

IMPACT OF COVID19 ON THE INDIAN STOCK MARKET

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Abstract: *Abstract: The COVID19 pandemic which came unprecedented has brought forward a lot of confusion and unrest in the world. There are a lot of changes with regard to the global landscape in multiple ways. SARS-CoV-2 is the primary virus, which is the root contributor to the COVID19 outbreak, which started in Wuhan, Hubei Province, China, in December 2019. It did not take much time to spread across the world. This pandemic has resulted in a universal health crisis, along with a major decline in the global economy. One of the major reasons for the fluctuation in the stock price is because of supply and demand. When the number of people who wanting to sell their stocks outnumbers those who want to purchase it, the stock price drops. Due to the result in the gap the financial markets will suffer in short duration, but in the long run, markets will correct themselves and would increase again. There is a sharp decline in the stock price because of the pandemic. The current scenario has resulted in a world health crisis which has contributed to global and economic crisis. Almost all financial markets across the world have been affected by the recent health crisis, with stock and bond values falling gradually and severely. In the United States, the Dow Jones and S& P 500 indices have fallen by more than 20%. The Shanghai Stock Exchange and the New York Dow Jones Stock Exchange both indicate that they had a significant impact on China's and the United States' financial markets. The primary purpose of this paper is to determine the impact of COVID19 on stock markets. The rapid spread of the virus have left a major impact on the global financial markets. There is a link between the pandemic and the stock market, and this has been studies in this paper. Along with it an attempt is taken to compare stock price returns in pre-COVID19 and post-COVID19 scenarios. The stock market in India faced uncertainty during the pandemic, according to the findings.*

Keywords: COVID19, Economy, Nifty, Stock Market, Sensex, Pandemic, Comparison of Global markets, Supply and Demand

1. Introduction:

COVID19, a new coronavirus pandemic began in China's Hubei province and spread very quickly to the rest of the world excluding very few regions (Hui et al., 2020). If we look into the data as received on May 1, 2020, there are 3.26 million people affected worldwide, with 234 thousand deaths recorded in 212 countries and territories. The economic activities in many countries came to an abrupt halt with the implementation of the lockdown and strict quarantine measures. The pandemic's impact spread to almost all the developing countries and had an impact on their economies as well. Drop in the oil prices had a hard hit on the economy. Its effect along with the pandemic's emergence has heightened the urgency of this situation. The emerging economies of many countries such as Brazil, have steadily implemented strict mobility limits, which are expected to push the emerging economies into a 1% recession by 2020. In China, with the increase in the COVID19 infections, there is lot of uncertainty leading to increase in stock return volatility. Travel between countries is restricted. Prohibition is also on the rise which have paused a lot of global economic activities. This gave rise to a lot of panic among customers as many a business has stopped them from engaging in their regular consumption habits. This also resulted in abnormality in the market. The epidemic is creating uncertainty and risk, and it is having a significant economic impact on both rich and emerging countries such as the United States, Spain, Italy, Brazil, and India.

There has been an adverse effect on the stock market because of the pandemic. The capital market, which consist of equity as well as bond markets, has been severely impacted by the economic uncertainty associated with COVID19. The Sensex on the Bombay Stock Exchange

(BSE) and the Nifty on the National Stock Exchange (NSE) are the two primary stock indexes in India (NSE). According to the Bombay Stock Exchange, the Sensex index decreased to 13.2 percent on March 23, 2020. After the Harshad Mehta Scam broke on April 28, 1991, it was their highest single fall. (2020, Mandal). Similarly, over the same time period, Nifty has lost roughly 29%. Some analysts have called COVID19's impact on the Indian stock market a "black swan episode," referring to the occurrence of a highly unexpected event with disastrous repercussions. As the government enforced lockdown throughout the country, there is a decrease in the labor force, which has an effect on production as well as the supply chain. This has also led to a reduction on the consumption and people tend to keep the basic essentials only in stock. People have reduced their consumption patterns as a result of the confusion that exists among mankind, resulting in demand-side shock. The previous pandemic, according to research, had little effect on the supply chain. The COVID19 epidemic, on the other hand, has had an impact on both demand and supply chains. As a result of the epidemic, the price of oil has plummeted considerably, while the price of gold has increased dramatically. Firzli (2020) refers to this epidemic as "the bigger financial crisis."

