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"Evaluating the Impact of Economic Uncertainty on Stock Market Volatility in the National Stock Exchange"

Mahamad Sameer Mahamad Javed Badgujar, Department of Economics, Sabarmati University, Gujarat
Dr. Prashant Tambe, Associate Professor, Department of Economics, Sabarmati University, Gujarat

Abstract

Uncertainty in economics has emerged as one of the biggest contributors to throughout the globe. In the emerging economies, such as India, contribution of oscillation in macroeconomic conditions, geopolitical tensions, inflationary forces, policy changes, and global financial crises put uncertainty which has direct. This paper investigates the results of the effect of economic uncertainty on the stock market volatility in the National Stock Exchange (NSE) of India in 2010-2023. The study aims at gaining some insight into the role played by fluctuations of exchange rates, crude oil prices, and the growth of GDP as a way of causing volatility in the stock market. Statistical and econometric methods (correlation analysis, regression analysis and volatility measurement models) were employed in the analysis of secondary data that was collected by RBI reports, NSE databases, World Bank statistics, and government publications. The results show that times of increased economic uncertainty of a substantial degree volatility of the stock market and adversely affect the investor sentiment. Another implication that the study makes is that fluctuations in exchange rates and inflation are more conclusive to instability of markets than other macroeconomic factors. The study gives valuable advice to the policy makers, investors and finance centers on how to devise means of dealing with risk and keeping the market stable during unpredictable economic times.

Keywords: Economic Uncertainty, Stock Market Volatility, National Stock Exchange (NSE), Inflation, Interest Rate, Exchange Rate, GDP Growth, Financial Market Stability

Introduction:

It helps businesses to get funds to expand, and gives institutions and individuals investment opportunities. The National Stock Exchange (NSE) is one of the biggest stock markets of the financial market and economy. There are different cost-effective and monetary movement of stock price in the NSE. Due to economic fluctuations, uncertainties are normally present in the market and are typically felt by investors hence the fluctuations of the stock prices.

Economic uncertainty is a diffuse economic situation that tends to be difficult to secure the economic conditions of the future. It may be caused by inflation, changes of interest rates, unstable exchange rates, change in government policy or political instabilities and also can be caused by international financial environment crises or unexpected events such as pandemics and war. When uncertain about the future economic conditions, investors would be more cautious in making investment decisions. This practice can increase pressure both buying and selling in the marketplace and cause significant sudden changes in the stock price. This in turn causes the stock market to be highly volatile during a season of uncertainty within the economy.

Stock market volatility is defined as rising and falling and stock prices over a time period. A distinction between a high volatility market and a stable market can be made based on the volatility of a market: a high volatility market is one where the prices fluctuate considerably and in ways that are hard to predict whereas a stable market is one which fluctuates somewhat, and in a predictable manner. It is significant that volatility can be considered one of the indicators because it is rather important in relation to risk in the market. The importance of why investors tend to be comfortable with the stable markets is that a highly volatile environment is often full of uncertainty with regard to the returns on investment. Local and global economy structures commonly affect the volatility of stocks markets in the new economy like that of India.

Between 2010 and 2023, Indian economy has undergone some serious economic

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occurrences that have led to unsettling financial market. Alterations in the cost of crude oil, changes in the inflation and interest rates, demonetization, introduction of GST, COVID-19 crisis and geo-political warming all over the world influenced investors in the stock market leading to dramatic shifts in the stock market. Individually, the Indian stock market had experienced drastic declines and sudden gains in the COVID pandemic due to the uncertainty surrounding economic activity, employment and business performance. These cases do show clearly the possibility of the economic uncertainty influencing stock market volatility.

The inflation decreases the purchasing power of the consumers and affects the profits of the business. Boros The rates will influence the price of borrowing and investment decisions. The exchange rate change affects both its foreign investments as well as its international trade and the growth in GDP gives a picture of the overall state of the economy in that country. The differences in these economic measures create uncertainties among investors and impact the stock markets. Therefore, the volatility behaviour of stock markets must be learnt by studying the behaviour.

