-
Standard Deviation	439.65	2.42	3.3	6.1	10.09
Sample Variance	1,93,289.28	5.87	10.89	37.25	101.9
Kurtosis	52.63	2.23	2.62	2.12	4.5

Skewness	3.62	0.3	0.98	0.98	-0.12
Range	6,265.38	15.66	21.22	36.15	80.64
Minimum	-2,501.47	-6.74	-6.85	-12.6	-37.22
Maximum	3,763.91	8.92	14.37	23.54	43.42
Sum	4,045.73	50.3	96.18	62.6	50.54
Count	120	120	120	120	120

Figure 3.3 - Showing Descriptive Statistics of selected Economic Factors



The above table and figure presents a summary of descriptive statistics of selected economic factors. The table shows the value of mean, median, standard error, mode, standard deviation, sample variance, kurtosis, Skewness, range, minimum and maximum, sum and count for the selected economic factors. The highest average return for the above time series data is for FDI i.e., 33.71 and the lowest one is for call money rate i.e., -0.35. The highest standard error is for FDI i.e., 40.13 and the lowest one is for CPI i.e., 0.16. Another average in this time series data is median in that highest median is for FDI only i.e., 4.14 and lowest one is for call money rate i.e., -0.55. The highest deviation of the returns from the mean return is for FDI (439.65) i.e., standard deviation and lowest S.D is for CPI i.e., 1.70. The highest and lowest sample variance is for FDI and CPI respectively. The basic condition for the time series data is it should be normally distributed, so kurtosis and Skewness is used to check the normality test, usually the kurtosis should be less than 3 and Skewness must be zero then only we can conclude that data series is normally distributed but in the above result except Exchange rate, gold and silver rate all other factors are not normally distributed. However, this Exchange rate,

gold and silver rate fall under only kurtosis rules since these three factors kurtosis values are less than 3 but their Skewness values are not equal to zero hence none of the factors are normally distributed. Again FDI have the highest range than other factors and exchange rate have lower exchange rate.

Table 3.10 - Showing Stationarity Test for selected Economic Factors

Variables	Augmented Dickey-Fuller Unit Root Test	
	'P' Value	'P' Value
	Before taking	After taking
	Log difference	Log difference
CPI	0.9298	0.000
WPI	0.1064	0.000
Export	0.3902	0.03795
Import	0.03929	-
Call money Rate	0.9606	0.000
FDI	0.000	-
Exchange Rate	0.3514	0.000
Gold	0.9862	0.000
Silver	0.5366	0.000
Crude Oil	0.4141	0.000

Hypothesis for Stationarity Test of selected Economic Factors

Null Hypothesis (H0): The Data series of Selected Economic Factors are Non–Stationary

Alternative Hypothesis (H1): The Data series of Selected Economic Factors are Stationary

Table - 3.11 ADF Level

Null Hypothesis	P value	Null Hypothesis	Result
CPI is not Stationary	0.9298	Accept	Variable is not Stationary
WPI is not Stationary	0.1064	Accept	Variable is not Stationary
Export is not Stationary	0.3902	Accept	Variable is not Stationary
Import is not Stationary	0.03929	Reject	Variable is Stationary
Call Money Rate is not Stationary	0.9606	Accept	Variable is not Stationary
FDI is not Stationary	0.000	Reject	Variable is Stationary
Exchange Rate is not	0.3514	Accept	Variable is not

Stationary			Stationary
Gold is not Stationary	0.9862	Accept	Variable is not Stationary
Silver is not Stationary	0.5366	Accept	Variable is not Stationary
Crude Oil is not Stationary	0.4141	Accept	Variable is not Stationary

From the table it can be concluded that none of the variables except Import and FDI attains stationary in the time series as the 'P' value of all these variables is greater than the critical P-value at 5%. Thus the null hypothesis that variables are not stationary was accepted. However, Import and FDI are the only variables that has attained stationarity as its P-value is less than the critical P value.

Now in order to do analysis it is important to make these variables stationary. Thus we have calculated the first differencing (log difference) of all the variables except Import and FDI. ADF test result for variables with first differencing are given below.

Table 3.12 - ADF 1st difference

Null Hypothesis	P value	Null Hypothesis	Result
CPI is not Stationary	0.000	Reject	Variable is Stationary
WPI is not Stationary	0.000	Reject	Variable is Stationary
Export is not Stationary	0.0379	Reject	Variable is Stationary
Call Money Rate is not Stationary	0.000	Reject	Variable is Stationary
Exchange Rate is not Stationary	0.000	Reject	Variable is Stationary
Gold is not Stationary	0.000	Reject	Variable is Stationary
Silver is not Stationary	0.000	Reject	Variable is Stationary
Crude Oil is not Stationary	0.000	Reject	Variable is Stationary

Thus first differencing (log difference) of the variables is stationary at 5% (0.05) as the P value is less than the critical P value thus rejecting the null hypothesis and accepting the alternative hypothesis that the variables are stationary.

3.3 THE IMPACT OF ECONOMIC FACTORS ON INDIAN STOCK MARKET PERFORMANCE

Table 3.13 - Showing the Sensex Correlation Matrix

	Sensex	CPI	WPI	Export	Import	CMR	FDI	EXR	Gold	Silver
Sensex	1									
CPI	0.039	1								
WPI	0.068	-0.03	1							
Export	0.034	-0.08	0.081	1						
Import	0.124	-0.06	0.091	0.702**	1					
CMR	-0.126	-0.04	0.136	0.248**	0.208*	1				
FDI	-0.126	-0.05	-0.12	-0.056	-0.041	0.028	1			
EXR	-0.521**	0.156	-0.08	-0.028	-0.05	0.223**	0.117	1		
Gold	-0.174	0.101	-0.03	-0.058	-0.173	0.125	0.300**	0.286**	1	
Silver	0.088	0.062	0.098	0.074	0.008	0.105	0.134	0.026	0.668**	1
CO	0.134	-0.02	0.111	0.397**	0.291**	0.101	-0.035	0.065	-0.011	0.285**

** Correlation is significant at the 0.01 level (2 – tailed) and * Correlation is significant at the 0.05 level (2 – tailed).

Correlation analysis tells us the degree of relationship between a pair of variables. Table 3.13 elaborate the results of correlation between dependent variable i.e., BSE Sensex and independent variables like CPI, WPI, Exchange rate, Call money rate, FDI, Export, Import, Gold, Silver, and Crude Oil. From the above results it could be concluding that CPI, WPI, Export, Import, Silver and crude oil have positive relationship with BSE Sensex. It means when CPI, WPI, Export, Import, Silver and crude oil increases the stock prices will also increase and move in same direction. Call money rate, FDI, Exchange rate, and Gold rate are weakly associated and also has negative relationship with BSE Sensex.

