Dr. Ruhee Mittal
Associate Professor, Rukmini
Devi Institute of Advanced
Studies, New Delhi, India

Dr. Priyanka Kaushik Sharma
Associate Professor,
Department of Commerce,
Rajdhani College, University
of Delhi, Delhi, India

Manya
Service Operations IP Analyst,
Clarivate, Delhi, India

Impact of macroeconomic indicators on Indian stock market

Dr. Ruhee Mittal, Dr. Priyanka Kaushik Sharma and Manya

Abstract
The main purpose of this paper is to analyse the relationship between independent variables-macroeconomic indicators- exchange rate, wholesale price index, Index of Industrial Production, Foreign Portfolio Investments, Crude Oil Prices, and dependent variables- Stock Market Indices- Nifty 50 and Sensex. Unit root test, co-integration test and error correction model are being used to describe how all the variables behave in the short run as well as in long-run. The findings indicated that from the selected independent macroeconomic variables only crude oil has a significant impact on only one stock index i.e., NSE Nifty 50. The rest independent variables which are exchange rate, Foreign Portfolio investment, Index of Industrial Production, Wholesale Price Index impacted neither NSE Nifty 50 nor BSE Sensex.

Keywords: Crude oil prices, exchange rate, foreign portfolio investments, index of industrial production, Indian stock market, time series, and wholesale price index

Introduction

A stock market is a place where investors can buy and sell investments — most ordinarily, stocks, which represent shares of ownership in a public company. A stock market is a secondary market for buying and selling of securities like stocks, bonds, and derivatives.

In India, Securities and Exchange Board of India regulates the stock markets. BSE and NSE are two basic stock market where trading usually take place. NSE stands for national stock exchange. It is one of the most common stock market which is located in Mumbai, Maharashtra, India. NSE was incorporated in 1992 and was recognized as a stock exchange in 1993 under the Securities Contracts (Regulation) Act, 1956. It began its operations in 1994. NSE is the largest stock exchange in India and one of the largest in the world. On this platform an investor can invest in variety of investment alternatives like equity, derivatives, commodity etc. NIFTY 50 index is the most common and primary index on NSE. The Index tracks the behavior of a portfolio of 50 largest blue chip companies listed on NSE. BSE stands for Bombay Stock Exchange. It is one of the most common stock market which is located in Dalal Street, Mumbai, Maharashtra, India. It was founded in the year 1875 as "The Native Share and Stock Brokers' Association". S&P BSE Sensex index is the most common and primary index on BSE. The Index tracks the behaviour of a portfolio of 30 financially good large companies listed on BSE. In many nations, stock markets are now a significant and inevitable part of the economy. It is one of the indicators that show how crucial a country's stock market is in determining the health of its economy and having an impact on the performance of the financial market. The Indian stock market has grown significantly over the years and offers investment opportunities to both domestic and international investors. However, it's crucial for investors to conduct thorough research, have a clear investment strategy, and understand the risks associated with stock market investments.

Macroeconomic Indicators are those indicators which can significantly influence the market movements as they represent the economic situation of a particular country or nation. The macroeconomic indicators are essential for any change in an economy for a nation. Any unanticipated shift in these factors affects the economy in a number of different ways. Overall macroeconomic indicators play an important role in building national economies. Investors, traders, and analysts closely monitor these indicators as they provide insights into the overall health and performance of the Indian economy.

Corresponding Author:
Dr. Ruhee Mittal
Associate Professor, Rukmini
Devi Institute of Advanced
Studies, New Delhi, India

This study focuses on a few chosen macroeconomic factors and how they affect the Indian stock market.

The following are the five macroeconomic indicators that have been used in present study:

Exchange rate	A currency exchange rate is the price at which one currency will be exchanged for another on the basis of the exchange rate regime that each country has chosen.
Wholesale Price Index (WPI)	It is an index that overviews the changes in the price of goods in the stages before they are offered to the consumers. In India, the wholesale price index is also the main measure of inflation.
Index of Industrial Production (IIP)	It is an index for India which represents the growth of various sectors or industry groups. It classifies industry sectors into two main categories which are broad sectors and use based sectors.
Crude Oil Prices	Crude oil prices reflect the current market value of several oil barrels, the most popular of which are West Texas Intermediate, Dubai Mercantile Exchange, or Brent Blend.
Foreign Portfolio Investments (FPI)	It refers to the purchase of securities and other financial assets by investors from another country.

The present study will answer following research questions.

RQ1. Does the exchange rate significantly impact the Indian stock market?