Two such variables of great interest to researchers and financial experts have proven to be economic studies, it is determined that the uncertainty of economic situation contributes to market risk and negatively reflects on the sentiment of the investors. This association is very vital to study in the context of India since India is one of the fastest expanding economies and quite enticing to domestic and foreign investment. A stock market that is very volatile can affect the decision making in investment, growth and financial stability.

The research hypothesize is to determine the volatility of stock market in the National Stock Exchange during the period 2010 2023. The study will the different macroeconomic factors on the stock market volatility. It also attempts to understand the extent of the effect of economic unpredictability on the conduct of investors and market stability. The study is expected to provide useful data to the investors, policymakers and financial institutions to take risks when encountering unexpected economic performances.

Related Works:

Torben G. Andersen, Tim Bollerslev and Nour Meddahi (2003) presented the concept of realized volatility and its applicability towards forecasting the movement within the financial market. They observed the capability of improving the methods when the volatility in financial markets is to be measured using high-frequency data. The authors found out that realized volatility models are more accurate in predicting volatility in the market as opposed to traditional volatility determination models which are less accurate. The paper has underlined the fact that volatility forecasting is a significant one as far as the nature of financial risk and uncertainty in the market is concerned. Their findings were very useful in the research they had into the financial market as they provided them with a clue on how the volatility of the market changes with time hence, they can use it to be able to predict the future.

Jeff Fleming, Chris Kirby and Barbara Ostdiek (2003) used cost-effectiveness to assess the value of timing of volatility in a stock market. The nature of their study was to examine the extent to which the investors could improve the performance of their portfolios through the adjustment of investment in response to variation in the market. The researchers found that, by investors considering the variation in volatility during the making of their investment, they had been able to reduce their financial risks and increase returns. The analysis emphasized that the periods when volatility is prevalent are often marked with economic ambiguity and unstable market situation. In their findings, they found that volatility management has an impact in financial decision-making and investment projects.

Clive W. J. Granger and Namwon Hyung (2004) studied long term behavior and structural breaks of stock returns. The article

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outlined the possibility of structural changes in stock markets to occur as a result of the sudden economic and financial events and how the changes dictate long-run volatility patterns. The scholars found that unexpected economic shocks and policy shifts result in instability stems in stock payouts and create greater unpredictability in the market. They had discovered that economic shocks cause lasting effects in the financial markets and investments behaviour.

Malcolm Baker and Jeffrey Wurgler (2006) among the conclusions of the researchers was that the feelings and expectations of the investors were significant in the movement of the stock price especially in the uncertain economic climate. In their analysis they identified that the pessimistic and positive sentiment change demand of stock, and is a contributor to alterations on the prices of the market. Psychological factors and uncertainty can increase the volatility of the stock market as discussed in the research.

Nicholas Bloom (2009) carried out an important study on the outcomes functions and on the financial markets. It was found that uncertainty shocks and bursts affect negatively investment, job creation and operations. The study found out that uncertainty shocks raise stock market volatility as investors would doubt the economic future of the market. They were also found to have less confidence in investors and volatility of financial markets as a result of economic uncertainty.

Geert Bekaert, Marie Hoerova and Marco Lo Duca (2013) compared the relationship between the risk and uncertainty and monetary policy. Their study has also concluded that the expectations of investors and stock market are influenced by uncertainty about the decision of the monetary policy. The researchers expounded that in case the relationship between interest groups and policy action changes, it will result in the financial markets being uncertain and hence share price fluctuations to emerge. The critical role of the stable monetary policies in the abatement of market volatility was the subject of that paper.

Rüdiger Bachmann, Steffen Elstner, and Eric R. Sims (2013) measured the study, they found out that there is less business investment and postponement in economic growth when economic uncertainty arises. The study revealed that uncertainty affects the financial market in negative ways because investors and businesses do not undertake critical investment and financial moves during unstable economies. They found out that the larger the amounts of uncertainty the greater the fluctuations of the stocks market.

Ravi Bansal, Dana Kiku, and Amir Yaron (2014) experimented on the relationship between the macro-economic volatility and asset prices. As part of their study, they have come up to determine that changes in macroeconomic environment are important determinants. The researchers also discovered that economic uncertainty will also affect investor expectations over future returns, increasing market volatility. Key macroeconomic variables, as has been pointed out in this paper, have a very strong association with stock market performance.