CPI had a negative relation with all other independent variables except Exchange rate, Gold rate and Silver rate. Also WPI had a positive correlation with all other variables except CPI, FDI, Exchange rate and gold rate. Likewise, all other independent variables had both positive and negative correlation with Sensex and other independent variables.

Hypothesis for Correlation of BSE Sensex

Null Hypothesis (H0): There is no Significant Relationship between Economic Indicators and Stock Market Performance

Alternative Hypothesis (H1): There is a Significant Relationship between Economic Indicators and Stock Market Performance

Table 3.14 - Showing the Result of Hypothesis for Correlation of BSE Sensex

Null Hypothesis (H0)	Alternative Hypothesis (H1)	P-Value	Decision Rule	Results
CPI has no Significant Relationship	CPI has Significant Relationship	0.675	P > 0.05 Accept Null	CPI has no Significant Relationship to Sensex
WPI has no Significant Relationship	WPI has Significant Relationship	0.471	P > 0.05 Accept Null	WPI has no Significant Relationship to Sensex
Export has no Significant Relationship	Export has Significant Relationship	0.709	P > 0.05 Accept Null	Export has no Significant Relationship to Sensex
Import has no Significant Relationship	Import has Significant Relationship	0.179	P > 0.05 Accept Null	Import has no Significant Relationship to Sensex
Call Money Rate has no Significant Relationship	Call Money Rate has Significant Relationship	0.173	P > 0.05 Accept Null	Call Money Rate has no Significant Relationship to Sensex
FDI has no Significant Relationship	FDI has Significant Relationship	0.171	P > 0.05 Accept Null	FDI has no Significant Relationship to Sensex
Exchange Rate has no Significant Relationship	Exchange Rate has Significant Relationship	0.000	P < 0.05 Reject Null	Exchange Rate has Significant Relationship to Sensex
Gold has no Significant Relationship	Gold has Significant Relationship	0.051	P = 0.05 Reject Null	Gold has Significant Relationship to Sensex
Silver has no significant relationship	Silver has significant relationship	0.340	P > 0.05 Accept Null	Silver has no Significant Relationship to Sensex
Crude Oil has no Significant Relationship	Crude Oil has Significant Relationship	0.143	P > 0.05 Accept Null	Crude Oil has no Significant Relationship to Sensex

From the above table it can be concluded that except Exchange Rate and Gold Rate all other variables don't have significant relationship with BSE Sensex since the P-value is more than 0.05. Since both Exchange Rate and Gold Rate P-value is less than and equal to 0.05 they have significant relationship with BSE Sensex thus rejecting Null hypothesis and accepting Alternative hypothesis.

Table 3.15 - Showing the NSE Nifty Correlation Matrix

	Nifty	CPI	WPI	Export	Import	CMR	FDI	Export	Gold	Silver
Nifty	1									
CPI	-0.024	1								
WPI	0.106	-0.03	1							
Export	0.456**	-0.08	0.081	1						
Import	0.349**	-0.06	0.091	0.702**	1					
CMR	0.108	-0.04	0.136	0.248**	0.208*	1				
FDI	-0.032	-0.05	-0.12	-0.056	-0.041	0.028	1			
Export	0.055	0.156	-0.08	-0.028	-0.05	0.223*	0.117	1		
Gold	-0.003	0.101	-0.03	-0.058	-0.173	0.125	0.300**	0.286**	1	
Silver	0.287**	0.062	0.098	0.074	0.008	0.105	0.134	0.026	0.668**	1
CO	0.992**	-0.02	0.111	0.397**	0.291	0.101	-0.035	0.065	-0.011	0.285**

** Correlation is significant at the 0.01 level (2 – tailed) and * Correlation is significant at the 0.05 level (2 – tailed).

Correlation analysis tells us the degree of relationship between a pair of variables. Table 3.15 elaborate the results of correlation between dependent variable i.e., NSE Nifty and independent variables like CPI, WPI, Exchange rate, Call money rate, FDI, Export, Import, Gold, Silver, and Crude Oil. From the above results it could be concluding that WPI, export, import, call money rate, exchange rate, silver rate, and crude oil rate have positive relationship with NSE Nifty. It means when WPI, export, import, call money rate, exchange rate, silver rate, and crude oil rate increases the stock prices will also increase and move in same direction. CPI, FDI, and Gold rate are weakly associated and also has negative relationship with NSE Nifty.

CPI had a negative relation with all other independent variables except Exchange rate, Gold and Silver rate. Also WPI had a positive correlation with all other variables except CPI, FDI, Exchange rate and Gold rate. Likewise, all other independent variables had both positive and negative correlation with Nifty and other independent variables.

Hypothesis for Correlation of NSE Nifty

Null Hypothesis (H0): There is no Significant Relationship between Economic Indicators and Stock Market Performance

Alternative Hypothesis (H1): There is a Significant Relationship between Economic Indicators and Stock Market Performance

Table 3.16 - Showing the Result of Hypothesis for Correlation of BSE Sensex

Null Hypothesis (H0)	Alternative Hypothesis (H1)	P-Value	Decision Rule	Results
CPI has no Significant Relationship	CPI has Significant Relationship	0.797	P > 0.05 Accept Null	CPI has no Significant Relationship to Nifty
WPI has no Significant Relationship	WPI has Significant Relationship	0.261	P > 0.05 Accept Null	WPI has no Significant Relationship to Nifty
Export has no Significant Relationship	Export has Significant Relationship	0.000	P < 0.05 Reject Null	Export has Significant Relationship to Nifty
Import has no Significant Relationship	Import has Significant Relationship	0.000	P < 0.05 Reject Null	Import has Significant Relationship to Nifty
Call Money Rate has no Significant Relationship	Call Money Rate has Significant Relationship	0.244	P > 0.05 Accept Null	Call Money Rate has no Significant Relationship to Nifty
FDI has no Significant Relationship	FDI has Significant Relationship	0.733	P > 0.05 Accept Null	FDI has no Significant Relationship to Nifty
Exchange Rate has no Significant Relationship	Exchange Rate has Significant Relationship	0.550	P > 0.05 Accept Null	Exchange Rate has no Significant Relationship to Nifty
Gold has no Significant Relationship	Gold has Significant Relationship	0.974	P > 0.05 Accept Null	Gold has no Significant Relationship to Nifty
Silver has no significant relationship	Silver has significant relationship	0.001	P < 0.05 Reject Null	Silver has Significant Relationship to Nifty
Crude Oil has no Significant Relationship	Crude Oil has Significant Relationship	0.000	P < 0.05 Reject Null	Crude Oil has Significant Relationship to Nifty

From the above table it can be concluded that except Export, Import, Silver and Crude oil all other variables don't have significant relationship with NSE Nifty since the P-value is more than 0.05. Since Export, Import, Silver and Crude Oil P-value is less than 0.05 they have significant relationship with NSE Nifty thus rejecting Null hypothesis and accepting Alternative hypothesis.