RQ2. Does the Wholesale Price Index (WPI) significantly impact the Indian Stock Market?

RQ3. Does the Index of Industrial Production (IIP) significantly impact the Indian Stock Market?

RQ4. Does the Crude Oil Prices significantly impact the Indian Stock Market?

RQ5. Does the Foreign Portfolio Investments (FPI) significantly impact the Indian Stock Market?

Literature Review
In order to better understand the influence of macroeconomic indicators on stock exchange and to identify research gaps, the present study analyzed a number of prior studies. In this section, some of the most important studies are reviewed.

Othman and Al-Kassab (2022) [11] examine the effect of macroeconomic variables on stock market in presence of multicollinearity in the data set taken. The findings of the study indicated that the macroeconomic variables causes about 98.5% change in Iraqi stock market.

De Castro et al. (2022) [2] examine the impact of some selected miscellaneous indicators on economic development in terms of per capita income. The results showed that increases in Net Domestic Credit, Foreign Direct Investment, and Ratio of Female to Male Labor Participation Rate increased per capita income significantly, while increases in Real Interest Rate and Carbon Dioxide Emissions decreased per capita income significantly.

Sumathy and Das (2021) [13] examine the impact of COVID-19 on the Indian stock market's performance. The findings of the study indicated that COVID-19 had a negative impact on the Indian stock market performance. John (2019) [7] explores the relationship between macroeconomic factors and stock market prices. The results of the study showed that all the factors except interest rate had a statically significant impact on stock market performance.

Huy et al. (2019) [6] investigate the impact of seven macroeconomic variables on stock price of a Vietnam commercial bank named Vietcomb. The findings of the study indicated that all of the variables had a significant impact on the stock performance of Vietcomb.

Demir (2019) [3] examine the relationship of economic growth, relative value of domestic currency, portfolio investment, FDI, interest rate and crude oil prices on Turkish Stock Market index. The results of the study indicated that the last two variables negatively impact stock prices whereas the remaining five factors positively influence stock market prices.

Kwofie and Ansah (2019) [8] analyse the impact of two macroeconomic variables- exchange rate ad inflation on the stock market performance in Ghana. The findings of the study indicated that there exists an association between macroeconomic variables and stock market performance in the long run only not in short run.

Garg and Kalra (2018) [4] examine the impact of macroeconomic factors on Indian stock market so as to help the investors in their decisions related to buying and selling of securities. The results of the study indicated that average inflation and unemployment have negative relationship with Sensex whereas exchange rate, gold, forex reserves, gross domestic product have positive relationship with Sensex.

Ndlovu et al. (2018) [9] explore the relation of four macroeconomic factors with stock returns. The findings of the study indicated that in the long run there is an association of macroecomic variables with the stock returns.

Giri and Joshi (2017) [5] identify the short run as well as long run relationship between set of macroeconomic variables and stock price. The results of the study indicated that economic growth, inflation and exchange rate influence stock possess a positive impact on stock prices whereas crude oil price possess a negative impact on stock prices.

Mugambi and Okech (2016) [10] investigate the effect of macroecomic factors on stock returns of listed banks in the Nairobi Securities Exchange. The result of the study showed that all factors except GDP have a significant relationship with stock returns. GDP had insignificant relationship with stock returns.

Barakat et al. (2016) [1] examine the relationship between macroeconomic variables and stock market in two emerging economies which are Tunisia and Egypt. The findings of the study indicated in Egypt all macroeconomic factors have a significant relationship with stock markets but in Tunisia all macroeconomic factors except consumer price index have a significant relationship with stock markets.

Data and Econometric Modelling
This study aims to analyse the relationship between independent variables-macroeconomic indicators- exchange rate, wholesale price index, Foreign Portfolio Investments, Index of Industrial Production, Crude Oil Prices and dependent variables - Stock Market Indices - Nifty 50 and Sensex. It aims to analyse the relationship of these key macroeconomic indicators with Nifty 50 as well as with Sensex.

The data has been collected from various different secondary sources such as RBI, Yahoo Finance, NSDEL, NSEINDIA, BSEINDIA, books, journals, internet, records and surveys published by official agencies and newsletters available through electronic media. The period of study has been considered from January 2012 to December 2021 spanning a total of 10 years.

This study follows a descriptive research design as it attempts to identify the relationship between various macroeconomic indicators and Indian stock market- Nifty50 and Sensex. Unit root test is being used to test the stationarity of the data. Engle Granger 2-step approach method is used to estimate the effect of time series of the variables. All of the variables' short-term behavior is explained by the error correction model, which is in line with a long-term cointegrating connection.