Businesses are heavily indebted worldwide, weak firms are broken down, and corporate debt is at an all-time high. There is a rise in the global financial market risk (Zhang et al., 2020). There is a lot of fear which have caused losses for investors. To elucidate an example, As a result of the pandemic's impacts, the world stock market lost roughly US\$6 trillion in one week, from February 24 to February 28. (Ozili & Arun, 2020). The market value of the standard & poor (S&P) 500 indices has plummeted by 30% since the COVID19 outbreak. In the words of Azimili (2020), increased volatility impacts the necessary rate of return and hence the current market value of stocks.

2. Literature Review:

Frankel (2020) looked at the pandemic's economic impact on the developing economy. The virus has limited those economies' income by limiting exports, tourism business, and migrant worker remittances. In his analysis, Raja Ram (2020) discovered that COVID19 has created disruption in the whole of global scenario. The crash of the global financial market caused significant volatility in the Indian stock market as well. The return on the Indian stock market is also reduced due to a drop in foreign portfolio investments. COVID19 was classified as a "black swan" case after the author examined the past of all unexpected incidents. He went on to examine the past of the Indian stock market's collapse and recovery, concluding that economists cannot forecast the economy's recovery until the public health system is stable. Ravi (2020) contrasted the Indian stock market's pre-COVID19 and post-COVID19 conditions. His findings showed that the NSE and BSE traded at their highest levels before COVID19, at the beginning of January, reaching peaks of 12,362 and 42,273, respectively, indicating favorable stock market conditions. The stock market was shaken by the COVID19 outbreak, with the BSE Sensex and NSE Nifty both falling by 38 percent. It has resulted in a gross stock market loss of 27.31 percent since the beginning of the year. Because of the constraints in transportation, the shares of many industries, especially the tourism as well as hospitality departments, cinema halls, have reduced more than 40%. Mandal (2020) in one of his papers has made a study on the impact of the pandemic on the stock market of India elaborately. The findings in the papers were as such that the BSE Sensex has dropped 13.2 percent in a single day, exceeding the historic April 28, 1992 collapse. The Nifty has also plummeted by 29 percent, exceeding the 1992 disaster. Simply the FMCG industry has experienced a favorable return as individuals have limited their purchases to only the necessities, while other industries have witnessed a significant drop. 2020 (Rakshit & Basistha).

There is a lot of literature on COVID19's effect on different sectors like health, agriculture, manufacturing, trade, and commerce, but only a few studies on its impact on the emerging economy's stock market have been done. The stock market has a major impact on the economy. GJR GARCH (The Glosten-Jagannathan-Runkle) is considered as a useful model for analyzing the volatility of the BSE and NSE, These two are India's major stock exchanges. There is also less availability of literature which compares the stock market's return before and after the COVID19 case. Therefore, this study sought to evaluate the returns of both the stock market considering the two specified time frames.

3. Data and Methodology:

The research is focused on secondary data sources. The regular closing prices of the indices Nifty and Sensex were obtained from the BSE and NSE official websites (<https://in.finance.yahoo.com/>). Data is collected between September 3, 2019, and July 10, 2020,

covering both before and after COVID19. The period from September 3, 2019, to January 29, 2020, is considered before COVID19, and January 30, 2020, to October 6, 2020, is considered during COVID19, i.e., the first 5 months are considered before COVID19, and the next 5 months are considered during COVID19. (<https://www.statista.com/>). On January 30, 2020, India's first positive case was discovered. The Ministry of Health and Family Welfare of the Government of India (<https://www.mohfw.gov.in/>) provided data on COVID19 positive cases. As a result, the period before this date is referred to as the pre-COVID19 era, while the period following this date is referred to as the COVID19 era.

The closing prices of the BSE and NSE were used to analyze the stock market's volatility in this article. To minimize the observed skewness in the stock price data distribution, we use the natural logarithm of each price data in the estimations.

The Glosten-Jagannathan-Runkle model is taken for the purpose of understanding the impact of COVID19 on stock market volatility. The GJR GARCH model was developed by Glosten et al. (1993) and Zakoian (1994) to represent asymmetry in terms of varied shocks in financial choices. One of the GARCH model's weaknesses is that both positive and negative shocks need an unbalanced volatility response (Sakthivel et al., 2014). It is because of the presence of conditional variance is the magnitude of the lagged error terms and hence does not account for the sign of the error terms.