Table 3.17 - Showing the Multiple Regression of BSE Sensex

Dependent Variable: BSE Sensex Returns				
Included observations: 199				
Variables	**Coefficient**	**Std. Error**	**t-ratio**	**P-value**
Constant	1.37564	0.412684	3.333	0.0012
CPI-Returns	0.316766	0.229685	1.379	0.1707
WPI-Returns	0.0242643	0.119468	0.2031	0.8394
Import-Returns	0.0342121	0.0493541	0.6932	0.4897
Call Money Rate-Returns	0.0316563	0.0914498	0.3462	0.7299
FDI-Returns	-0.000512	0.0009208	-0.5562	0.5792
Exchange Rate-Returns	-1.02613	0.179206	-5.726	0.000
Gold-Returns	-0.247915	0.188393	-1.316	0.191
Silver-Returns	0.124396	0.0965057	1.289	0.2002
Crude Oil-Returns	0.110686	0.0461918	2.396	0.0183
Export-Returns	-10.1221	4.10684	-2.465	0.0153
Mean dependent var	0.934704	S.D. dependent var	5.005791	
Sum squared resid	1865.381	S.E. of regression	4.155965	
R-squared	0.36913	Adjusted R-square	0.310716	
F (10, 108)	6.319213	P-value (F)	0.000	
Log-likelihood	-332.6035	Akaike criterion	687.2069	
Schwarz criterion	717.773	Hannan-Quinn	699.6206	
Rho	-0.251637	Durbin-Watson	2.472772	

Multiple regression analysis is used for the purpose to analyze the relationship that exists between two or more variables. For the purpose of the research study ten independent variables i.e. CPI, WPI, Export, Import, Call money rate, FDI, exchange rate, Gold, Silver and Crude oil were used to study its impact on the dependent variable i.e. BSE Sensex.

From the above table it can be concluded that since it's R-square is not more than 0.5 it is not good regression model but this model has Goodness of Fit since it's P-value (1.41e -07) is less than 0.05. Also when come to individual performance Export, exchange rate and crude oil price have significant impact on BSE Sensex out of 10 variables.

Hypothesis for Multiple Regression of BSE Sensex

Null Hypothesis (H0): There is no Significant Impact of Economic Indicators on Stock Market Performance

Alternative Hypothesis (H1): There is a Significant Impact of Economic Indicators on Stock Market Performance

Table 3.18 - Showing the Result of Hypothesis for Multiple Regression of Sensex

Null Hypothesis (H0)	Alternative Hypothesis (H1)	P-Value	Decision Rule	Results
CPI has no Significant Impact	CPI has Significant Impact	0.1707	P > 0.05 Accept Null	CPI has no Significant Impact on Sensex
WPI has no Significant Impact	WPI has Significant Impact	0.8394	P > 0.05 Accept Null	WPI has no Significant Impact on Sensex
Export has no Significant Impact	Export has Significant Impact	0.0153	P < 0.05 Reject Null	Export has Significant Impact on Sensex
Import has no Significant Impact	Import has Significant Impact	0.4897	P > 0.05 Accept Null	Import has no Significant Impact on Sensex
Call Money Rate has no Significant Impact	Call Money Rate has Significant Impact	0.7299	P > 0.05 Accept Null	Call Money Rate has no Significant Impact on Sensex
FDI has no Significant Impact	FDI has Significant Impact	0.5792	P > 0.05 Accept Null	FDI has no Significant Impact on Sensex
Exchange Rate has no Significant Impact	Exchange Rate has Significant Impact	0.000	P < 0.05 Reject Null	Exchange Rate has Significant Impact on Sensex
Gold has no Significant Impact	Gold has Significant Impact	0.191	P > 0.05 Accept Null	Gold has no Significant Impact on Sensex
Silver has no significant Impact	Silver has significant Impact	0.2002	P > 0.05 Accept Null	Silver has no Significant Impact on Sensex
Crude Oil has no Significant Impact	Crude Oil has Significant Impact	0.0183	P < 0.05 Reject Null	Crude Oil has Significant Impact on Sensex

From the above hypothesis table, it can be concluded that except Export, Exchange rate and Crude oil all other variables don't have significant impact on BSE Sensex since the p-

value is more than 0.05. Since Export, Exchange rate and Crude Oil P-value is less than 0.05 they have significant impact on BSE Sensex thus rejecting Null hypothesis and accepting alternative hypothesis.

Table 3.19 - Showing the Multiple Regression Analysis of NSE Nifty

Dependent Variable: NSE Nifty Return				
Included observations: 199				
Variables	**Coefficient**	**Std. Error**	**t-ratio**	**P-value**
Constant	1.39007	0.416091	3.341	0.0011
CPI-Returns	0.333427	0.231581	1.44	0.1528
WPI-Returns	0.0299337	0.120454	0.2485	0.8042
Import-Returns	0.0286413	0.0497614	0.5756	0.5661
Call Money Rate-Returns	0.00938547	0.0922046	0.1018	0.9191
FDI-Returns	-0.0005438	0.0009283	-0.5858	0.5592
Exchange Rate-Returns	-1.0753	0.180685	-5.951	0.000
Gold-Returns	-0.280545	0.189948	-1.477	0.1426
Silver-Returns	0.140832	0.0973023	1.447	0.1507
Crude Oil-Returns	0.10509	0.0465731	2.256	0.0261
Export-Returns	-9.32281	4.14074	-2.251	0.0264
Mean dependent var	0.918922	S.D. dependent var		5.124943
Sum squared resid	1896.302	S.E. of regression		4.190269
R-squared	0.388146	Adjusted R-square		0.331493
F (10, 108)	6.851283	P-value (F)		0.000
Log-likelihood	-333.5817	Akaike criterion		689.1634
Schwarz criterion	719.7337	Hannan-Quinn		701.577
Rho	-0.242754	Durbin-Watson		2.452448

Multiple regression analysis is used for the purpose to analyze the relationship that exists between two or more variables. For the purpose of the research study ten independent variables i.e. CPI, WPI, Export, Import, Call money rate, FDI, exchange rate, Gold, Silver and Crude oil were used to study its impact on the dependent variable i.e. NSE Nifty.

From the above table it can be concluded that since it's R-square (0.388146) is not more than 0.5 it is not good regression model but this model has Goodness of Fit since it's P-value (0.000) is less than 0.05. Also when come to individual performance Export, exchange rate and crude oil price have significant impact on NSE Nifty out of 10 variables.