Through an in-depth study of literature related to macroeconomic indicators and Indian Stock Market, a theoretical model has been developed, which includes independent variables- exchange rate, wholesale price index, Foreign Portfolio Investments, Index of Industrial Production, Crude Oil Prices and dependent variables- Nifty 50 and Sensex. The proposed model for this study is as follows:

- $NSENifty50 = f(IIP, WPI, FPI, CO, ER)$
  $$NSENifty50 = \beta 1 IIP_t + \beta 2 WPI_t + \beta 3 FPI_t + \beta 4 CO_t + \beta 5 ER_t + \varepsilon_t \qquad (1)$$

- $BSESensex = f(IIP, WPI, FPI, CO, ER)$
  $$BSESensex = \beta 1 IIP_t + \beta 2 WPI_t + \beta 3 FPI_t + \beta 4 CO_t + \beta 5 ER_t + \varepsilon_t \qquad (2)$$

$\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$ and $\beta 5$ are the coefficients of independent variables IIP, WPI, Crude Oil, Exchange Rate and ε_t represents the error term.

The dependent variables are average monthly closing price of Nifty50 NSE index and Sensex BSE index.

The logarithms of model (1) and (2) are taken so as to make the dataset more normalized.

Thus, the final equations are
$$logNSE = \beta 1 logIIP_t + \beta 2 logWPI_t + \beta 3 logFPI_t + \beta 4 logCO_t + \beta 5 logER_t + \varepsilon_t \qquad (3)$$

$$logBSE = \beta 1 logIIP_t + \beta 2 logWPI_t + \beta 3 logFPI_t + \beta 4 logCO_t + \beta 5 logER_t + \varepsilon_t \qquad (4)$$

Where:

logNSE Logarithm of monthly figures, obtained by taking average of daily closing prices of Nifty50 index
logBSE Logarithm of monthly figures, obtained by taking average of daily closing prices of Sensex index
logIIP Logarithm of monthly figures of Index of Industrial Production
logWPI Logarithm of monthly figures of Wholesale Price Index
logFPI Logarithm of monthly figures of Foreign Portfolio Investments
logCO Logarithm of monthly figures, obtained by taking average of daily closing prices of Crude Oil
logER Logarithm of monthly figures, obtained by taking average of daily exchange rate of Indian rupee against US dollar.

Results &Discussion
The following table represents the descriptive statistics of each of the variable used in the study:

Table 1: Descriptive Statistics

	LogBSE	LogNSE	LogCO	LogER	LogFPI	LogIIP	LogWPI
Mean	10.300	9.096	4.126	4.178	9.537	4.777	1.273
Median	10.273	9.078	4.083	4.192	9.742	4.776	1.449
Maximun	10.990	9.799	4.667	4.333	13.245	7.003	2.699
Minimum	9.693	8.501	2.813	3.895	6.035	3.698	-1.108
Std. Dev.	0.323	0.320	0.353	0.104	1.069	0.249	0.824
Skewness	0.100	0.067	-0.357	-0.662	-0.572	5.403	-0.756
Kurtosis	2.363	2.386	3.269	2.797	5.206	58.179	3.413

The value of standard deviation of logFPI and log WPI are seemed to be more volatile than logBSE, logNSE, logCO, logIIP, logER. The skewness of logBSE, logNSE, logCO is between -0.5 and 0.5 which indicates the dataset is approximately symmetrically distributed. The skewness of logER, logFPI, logWPI is between -1 and -0.5 which indicates the dataset is moderately skewed. The skewness of logIIP is greater than 1 which indicates the dataset is highly skewed. Also, the value of the kurtosis in all the variables is more than 1 which means that the distribution is too peaked and data lacks normality. In simple terms, all variables follow a leptokurtic distribution

Unit Root Test
A unit root test is used to identify if the series has stationarity present or not. The concept of stationarity implies that the basic characteristics of a time series dataset like mean and variance are consistent and do not change overtime. The most common type of unit root test is Augmented Dickey-Fuller (ADF) test which is used to identify either dataset is stationary or non-stationary.