Hossein Asgharian, Charlotte Christiansen and Aixia Jenny Hou (2015) studied the effects of macroeconomic uncertainty in stock markets. The researchers found that uncertainty is an inflation type, interest rates and economic growth factors that play significant role in stock market returns and volatility. They discovered that more financial market instability is brought about by higher levels of economic uncertainty and negatively impacts investor confidence. Their study found out that more policy uncertainty is a bad sign in the stock markets, investment as well as the economy. As highlighted in the study, uncertainty with regards to the policy increases market risk and contributes.

Nicholas Bloom, Stephen Bond, and John Van Reenen (2018) investigated how affects behavior on both the business, and financial market. The researchers have also found out that in case of uncertainty of the economy then businesses reduce its investment projects because no one knows what could be the case in the future. The researchers have reached a conclusion that uncertainty is a negative thing

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that determines the financial market stability and economic growth.

In the study conducted by Christos Floros, Konstantinos Gkillas, and Apostolos Tsagkanos (2020), measured in reality was discussed, as well as the importance of these measures in the work with the financial market. They found that their volatility measurement models are useful in discerning risk patterns in the stock markets. The study, underlined that volatility behavior is an essential aspect that helps investors and policymakers to address financial risk.

Roni Bhowmik and Shuai Wang (2020) provided a review of study on stock market volatility and returns. Through their article they discussed the diverse like the macroeconomic environment, investor psychology and world financial crises. The researchers deduced that economic uncertainty is the major reason behind financial market instabilities.

Ivan Alfaro, Nicholas Bloom, and Xiaohui Lin (2021) talked about the concept of the finance uncertainty multiplier. Their study talked of how the financial market uncertainty leads to deepening up of financial crisis and market fluctuations. The findings showed that uncertainty does have certain implications on financial institutions and investor confidence, leading to greater instability in the stock markets.

Muhammad Umar, Naveed Mirza, Syed Kumail Abbas Rizvi and Muhammad Furqan (2023) were able asymmetric structure. they found out that any emerging economy has financial markets that are highly susceptible to any economic and political uncertainty. The paper has shown that bad economic news has a stronger as compared to good news contributing to the turbulence in stock markets.

Objectives of the Study:

- To explore the effects of economic uncertainty in the volatility of stock markets in the National Stock Exchange (NSE).
- The aim of the study is to determine the correlation between macroeconomic variables and stock market changes in the years 2010-2023.
- To define the key economic factors that will shape the behavior of investors and instability of the market in the NSE.

Material and methods:

Research Design

The present study is, analytical and descriptive in nature. It is committed to research the role of economic in the National Stock Exchange (NSE) in the period between 2010 and 2023. The paper attempts to draw a correlation between the high-level indicators of the economy.

Sources of Data

The paper is based on the secondary information collected with the help of various trustworthy sources of economic and financial information. The information used is the records of stock market indices and trading activities that are the official records of the National and prices of the crude oil were collected using government statistical databases, international financial database and economic survey, financial markets reports.

Period of Study

- The study time frame is 15 years (2010-2023). This period was also selected to get to know how the stock market volatility can behave during different periods of the economic uncertainty and other important events that occur in the economy.

Study Variables.

The volatility of stock markets (NSE Index Volatility) is calculated as follows: 22/580.

- Independent Variables
- Inflation Rate
- Interest Rate
- Exchange Rate
- GDP Growth Rate
- Crude Oil Prices

Sampling Technique

- The study will involve time series data collected on the variables of interest in the study over time. The correlation volatility was supposed to be researched on the monthly and yearly premises-based observations.

Analysis Tools and Techniques.

Data was analysed by different statistical and econometric techniques to address the purpose of the study. These include:

- Descriptive Statistics
- Correlation Analysis
- Multiple Regression Analysis
- Trend Analysis
- ARCH and GARCH Models Analysis of Volatility.