Hypothesis for Multiple Regression of NSE Nifty

Null Hypothesis (H0): There is no Significant Impact of Economic Indicators on Stock Market Performance

Alternative Hypothesis (H1): There is a Significant Impact of Economic Indicators on Stock Market Performance

Table 3.20 - Showing the Result of Hypothesis for Multiple Regression of Nifty

Null Hypothesis (H0)	Alternative Hypothesis (H1)	P-Value	Decision Rule	Results
CPI has no Significant Impact	CPI has Significant Impact	0.1528	P > 0.05 Accept Null	CPI has no Significant Impact on Nifty
WPI has no Significant Impact	WPI has Significant Impact	0.8042	P > 0.05 Accept Null	WPI has no Significant Impact on Nifty
Export has no Significant Impact	Export has Significant Impact	0.0264	P < 0.05 Reject Null	Export has Significant Impact on Nifty
Import has no Significant Impact	Import has Significant Impact	0.5661	P > 0.05 Accept Null	Import has no Significant Impact on Nifty
Call Money Rate has no Significant Impact	Call Money Rate has Significant Impact	0.9191	P > 0.05 Accept Null	Call Money Rate has no Significant Impact on Nifty
FDI has no Significant Impact	FDI has Significant Impact	0.5592	P > 0.05 Accept Null	FDI has no Significant Impact on Nifty
Exchange Rate has no Significant Impact	Exchange Rate has Significant Impact	0.000	P < 0.05 Reject Null	Exchange Rate has Significant Impact on Nifty
Gold has no Significant Impact	Gold has Significant Impact	0.1426	P > 0.05 Accept Null	Gold has no Significant Impact on Nifty
Silver has no significant Impact	Silver has significant Impact	0.1507	P > 0.05 Accept Null	Silver has no Significant Impact on Nifty
Crude Oil has no Significant Impact	Crude Oil has Significant Impact	0.0261	P < 0.05 Reject Null	Crude Oil has Significant Impact on Nifty

From the above hypothesis table, it can be concluded that except Export, Exchange rate and Crude oil all other variables don’t have significant impact on NSE Nifty since the p-

value is more than 0.05. Since Export, Exchange rate and Crude Oil P-value is less than 0.05 they have significant impact on NSE Nifty thus rejecting Null hypothesis and accepting Alternative hypothesis.

CHAPTER – 4

4. SUMMARY OF FINDINGS

The following are the findings of the study.

1. By analysis using Descriptive statistics using 10 economic variables, 2 Stock Market indices i.e. Sensex, nifty and sample period consists of 120 monthly observations from January 2011 to December 2020. It showed that all mean values are positive except WPI and Call money rate. The results show that all the variables are negatively skewed except FDI, Exchange rate, Gold, Silver and Call money rate and the kurtosis value is more than 3 for most of the variables indicating that the data series is not normally distributed since there kurtosis and Skewness values are not less than 3 and equals to zero respectively.
2. The results of stationarity test reveals that none of the variables had attained stationarity before taking log difference, but after taking log differences for each of the variables using Augmented Dickey-Fuller unit root test all variables can be used for run correlation and multiple regression analysis.
3. The results of correlation matrix of Sensex, Nifty and selected Economic Factors or indicators shows that there is a significant correlation amongst all the selected variables. It has been observed that BSE Sensex have positive relationship with CPI, WPI, Export, Import, Silver and Crude Oil. It means when CPI, WPI, Export, Import, Silver and Crude Oil increases the Sensex will also increases in its price and move in same direction. Similarly, NSE Nifty have positive correlation with all independent variables except CPI, FDI and Gold rate. They are weakly associated and also has negative relationship with NSE Nifty.
4. By analysis using regression analysis shows that both Sensex and Nifty regression model with selected economic factors R-square is not more than 0.5, hence these two models are not good regression model. But these models have goodness of fit since its significance values are less than 5% (0.5). Also when come to individual performance of each variables Export, exchange rate and crude oil have significant impact on both Sensex and Nifty out of 10 independent variables since their significance value are less than 5%.

CHAPTER – 5

5. CONCLUSION AND SUGGESTION

5.1 CONCLUSION AND SUGGESTION

The strength of Indian capital market depends upon various economic parameters prevailing in the market. These parameters boost the confidence amongst investors to invest their money in the economy. These parameters have positive as well as negative impact on the well-being of the investors and investors always try to overlook these aspects before entering into stock markets. To support economic variables, the government and the policy makers need to make strategies and policies that complement with economic framework and further support the Indian stock market. Indian stock market is affected by a large number of global factors. Out of this factors, few factors are taken into study.

The main objective of this research is to know the Impact of Economic Factors on Indian Stock Market Performance. The Economic variables represented by the CPI, WPI, Export, Import, Call money rate, Gold, Silver, Crude oil, Exchange rate and FDI. Indian Stock Market is represented by the BSE Sensex and NSE Nifty. In order to meet this objectives, researcher carried out analysis of data by considering different statistical techniques and by constructing the research hypothesis.

Monthly data for a time span of 10 years (From January 2011 to December 2020) was considered. Using the ADF test variables were found to be stationary. The results of various other tests were analyzed and interpreted. The correlation analysis provided some useful results like, inter-variables relationship between different independent variables used. The above analysis concluded that except export, import, silver and crude oil all other variables don’t have significant relationship with NSE Nifty, similarly except exchange rate and Gold rate all other variables don’t have correlation with BSE Sensex since their significance value are not less than 5%. The result has been concluded on the basis of the regression analysis in which export, crude oil and exchange rate have significant impact on Sensex and Nifty out of 10 selected economic variables.

The results of this analysis should not be treated as conclusive for an investment. Apart from understanding Indian Stock market based on the contributions of the significant variables, there remain other important issues that affect the return generating process. These issues are the cost of equity capital, asset valuation, industry analysis, a firm’s

management and operational efficiency analysis and so on. Any investors should consider all relevant sources of information when making an investment decision.

5.2 SCOPE FOR FURTHER STUDIES

1. The present study has further scope for more comprehensive results. It can be extended over a longer period and more economic variables can be selected.
2. Further, research areas can be extended by analyzing the fundamentals, economy and stock markets of various developed and developing nations.
3. The major implication of this study can be for government, such as government of India in this case, as it should concentrate on promoting equity shares as leading financial instruments.
4. In the context of policy implications, this study suggests that government should provide incentives to foreigners for investment as foreign direct investment enriches stock market capitalization which not only encourages economic activity but also ripens capital markets.
5. Further research may either eliminate some of the limitations or expand the scope of relationship already done in the present thesis.
6. Further work may re-examine the issues addressed in this thesis using a relatively more comprehensive data set including more recent share price data and the data of major leading stock indices of developed economies can also be included.
7. Examining how the developed markets of the UK and the US affect the emerging markets like India could be valuable.
8. The current study focuses exclusively on the time series data of Indian economy, but the further studies can be done by considering panel data incorporating similar economic variables for more countries of Asian region.