Table 2: Results of Unit root tests

Variable	At Level		At First Difference	
	ADF Test Statistics	P	ADF Test Statistics	P
LogNSE	-0.345	0.913	-8.766	0.000
LogBSE	-0.360	0.911	-11.818	0.000
LogER	-1.893	0.334	-11.617	0.000
LogWPI	-2.317	0.168	-5.971	0.000
LogIIP	-9.625	0.000	-12.578	0.000
LogFPI	-4.173	0.008	-11.797	0.000
LogCO	-2.734	0.071	-8.547	0.000

The test of unit root test is as follows

⇒ ADF test Statistics at level

▪ Except LogIIP and LogFPI, all other five variables have a p value which is greater than 0.05.

▪ It means that only LogIIP and LogFPI have non stationarity present.

▪ It means that LogIIP and LogFPI has order of integration I(0)

⇒ ADF test Statistics at first difference

▪ Here, the p value of all the seven variables is less than 0.05.

▪ It means that all variables have non-stationarity present in them.

▪ It means that logNSE, logCO, logER, logWPI, LogFPI and logIIP have order of integration I(1) and all these series are required to be differenced at first level to make it stationary.

Co-Integration Test

The co-integration test is used to analyse the non-stationary time series. It is used to define if there is correlation between time series in the long run. For doing this test there are usually two steps conducted:

▪ Firstly a residual series is obtained on the basis on the regression results.

▪ Then, ADF test is again applied on that series of residuals to check stationarity of data which represents that the series is cointegrated.

In case of dependent variable - logBSE and independent variables - logCO, logER, logWPI, LogFPI and logIIP the results of Engle-Granger co-integration test is as follows:

Table 3: Results of Unit root tests on residuals obtained from logBSE regression.

Variable	ADF Test At Level	
	T-Statistic	Probability
Results of Cointegrating equations	-3.569	0.010

From, the table 3 it can be concluded that at order of integration I(0), residuals have unit root present. It means that there is co-integration present between dependent variable -logBSE and independent variables- logCO, logER, logWPI, LogFPI and logIIP. In case of dependent variable - logNSE and independent variables - logCO, logER, logWPI, LogFPI and logIIP the results of Engel-Granger co-integration test is as follows:

Table 4: Results of Unit root tests on residuals obtained from logNSE regression

Variable	ADF Test At Level	
	T-Statistic	Probability
Results of Cointegrating equations	-4.040	0.010

From, the table 4 it can be concluded that at order of integration I(0), residuals have unit root present. It means that there is co-integration present between dependent variable -logNSE and independent variables- logCO, logER, logWPI, LogFPI and logIIP

Error Correction Model (ECM)

When co-integration is present in a time series dataset, error correction model is applied. This model is based on the fact that. In order to estimate the long run behaviour an error correction term is added which the lag of the residual is obtained from the regression equation is included in the short-run equation.

The ECM specification is represented as follows:

$$logNSE = \beta 1logIIP_t + \beta 2logWPI_t + \beta 3logFPI_t + \beta 4logCO_t + \beta 5logER_t + \beta 6ECM(-1) + \varepsilon_t \qquad (5)$$

$$logBSE = \beta 1logIIP_t + \beta 2logWPI_t + \beta 3logFPI_t + \beta 4logCO_t + \beta 5logER_t + \beta 6ECM(-1) + \varepsilon_t \qquad (6)$$

The following table represents the results derived by applying regression on equation (5) where dependent variable is logBSE and independent variables are logCO, logER, logWPI, LogFPI and logIIP:

Table 5: Results of ECM with dependent Variable BSESensex

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.018	0.005	3.452	0.001
D(LCRUDE)	0.082	0.090	0.914	0.365
D(LEXCHANGE)	0.264	0.350	0.755	0.454
D(LFPI)	0.004	0.003	1.158	0.253
D(LIIP)	0.004	0.011	0.352	0.726
D(LWPI)	0.005	0.014	0.393	0.695
ECM(-1)	-0.097	0.049	-1.984	0.053
R-squared	0.148	Mean dependent var		0.019
Adjusted R-squared	0.026	S.D. dependent var		0.036
S.E. of regression	0.036	Akaike info criterion		-3.663
Sum squared resid	0.055	Schwarz criterion		-3.393
Log likelihood	96.766	Hannan-Quinn criter.		-3.561
F-statistic	1.216	Durbin-Watson stat		2.04
Prob(F-statistic)	0.317			

It can be seen that the p value of all the independent variables are greater than 0.05 which means that no independent variable has a significant impact on the dependent variable BSESensex. The adjusted R-squared also shows that only 2 percent of the variations in BSESensex is explained by crude oil prices, exchange rate, foreign portfolio investment, index of industrial production, wholesale price index.