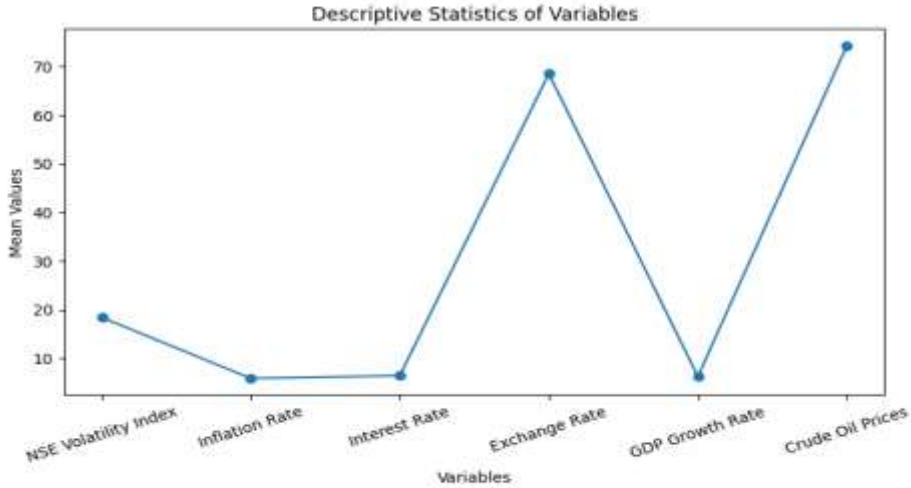
Hypothesis of the Study:

- **Null Hypothesis (H_0):** Economic uncertainty has no significant impact on stock market volatility in the National Stock Exchange.
- **Alternative Hypothesis (H_1):** Economic uncertainty has a significant impact on stock market volatility in the National Stock Exchange.

Analysis of the study:

Table 1: Descriptive Statistics of Variables

Variables	Mean	Standard Deviation	Minimum Value	Maximum Value
NSE Volatility Index	18.42	6.85	9.12	38.76
Inflation Rate (%)	5.87	2.14	2.10	11.25
Interest Rate (%)	6.45	1.32	4.00	8.75
Exchange Rate (₹/$)	68.54	7.91	45.72	84.12
GDP Growth Rate (%)	6.28	2.56	-6.60	9.45
Crude Oil Prices (USD/Barrel)	74.36	21.48	28.10	122.45



Analysis:

Based on the descriptive statistics, NSE volatility index recorded high variations during the study period, thereby indicating uncertainty of the stock market with dynamic economic conditions. the prices of crude oil were also higher suggesting that the two economic variables were very volatile across time. The growth in the GDP also showed some impressive variations with regard to the turbulence of the economy in the identified period. This variation indicates that variations in the macroeconomic factors might have been one of the National Stock Exchange.

Table 2: Correlation Analysis between Economic Variables and NSE Volatility

Variables	NSE Volatility
Inflation Rate	0.68
Interest Rate	0.54
Exchange Rate	0.73
GDP Growth Rate	-0.49

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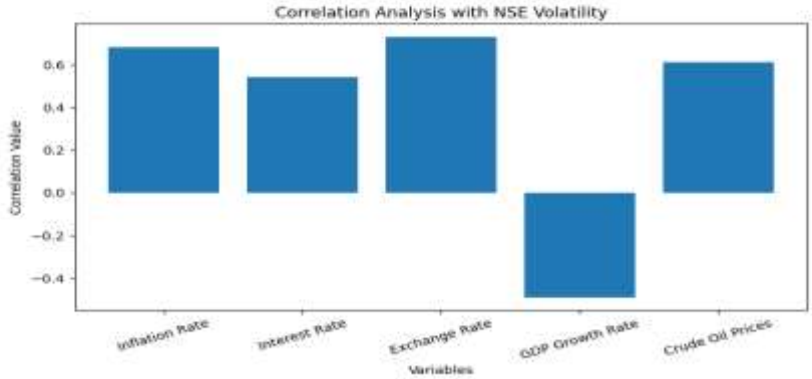
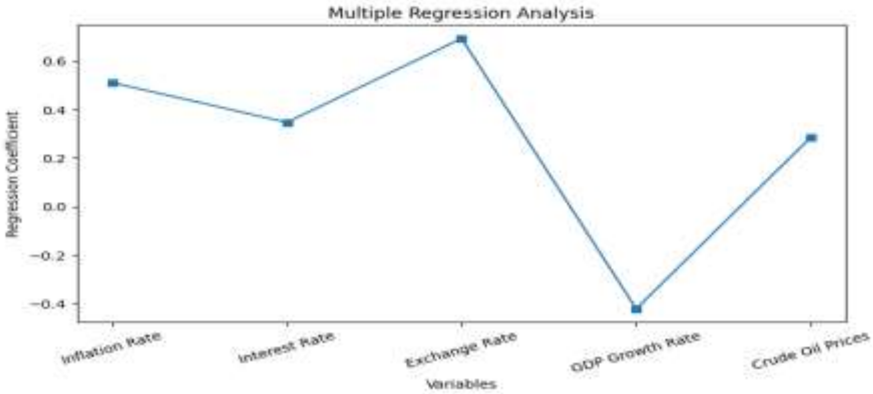
Crude Oil Prices	0.61