REFERENCES

1. Aanchal. (2017). “Impact of Macroeconomic Variables on Indian Stock Market.” *SSRG International Journal of Economics and Management Studies*.

2. Ahuja, A. K. (2012). “A Study of the effect of Macroeconomic Variables on Stock Market: Indian Perspective.” *Munich Personal RePEc Archive,* Vol. 4, No.4.

3. Alam. S, M. (2016). “Analysis on Factors that affect Stock Prices: A Study on Listed Cement Companies at Dhaka Stock Exchange.” *Research Journal of Finance and Accounting,* Vol.02 Issue-02.

4. Benakovic, D. (2010). “Do macroeconomic factors matter for stock returns?.” *Evidence from estimating a multifactor model on the Croatian market. Working Paper Series*.

5. Gay Jr., R. D. (2016). “Effect of Macroeconomic Variables on Stock Market Returns for Four Emerging Economies: Brazil, Russia, India, and China.” *International Business & Economics Research Journal*.

6. Giri, A. (2016). “The Impact of Macroeconomic Indicators on Indian Stock Prices: An Inpirical Analysis.” *Studies in Business and Economics,* Volume 11, Issue-2.

7. Gurloveleen, k. (2015). “An Impact of Macroeconomic Variables on the functioning of Indian Stock Market: A study of Manufacturing Firms of BSE 500.” *Journal of Stock and Forex Trading.*

8. H, Kumar. (2014). “Macroeconomic forces and Indian stock Market.” *International Journal of Commerce,Business and Management*.

9. Keswani, S. (2019). “Evaluating the Impact of Macroeconomic Variable on Indian Stock Market.” *International Journal of Engineering and Advanced Technology,* Vol. 7, No.7.

10. Kotha, K. (2016). “Kotha, Kiran KumMacroeconomic Factors and the Indian Stock Market: Exploring Long and Short Run Relationships.” *International Journal of Economics and Financial Issues*.

11. Kumar, A. (2011). “An Empirical Analysis of Causal Relationship between Stock Market and Macroeconomic Variables in India.” *International Journal of Computer Science & Management Studies*.

12. Malhotra, N. (2013). “Determinants of Stock Prices: Empirical Evidence from NSE 100 Companies.” *IRACST- International Journal of Research in Management & Technology (IJRMT),* Vol.02 Issue-02.

13. Megaravalli, A. V. (2018). “Macroeconomic indicators and their impact on stock markets in ASIAN 3: A pooled mean group approach.” *Cogent Economics & Finance.*

14. Mishra. P. (2018). “An Investigation of the Macroeconomic Factors Affecting the Indian Stock Market.” *Australasian Accounting, Business and Finance Journal,* Vol. 8, No. 8.

15. Naik, P. K. (2012). “The Impact of Macroeconomic Fundamentals on Stock Prices Revisited: Evidence from Indian Data.” *Eurasian Journal of Business and Economics*.

16. Naik, P. K. (2012). “Does Stock Market Respond to Economic Fundamentals? Time-series Analysis from Indian Data.” *Journal of Applied Economics and Business Research,* Volume 6,Iissue 3.

17. Pilinkus, D. (2010). “Macroeconomic indicators and their impact on stock market performance in the short and long run: The case of the Baltic States.” *Technological and Economic Development of Economy*.

18. Rajesh, D. M. (2015). “Impact of Fundamental Factors on Share Price Movements - A Study on Select Listed Companies of Indian manufacturing industries in Bombay Stock Exchange.” *Indian Journal of Applied Research*.

19. Ramanujam, V. (2011). “Factors Affecting the Movement of Stock Market: Evidence from India.” *Indian Journal of Applied Research,* Vol. 2, No.2.

20. Ray, S. (2013). “Towards examining the Relationship between Industrial Production and Stock Pricein India.” *United States of America Research Journal,* Vol. 4, Issue-2.

21. Sangmi MUD, H. M. (2013). “Macroeconomic Variables on Stock Market Interactions: The Indian Experience.” *Journal of Business and Management*.

22. Singh, P. (2014). “Indian Stock Market and Macroeconomic Factors in Current Scenario.” *International Journal of Research in Business Management*, Vol. 9, No. 4.

23. Sireesha, B. P. (2013). “Effect of Select Macroeconomic Variables on Stock Returns in India.” *International Journal of Marketing, Financial Services and Management Research*.

24. Talla, J. T. (2017). “Impact of Macroeconomics Variables on the Stock market Pricesof the Stockholom Stock exchange.” *Jonkoping International Business School*, Vol. 2, No. 2.

ANNEXTURE – A

Monthly Closing Prices and Returns of BSE Sensex and NSE Nifty 50

Month	BSE Sensex		NSE Nifty 50	
	Closing Prices	Returns (%)	Closing Prices	Returns (%)
Jan-11	18,328	-10.63	5,506	-10.25
Feb-11	17,823	-2.75	5,333	-3.14
Mar-11	19,445	9.10	5,834	9.38
Apr-11	19,136	-1.59	5,750	-1.44
May-11	18,503	-3.31	5,473	-4.81
Jun-11	18,846	1.85	5,647	3.18
Jul-11	16,197	-3.44	5,482	-2.93
Aug-11	16,677	-8.36	5,001	-8.77
Sep-11	16,454	-1.34	4,943	-1.15
Oct-11	17,705	7.60	5,327	7.76
Nov-11	16,123	-8.93	4,832	-9.28
Dec-11	15,455	-4.15	4,624	-4.30
Jan-12	17,194	11.25	5,199	12.43
Feb-12	17,753	3.25	5,385	3.58
Mar-12	17,404	-1.96	5,296	-1.66
Apr-12	17,319	-0.49	5,248	-0.90
May-12	16,219	-6.35	4,924	-6.17
Jun-12	17,430	7.47	5,279	7.20
Jul-12	17,236	-1.11	5,229	-0.95
Aug-12	17,430	1.12	5,259	0.56
Sep-12	18,763	7.65	5,703	8.46
Oct-12	18,505	-1.37	5,620	-1.47
Nov-12	19,340	4.51	5,880	4.63
Dec-12	19,427	0.45	5,905	0.43
Jan-13	19,895	2.41	6,035	2.20
Feb-13	18,862	-5.19	5,693	-5.66
Mar-13	18,836	-0.14	5,683	-0.18
Apr-13	19,504	3.55	5,930	4.36
May-13	19,760	1.31	5,986	0.94
Jun-13	19,396	-1.84	5,842	-2.40
Jul-13	19,346	-0.26	5,742	-1.72
Aug-13	18,620	-3.75	5,472	-4.71
Sep-13	19,380	4.08	5,735	4.82
Oct-13	21,165	9.21	6,299	9.83
Nov-13	20,792	-1.76	6,176	-1.95
Dec-13	21,171	1.82	6,304	2.07
Jan-14	20,514	-3.10	6,090	-3.40
Feb-14	21,120	2.96	6,277	3.08