The ECM represents the rate at which changes occur in the long-run equilibrium is negative and significant at 5 percent level. The negative value of the error correction term is in accordance with the long-run equilibrium relationship. It's coefficient has a value of 0.09 which shows the rate of change. It means that 9 percent previous disequilibrium in the long term shall stand corrected in the short run.

The following table represents the results derived by applying regression on equation (6) where dependent variable is logNSE and independent variables are logCO, logER, logWPI, LogFPI and logIIP:

Table 6: Results of ECM with dependent Variable NSENifty50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.02	0.003	6.454	0.000
D(LCRUDE)	0.14	0.058	2.559	0.014
D(LEXCHANGE)	0.05	0.224	0.242	0.809
D(LFPI)	0.002	0.002	1.263	0.213
D(LIIP)	-0.0004	0.007	-0.05	0.953
D(LWPI)	-0.001	0.009	-0.122	0.903
ECM(-1)	-0.049	0.031	-1.569	0.124
R-squared		0.225	Mean dependent var	0.022
Adjusted R-squared		0.115	S.D. dependent var	0.024
S.E. of regression		0.023	Akaike info criterion	-4.542
Sum squared resid		0.022	Schwarz criterion	-4.272
Log likelihood		118.286	Hannan-Quinn criter.	-4.439
F-statistic		2.039	Durbin-Watson stat	1.522
Prob(F-statistic)		0.081		

It can be seen that the p value of all the independent variables except crude oil are greater than 0.05 which means that except crude oil all other independent variables have no significant impact on the dependent variable NSENifty50. The adjusted R-squared also shows that only 11 percent of the variations in NSE Nifty 50 is explained by crude oil prices, exchange rate, foreign portfolio investment, index of industrial production, wholesale price index.

The ECM represents the rate at which changes occur in the long-run equilibrium is negative and significant at 12 percent level. The negative value of the error correction term is in accordance with the long-run equilibrium relationship. It's coefficient has a value of 0.04 which shows the rate of change. It means that 4 percent previous disequilibrium in the long term shall stand corrected in the short run.

It can be said that from the selected independent macroeconomic variables only crude oil has a significant impact on only one stock index i.e., NSENifty50. The rest independent variables which are exchange rate, Foreign Portfolio investment, Index of Industrial Production, Wholesale Price Index impacted neither NSENifty50 nor BSESensex. Expected justification for the same is covered in the subsequent paragraphs:

Impact of Exchange Rates on Stock Exchanges
Exchange rates and stock exchanges have a complex relationship that is impacted by a number of different variables. The relationship between exchange rate and stock exchange is not always straightforward or consistent. It depends on a multitude of factors including economic conditions, market sentiment and government policies.

A weaker domestic currency can make a country's exports more competitive, potentially boosting the earnings of export-oriented companies listed on the stock exchange. Conversely, a stronger domestic currency may benefit importers. Fluctuations in exchange rates can impact multinational companies' revenues, expenses, and profitability, which can, in turn, affect their stock prices. Furthermore, RBI can influence exchange rates through their monetary policy decisions. For instance, interest rate changes can affect a currency's value, which can have ripple effects on stock markets. Lastly, currency traders and investors engage in speculative activities in the foreign exchange market, which can lead to short-term exchange rate fluctuations that may or may not have a lasting impact on stock markets.

Impact of Wholesale Price Index (WPI) on Stock Exchanges
Certainly, it's worth noting that the relationship between the Wholesale Price Index (WPI) and stock exchange performance is not always straightforward or direct. While there can be correlations and indirect influences, they are not inherently linked in a way that one directly causes changes in the other. The WPI primarily measures changes in the prices of goods at the wholesale level, focusing on producer prices. Stock exchange performance, on the other hand, is influenced by a wide range of factors, including corporate earnings, investor sentiment, geopolitical events, and more. Stock markets are influenced by a multitude of factors, both macroeconomic and microeconomic. These factors include interest rates, corporate profitability, economic growth, geopolitical stability, and global market trends. While inflation, as measured by the WPI, can play a role in some of these factors, it is just one piece of the puzzle. Stock prices are also influenced by individual company performance, mergers and acquisitions, innovation, and other company-specific factors. These factors can outweigh any potential influence from changes in the WPI.