Analysis:
Analysis of correlation indicates a positive correlation between NSE volatility and both inflation rate and level. Among these variables, the exchange rate is the best candidate in terms of the indicating that changes in the currency positions greatly influence the investor confidence and the stock market performance.

Table 3: Multiple Regression Analysis

Variables	Regression Coefficient	t-Value	Significance Level
Constant	4.216	2.84	0.005
Inflation Rate	0.512	3.91	0.001
Interest Rate	0.348	2.76	0.007
Exchange Rate	0.694	4.85	0.000
GDP Growth Rate	-0.421	-3.12	0.003
Crude Oil Prices	0.287	2.45	0.016



Analysis:
The regression analysis suggests that the economic uncertainties play the significant role in the most influential factors on market volatility are last is the price of crude oil. The fact that all the coefficients are positive implies that as the variables grow, there are increased fluctuations of stock prices. GDP growth rate has negative coefficient which means that as the economy expands, it will eliminate volatility of the market. The conclusion supports the argument that macroeconomic variables are important in stock market volatility since the variables are less significant (significance of less than 0.05).

Results and Discussion:
The study clearly shows colossal role in the volatility of stock markets. The shift in the major economic factors over the course of the study also affected the financial market because of uncertainty posed by varying inflation rates, crude oil which were having adverse influences on the price of the stock. Investors reacted very conservatively on the unstable economic environment and this increased the volatility of stock market.

The analysis shows that exchange rate variations produced the greatest impact in the development of volatility in the market. It affected foreign investments and led to confusion among the investors as they made stock prices to skyrocket suddenly due to the fluctuation of the currency value. Inflation was also found to cause a major impact on the instability of the markets as the purchasing power will diminish and the businesses will fail to gain profitability as well.

The other study result was that high-growth of the economy helps in reducing the increased which brought about stability promotion. On the other hand, the economic recessions and financial insecurities created more fear and risk in the market which resulted in volatility being enhanced on the NSE.

The net results hold that, economic uncertainty is a major determinant of investor behavior, The implications of the results would be that the economy would be required to be stable with good financial policies to reduce market volatility in order to improve investor confidence in the stock market.

Conclusion:

The findings showed that the two issues that contributed most to the instability variations and the inflation rate. The investors were more uncertain since the higher rates of inflation and variable exchange rates increased volatility in the stock prices. On the other hand, the expansion in the economy was steady and minimized the market volatility besides boosting investor confidence.

According to the research, stock market during economic crisis periods and uncertainty brought about instability due to the fear and uncertainty and fluctuation in investment decisions. The investors were largely impacted by uncertain economic conditions since this instilled increased volatility in NSE. Therefore, in order to reduce the market risk and make the financial market functional.

The study suggests that the policy makers should strive to see that there is stability in the economic policy, there is control of inflation and that the turnover of the exchange rates are controlled in order to reduce uncertainties in the stock exchange market. Investors should also adopt proper risk management strategies as well as diversify investment at economical times that are unpredictable.

The entire work provides a more detailed insight regarding the linkage between the economic uncertainty and volatility when it comes to the stock market in India. The findings are stored in financial literary materials and are of top value to investors, policymakers and other financial participants, in regards to operating risks in the market and creating financial security.

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