Mar-14	22,386	5.99	6,704	6.81
Apr-14	22,418	0.14	6,696	-0.12
May-14	24,217	8.03	7,230	7.97
Jun-14	25,414	4.94	7,611	5.28
Jul-14	25,895	1.89	7,721	1.44
Aug-14	26,638	2.87	7,954	3.02
Sep-14	26,631	-0.03	7,965	0.13
Oct-14	27,866	4.64	8,322	4.49
Nov-14	28,694	2.97	8,588	3.20
Dec-14	27,499	-4.16	8,283	-3.56
Jan-15	29,183	6.12	8,809	6.35
Feb-15	29,362	0.61	8,845	0.41
Mar-15	27,957	-4.78	8,491	-4.00
Apr-15	27,011	-3.38	8,182	-3.65
May-15	27,828	3.03	8,434	3.08
Jun-15	27,781	-0.17	8,369	-0.77
Jul-15	28,115	1.20	8,533	1.96
Aug-15	26,283	-6.51	7,971	-6.58
Sep-15	26,155	-0.49	7,949	-0.28
Oct-15	26,657	1.92	8,066	1.47
Nov-15	26,146	-1.92	7,935	-1.62
Dec-15	26,118	-0.11	7,946	0.14
Jan-16	24,871	-4.77	7,564	-4.82
Feb-16	23,002	-7.51	6,987	-7.62
Mar-16	25,342	10.17	7,738	10.75
Apr-16	25,607	1.04	7,850	1.44
May-16	26,668	4.14	8,160	3.95
Jun-16	27,000	1.24	8,288	1.56
Jul-16	28,052	3.90	8,639	4.23
Aug-16	28,452	1.43	8,786	1.71
Sep-16	27,866	-2.06	8,611	-1.99
Oct-16	27,930	0.23	8,638	0.31
Nov-16	26,653	-4.57	8,225	-4.79
Dec-16	26,626	-0.10	8,186	-0.47
Jan-17	27,656	3.87	8,561	4.59
Feb-17	28,743	3.93	8,880	3.72
Mar-17	29,621	3.05	9,174	3.31
Apr-17	29,918	1.01	9,304	1.42
May-17	31,146	4.10	9,621	3.41
Jun-17	30,922	-0.72	9,521	-1.04
Jul-17	32,515	5.15	10,077	5.84
Aug-17	31,730	-2.41	9,918	-1.58
Sep-17	31,284	-1.41	9,789	-1.30

Oct-17	33,213	6.17	10,335	5.59
Nov-17	33,149	-0.19	10,227	-1.05
Dec-17	34,057	2.74	10,531	2.97
Jan-18	35,965	5.60	11,028	4.72
Feb-18	34,184	-4.95	10,493	-4.85
Mar-18	32,969	-3.56	10,114	-3.61
Apr-18	35,160	6.65	10,739	6.19
May-18	35,322	0.46	10,736	-0.03
Jun-18	35,423	0.29	10,714	-0.20
Jul-18	37,607	6.16	11,357	5.99
Aug-18	38,645	2.76	11,681	2.85
Sep-18	36,227	-6.26	10,930	-6.42
Oct-18	34,442	-4.93	10,387	-4.98
Nov-18	36,194	5.09	10,877	4.72
Dec-18	36,068	-0.35	10,863	-0.13
Jan-19	36,257	0.52	10,831	-0.29
Feb-19	35,867	-1.07	10,793	-0.36
Mar-19	38,673	7.82	11,624	7.70
Apr-19	39,032	0.93	11,748	1.07
May-19	39,714	1.75	11,923	1.49
Jun-19	39,395	-0.80	11,789	-1.12
Jul-19	37,481	-4.86	11,118	-5.69
Aug-19	37,333	-0.40	11,023	-0.85
Sep-19	38,667	3.57	11,474	4.09
Oct-19	40,129	3.78	11,877	3.51
Nov-19	40,794	1.66	12,056	1.50
Dec-19	41,254	1.13	12,168	0.93
Jan-20	40,723	-1.29	11,962	-1.70
Feb-20	38,297	-5.96	11,202	-6.36
Mar-20	29,468	-23.05	8,598	-23.25
Apr-20	33,718	14.42	9,860	14.68
May-20	32,424	-3.84	9,580	-2.84
Jun-20	34,916	7.68	10,302	7.53
Jul-20	37,607	7.71	11,073	7.49
Aug-20	38,628	2.72	11,388	2.84
Sep-20	38,068	-1.45	11,248	-1.23
Oct-20	39,614	4.06	11,642	3.51
Nov-20	44,150	11.45	12,969	11.39
Dec-20	47,751	8.16	13,982	7.81