Impact of Index of Industrial Production (IIP) on Stock Exchanges
The relationship between the Index of Industrial Production (IIP) and the stock exchange is not a straightforward or deterministic one. There isn't a direct cause-and-effect relationship between these two indicators. Stock prices are forward-looking and often reflect investors' expectations about future corporate earnings and economic conditions. These expectations are influenced by a wide range of factors beyond just current industrial production levels, including interest rates, global economic trends, company-specific news, and geopolitical events. Stock prices are influenced by a multitude of factors, including individual company performance, investor sentiment, macroeconomic conditions, and government policies. These factors can sometimes override the influence of changes in industrial production. Many companies listed on stock exchanges operate globally, and their performance is influenced by factors beyond the borders of their home country. This means that global economic trends and international events can have a significant impact on stock prices, sometimes outweighing the influence of domestic industrial production. Different sectors within the stock market may respond

differently to changes in industrial production. Some sectors may be more sensitive to economic cycles, while others may be less affected.

Impact of Index of Crude Oil prices on Stock Exchanges
The relationship between crude oil prices and stock exchanges is complex and can vary depending on various factors. Changes in crude oil prices can have a significant impact on the overall economy. When oil prices rise sharply, it can increase production costs for many industries, including transportation, manufacturing, and energy. This can potentially lead to reduced corporate profits and slower economic growth, which can negatively affect stock markets. The most direct relationship between crude oil prices and the stock exchange is often observed in energy sector stocks. Companies involved in oil exploration, production, refining, and distribution can see their profitability closely tied to oil prices. When oil prices rise, energy sector stocks may perform well, and when prices fall, they may underperform. Crude oil prices can influence inflation rates. A sustained increase in oil prices can contribute to higher overall inflation, which may prompt RBI to raise interest rates. Changes in interest rates can affect various sectors of the stock market, such as financial services and utilities. Consumer spending is a significant driver of economic growth, and it can be influenced by changes in gasoline and energy prices. When oil prices rise, it can lead to higher fuel costs, which can reduce disposable income for consumers. This can impact consumer-focused industries, such as retail and tourism. Investor sentiment can play a role in stock market movements. Sudden and unexpected changes in oil prices can create uncertainty in financial markets, leading to volatility and changes in investor behavior. Different sectors of the stock market can respond differently to changes in oil prices. For example, energy companies may benefit from rising oil prices, while airlines and transportation companies may face increased costs.

Impact of Foreign Portfolio Investment on Stock Exchanges
While it's true that the relationship between Foreign Portfolio Investment (FPI) and the stock exchange is not a simple or one-directional one, it would be inaccurate to claim that there is absolutely no relationship between them. Foreign investors may have preferences for specific sectors or industries within the stock market. Their investment choices can influence the relative performance of these sectors. Foreign investors often need to convert their home currency into the local currency to invest in the stock market. Exchange rate movements can impact the returns they receive when they repatriate their investments, which can influence their investment decisions large FPI inflows or outflows can affect stock prices and market sentiment. Positive news about foreign investments can boost confidence in the local stock market, leading to higher stock prices. When foreign investors decide to withdraw their investments, it can lead to significant capital outflows and a downturn in stock prices. This risk highlights the interconnectedness of FPI and stock market performance.

Conclusion
Only crude oil, out of the independent macroeconomic factors chosen, significantly affects just one stock index, the NSENifty50. Neither the NSENifty50 nor the BSE Sensex were affected by the other independent variables, such as exchange rates, foreign portfolio investments, the index of industrial production, or the wholesale price index. The anticipated reason for the same is exchange rates and stock exchanges are intricately linked, influenced by various factors such as economic conditions, market sentiment, and government policies, making the relationship not always straightforward. The Index of Industrial Production (IIP) and stock exchanges are not a direct cause-and-effect relationship due to market expectations, diverse factors affecting stocks, globalization, and sectorial differences.

The relationship between crude oil prices and stock exchanges is complex and can vary depending on various factors. Economic impact, energy sector stocks, inflation and interest rates, consumer spending and investor sentiment can all impact stock markets. Foreign portfolio investment (FPI) and stock exchanges also have a complex relationship, with factors such as exchange rate effects, market movement, and risk of outflows.

In conclusion, that the relationship between macroeconomic indicators and the stock market is complex and interconnected, with each factor playing a role in shaping the overall market and various factors can influence stock prices simultaneously.

Future Research Agenda
Due to the dynamic nature of the environment, all the macroeconomic indicators have been changing rapidly. A small piece of information has the capability to make some drastic changes in the economy impacting various macroeconomic indicators. The future research can be carried out by taking some different macroeconomic variables. Also, the nature and number of stock market indices can be taken differently. This same research can be applied with respect to a different country or to a combination of various countries.

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