ANNEXTURE – B

Monthly Growth Rate of Selected Economic Factors

Month	CPI	WPI	Export	Import	CMR	FDI	EX	Gold	Silver	CO
Jan-11	0.76	1.37	-81.36	-60.90	-3.11	-88.54	2.57	-1.47	-1.20	3.47
Feb-11	-0.57	0.07	2.53	-1.05	2.91	22.26	-1.70	0.58	4.50	5.80
Mar-11	0.28	0.95	29.59	2.91	7.43	-80.85	-1.17	2.53	16.36	9.82
Apr-11	0.57	1.74	-23.91	5.32	-9.13	686.00	-0.60	3.05	19.79	5.54
May-11	0.85	0.20	14.37	25.15	10.05	66.11	1.46	3.07	-12.60	-5.95
Jun-11	1.59	0.46	-0.06	-9.84	3.46	21.69	-0.67	0.38	-4.47	-2.14
Jul-11	1.56	0.72	-1.38	-0.35	1.87	-96.57	-1.25	1.86	3.17	0.95
Aug-11	1.09	0.45	-4.46	-0.84	4.59	3,764.00	4.14	14.37	8.98	-5.07
Sep-11	1.16	0.84	12.82	4.60	1.76	-81.73	6.35	6.22	0.25	5.76
Oct-11	0.71	0.51	-7.99	7.10	1.85	177.70	-0.06	-2.98	-12.60	2.18
Nov-11	0.26	0.25	1.66	-1.95	3.87	-37.73	6.73	7.11	5.26	8.66
Dec-11	-0.44	-0.06	12.91	6.07	5.36	-52.40	2.07	-1.75	-4.46	2.70
Jan-12	0.35	0.89	-2.49	4.54	-1.33	29.24	-6.74	-1.66	-0.93	-0.04
Feb-12	0.53	0.38	-4.93	-10.55	-1.23	-55.56	-1.45	1.89	6.11	1.00
Mar-12	0.79	1.07	17.15	8.12	4.09	-50.68	4.51	-0.94	1.43	7.00
Apr-12	1.39	-34.97	-15.06	-7.26	-6.00	613.20	2.66	2.55	-1.56	-0.67
May-12	0.94	0.57	9.69	16.20	-4.06	-34.44	7.43	0.94	-3.78	-3.94
Jun-12	1.18	-	3.28	-11.84	-1.57	20.61	-0.19	3.43	0.12	-10.11
Jul-12	1.51	0.85	-8.21	11.27	-1.11	30.61	-0.89	-1.18	-2.82	5.66
Aug-12	1.24	0.66	0.27	-8.05	-0.75	48.73	-0.16	2.42	4.84	8.88
Sep-12	0.90	0.65	5.79	10.78	-0.88	72.86	-5.42	4.95	11.70	-0.87
Oct-12	0.73	-0.19	-6.29	2.17	1.01	-70.75	2.69	-1.95	-1.71	-5.55
Nov-12	0.40	-0.09	-0.06	-5.54	0.50	-63.81	0.76	1.58	1.27	1.10
Dec-12	0.16	-0.19	9.23	6.17	0.12	3.19	0.46	-2.27	-1.96	-0.16
Jan-13	-16.72	0.84	0.63	3.33	-0.62	496.30	-2.72	-1.02	-3.14	3.27
Feb-13	0.67	0.37	2.43	-9.77	-2.50	-18.18	0.90	-1.83	-2.42	1.35
Mar-13	0.19	0.18	15.86	1.56	1.28	-62.81	1.15	-1.50	-4.04	-3.61
Apr-13	0.57	-	-19.74	1.48	-4.68	239.20	-0.31	-6.00	-11.18	-3.60
May-13	0.75	-	2.81	7.03	-3.19	-33.07	4.21	-3.51	-7.80	1.75
Jun-13	2.25	1.38	2.22	-14.80	-0.69	-1.66	5.66	1.53	-3.05	6.38
Jul-13	1.56	1.00	10.19	11.12	7.18	5.18	2.38	-0.92	-4.65	8.15
Aug-13	1.26	1.53	7.80	2.16	27.58	-13.94	8.92	12.21	17.23	8.66
Sep-13	1.16	1.24	7.74	-6.68	0.71	171.60	-5.69	0.85	7.06	1.32
Oct-13	0.97	0.26	-5.60	7.42	-9.43	-54.78	-2.18	0.78	-5.24	-6.19
Nov-13	1.31	-0.26	-10.48	-9.83	-6.42	6.13	1.60	0.10	-3.30	-0.95
Dec-13	-1.55	-0.79	7.80	7.06	-3.43	-14.04	-0.79	-2.72	-6.98	1.52
Jan-14	-0.79	0.18	2.16	-0.37	0.37	-130.00	0.94	-1.08	1.32	-2.91
Feb-14	-	-	-5.49	-7.15	0.24	19.14	-0.66	2.13	2.80	2.92
Mar-14	0.53	0.62	17.34	20.27	1.95	-420.20	-3.17	-1.25	-0.87	-2.85

Apr-14	0.79	-0.17	-15.79	-14.25	-0.12	-11.63	0.40	-1.69	-5.16	-0.20
May-14	0.61	0.61	6.60	7.22	-4.31	96.71	-2.17	-2.02	-3.42	-0.90
Jun-14	0.78	0.35	-6.80	-1.10	1.00	-46.09	1.80	-4.56	2.03	3.16
Jul-14	2.14	1.30	0.12	5.05	2.35	77.34	0.27	2.12	5.77	-2.32
Aug-14	0.92	0.43	5.36	-5.17	-3.51	-66.80	0.37	0.26	-3.26	-3.61
Sep-14	-0.17	-0.68	7.64	15.60	-2.26	134.00	1.89	-3.98	-5.87	-4.22
Oct-14	-	-0.69	-9.59	-8.22	1.79	-0.51	-0.32	0.10	-5.32	-9.51
Nov-14	-	-1.30	2.87	8.88	-1.39	-31.24	0.91	-3.25	-6.62	-10.07
Dec-14	-0.58	-1.75	0.43	-15.89	3.58	21.55	2.19	2.16	2.36	-19.84
Jan-15	0.08	-1.16	-7.50	-9.45	-2.71	95.11	-2.48	2.72	2.86	-23.12
Feb-15	0.17	-1.08	-10.13	-11.24	-2.53	-28.04	0.05	-1.20	-0.69	16.13
Mar-15	0.42	0.27	9.93	24.16	-1.43	-50.61	1.29	-3.35	-2.84	-2.94
Apr-15	0.42	0.27	-7.45	-4.97	-1.85	137.00	1.58	1.97	0.85	9.46
May-15	0.75	1.09	3.47	-0.36	0.40	7.86	0.28	1.54	4.00	10.47
Jun-15	1.15	0.36	-0.82	2.22	-4.82	-46.33	-0.02	-1.65	-3.87	-1.86
Jul-15	0.57	-0.63	3.92	8.07	-0.98	-14.46	0.41	-4.15	-5.93	-11.65
Aug-15	0.89	-0.99	-5.20	-4.46	0.43	12.02	3.59	0.74	0.69	-14.05
Sep-15	0.48	-0.09	3.12	-4.07	0.99	22.94	-0.86	2.01	0.28	3.06
Oct-15	0.56	0.18	-3.61	-4.47	-5.88	79.94	-0.79	1.26	4.51	-0.26
Nov-15	0.40	-0.18	-7.35	-2.46	0.89	-43.71	2.44	-3.50	-5.02	-6.84
Dec-15	-0.39	-0.45	16.34	14.87	-0.74	33.96	-0.72	-1.72	-3.10	-14.47
Jan-16	0.16	-1.28	-5.25	-14.50	1.19	26.84	2.34	3.14	0.12	-17.70
Feb-16	-0.24	-0.83	-0.23	-3.62	-0.59	-35.56	1.09	8.67	7.67	5.69
Mar-16	-	0.56	7.95	-2.17	2.36	-46.22	-3.34	1.92	1.58	18.22
Apr-16	1.03	1.21	-9.69	-6.71	-6.64	-17.96	0.29	0.08	3.08	8.19
May-16	1.02	1.28	8.11	10.83	-0.46	8.68	1.02	2.85	5.27	13.44
Jun-16	1.17	1.18	1.70	9.94	-1.71	-7.69	0.63	0.36	1.24	4.43
Jul-16	0.77	0.09	-4.38	-5.34	0.47	273.80	-0.87	4.02	13.95	-7.57
Aug-16	-	-0.54	-0.84	-0.41	0.63	28.15	-0.07	1.06	-0.70	1.28
Sep-16	-0.15	0.18	5.11	8.33	0.31	3.60	-0.48	-0.29	-0.82	0.07
Oct-16	0.38	0.09	2.61	8.35	-3.27	-33.36	0.30	-3.55	-6.50	9.45
Nov-16	-0.15	0.36	-12.97	-1.72	-1.13	-14.13	2.50	-0.91	-0.60	-7.11
Dec-16	-0.61	-0.18	20.37	3.83	-0.33	-44.38	-0.85	-6.85	-6.24	16.88
Jan-17	-0.08	0.81	-6.82	-6.52	-1.31	104.60	-0.21	3.57	2.11	2.18
Feb-17	0.23	0.36	8.97	4.59	-0.50	-75.58	-1.58	1.81	4.31	-0.08
Mar-17	0.23	0.18	16.38	14.55	-0.67	-106.80	-2.85	-1.73	-1.90	-8.01
Apr-17	0.15	-	-17.86	-4.80	-0.67	-2,501.00	-0.96	0.88	0.10	0.30
May-17	0.23	-0.27	-2.70	-1.56	1.84	109.00	0.51	-1.86	-6.59	-4.49
Jun-17	0.53	-0.18	-3.87	-3.17	0.66	-38.53	0.29	1.24	0.32	-7.44
Jul-17	1.59	1.06	-3.11	-7.65	-0.33	100.10	-1.02	-2.27	-5.29	3.23
Aug-17	0.97	0.79	3.97	4.63	-2.64	82.95	-0.09	2.57	3.30	4.01
Sep-17	-0.22	0.09	23.22	6.02	-0.34	-93.10	2.09	3.48	3.84	6.86
Oct-17	0.67	0.61	-19.08	-0.23	-0.17	19.25	-0.90	-1.32	-1.83	4.75

Nov-17	1.10	0.69	14.49	10.00	-	51.27	-0.52	-0.36	-0.13	8.76
Dec-17	-0.29	-0.60	4.84	0.58	0.68	186.20	-0.78	-2.16	-5.24	1.11
Jan-18	-0.22	0.26	-9.57	-4.08	-0.51	-38.27	-0.38	3.79	4.46	7.22
Feb-18	-0.37	0.09	3.64	-5.88	0.85	57.96	2.21	1.80	-1.23	-3.08
Mar-18	0.07	0.17	13.18	14.15	0.34	-23.13	-0.09	0.10	-0.32	2.13
Apr-18	0.44	0.86	-10.19	-5.74	-0.84	107.70	2.68	1.86	1.52	8.27
May-18	0.51	0.85	14.78	13.07	0.17	-13.90	1.00	0.42	2.06	9.81
Jun-18	0.58	0.68	-5.82	2.41	3.21	-55.15	1.68	-1.31	0.48	-1.61
Jul-18	0.87	0.67	-3.91	0.38	0.98	9.97	0.04	-1.99	-3.30	2.32
Aug-18	0.43	0.17	9.32	4.31	3.25	9.84	3.38	-1.51	-3.16	-1.00
Sep-18	-0.07	0.67	4.05	-2.77	1.57	81.93	2.28	3.02	-1.36	10.24
Oct-18	0.29	0.91	-2.40	6.39	-0.15	-13.69	1.98	3.11	3.91	3.67
Nov-18	0.07	-0.33	-4.62	-4.65	-0.78	-65.48	-5.85	-1.52	-3.73	-20.76
Dec-18	-0.43	-1.56	5.18	-4.50	1.09	188.90	0.19	0.78	0.59	-14.61
Jan-19	-0.36	-0.42	-5.21	-2.11	-1.24	18.32	1.78	3.13	5.41	4.74
Feb-19	0.14	0.25	2.43	-11.12	-1.41	-47.07	0.24	3.06	2.45	8.74
Mar-19	0.36	0.33	18.84	16.48	-0.95	-59.52	-2.85	-3.56	-5.03	1.81
Apr-19	0.57	1.00	-20.49	-3.05	-2.40	455.90	0.97	-1.18	-1.88	7.42
May-19	0.57	0.41	15.21	10.68	-2.46	-35.75	-0.04	0.25	-1.98	-2.04
Jun-19	0.63	-0.08	-16.56	-12.53	-2.86	140.90	-1.27	4.36	1.63	-11.02
Jul-19	0.91	-0.16	4.26	-3.98	-2.60	-48.71	-0.09	4.23	5.14	1.93
Aug-19	0.55	0.16	2.04	3.64	-4.27	-46.84	4.21	8.21	11.89	-3.00
Sep-19	0.55	-0.16	0.36	-5.16	-0.74	7.02	-1.49	1.53	6.71	4.39
Oct-19	0.96	0.58	0.35	0.36	-4.68	33.57	0.17	0.76	-2.36	-5.00
Nov-19	0.95	0.25	-1.21	2.00	-0.98	4.69	1.30	-0.24	-1.40	6.02
Dec-19	1.21	0.57	4.87	2.41	0.20	56.17	-0.64	-0.08	-0.81	4.54
Jan-20	-0.13	0.33	-4.50	4.09	-1.78	21.41	2.50	4.97	4.31	-2.53
Feb-20	-0.73	-0.97	7.61	-8.63	0.40	-47.89	1.03	3.03	0.15	-13.28
Mar-20	-0.27	-1.47	-19.83	-13.57	-0.80	45.20	0.23	2.65	-11.13	-37.22
Apr-20	1.82	-1.00	-50.73	-43.68	-15.79	-95.70	-0.23	7.61	1.63	-33.01
May-20	-0.33	-1.43	84.58	28.71	-7.93	-207.00	-0.27	1.84	7.23	43.42
Jun-20	0.53	1.53	14.78	-4.81	-6.79	330.60	1.59	2.10	6.91	29.93
Jul-20	1.58	1.09	6.88	33.53	-2.80	-545.80	1.02	5.42	13.69	5.66
Aug-20	0.39	1.16	-4.39	3.08	-5.48	417.00	0.15	6.09	23.54	2.79
Sep-20	1.16	0.74	19.57	1.19	3.05	-83.99	-0.69	-4.03	-6.47	-8.01
Oct-20	1.21	0.57	-9.79	10.84	-5.62	56.97	0.36	-0.17	-3.18	-1.74
Nov-20	0.32	0.49	-4.53	0.40	2.51	23.52	-4.24	-0.53	1.53	7.16
Dec-20	-1.01	0.24	14.44	26.46	19.27	15.49	-0.94	-0.45	9.95	14.23