This dissymmetric way of conditional volatility in order to disseminate along with the conventional GARCH variables, squared values of can be used to capture knowledge. Of ε_{t-1} when ε_{t-1} is negative (Glosten et al., 1993). The GJR GARCH model is estimated as follows:

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-1}^2 + \sum_{i=1}^p \beta_i h_{t-1} + \sum_{k=1}^r \gamma_k I_{t-1} \varepsilon_{t-1}^2$$

where $I_{t-1} = 1$ if $\varepsilon_{t-1} < 0$; $=0$ otherwise.

γ is known as asymmetry or leverage term. If $\gamma > 0$ represents asymmetry while $\gamma = 0$ represents symmetry. The condition for nonnegativity would now be $\alpha_0 \geq 0$, $\alpha_1 \geq 0$, $\beta_1 \geq 0$, and $\alpha_1 + \gamma_1 \geq 0$. In the model, the good news ($\varepsilon_{t-1} > 0$) and bad news ($\varepsilon_{t-1} < 0$) have contrasting impacts on the conditional variance, good news has an effect of β_1 , while bad news has an effect on $\alpha_1 + \gamma_1$. If $\gamma_1 > 0$, negative shocks tend to have more volatility and are known as the leverage effect of the i th order. If $\gamma_1 = 0$, the news effect is symmetric.

In order to find out the effect of the COVID19 outbreak on the volatility of NSE and BSE, a dummy variable is inserted into the conditional mean and variance equation. The model, as updated by the GJR GARCH approach, is as follows:

$$P_t = \alpha_0 + \beta_1 P_{t-1} + \gamma_1 D_1 + \varepsilon_1$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-1}^2 + \sum_{i=1}^p \beta_i h_{t-1} + \sum_{k=1}^r \gamma_k I_{t-1} \varepsilon_{t-1}^2 + \lambda_1 D_1$$

The dummy variable D_1 takes the costzero for the pre-COVID19 technology and 1 for the all through COVID19 technology. A bad and statistically vast coefficient for the dummy variable means that the COVID19 pandemic precipitated a discount within side the volatility of the Indian inventory market. A high-quality and statistically vast coefficient for the dummy variable means that the COVID19 disaster has precipitated a growth within side the volatility of the Indian inventory market.

4. Analysis and Discussion:

As we will see, BSE and NSE series' price and returns are used in this article. To begin, we compute descriptive statistics for the BSE and NSE series prices and returns.

Table 1 shows a negative mean return, which indicates a stock loss. The negative bias and large kurtosis values in the returns indicate big losses in equity and bond markets. Taking into account that India announced the first case of COVID19 on January 30, 2020, we refer to the previous period as the pre-COVID19 era, and we refer to the subsequent period as the COVID19 period for this paper. In the pre-COVID19 era, both indices have positive mean returns, but during the

COVID19 era, regular mean returns have been negative. As shown in Table2, this suggests a negative impact on stocks. During the COVID19 period, SDs of the indices increased, meaning that the indices were more volatile during that time.

Table 1: descriptive statistics of the entire sample

	BSE Sensex		NSE Nifty	
	Price	Return	Price	Return
Observation	209	208	209	208
Mean	466.9311	-0.000113	10,879.09	-5.7E-06
Median	496.5000	-0.000139	11,303.30	0.0004
Maximum	573.6500	0.039111	12,362.30	0.0364
Minimum	283.3000	-0.043645	7610.250	-0.0603
SD	77.23121	0.011278	1269.041	0.00929
Skewness	-0.708423	-0.95679	-0.63336	-1.53543
Kurtosis	2.349923	5.285872	2.083647	14.15163
JB	21.16169	45.60252	21.28587	1.159505

Table 2: Stock return ofpre-COVID19 and during COVID19 period

	BSE Sensex		NSE Nifty	
	pre-COVID19	DuringCOVID19	pre-COVID19	DuringCOVID19
Mean	8.84E-05	-0.000239	0.000471	-0.000448
Median	-0.000306	0.000217	0.000455	2.95E-05
Maximum	0.020004	0.039111	0.022507	0.036482
Minimum	- 0.015436	-0.043645	- 0.008378	-0.060383
SD	0.006570	0.014427	0.003938	0.012348
Skewness	0.307638	- 0.097568	1.844912	-1.229302
Kurtosis	3.643217	3.72661	12.00168	8.530320
JB	3.268177	2.491638	394.3503	168.8313



Fig. 1 –BSE Index (Sensex) from December 2019 to May 2021

Figure 1 and Figure 2 respectively show the time chart of the BSE and NSE stock prices during the period under review. Before February 2020 (the period before COVID-19), the prices of both indices were positive and showed almost smooth lines in the graph. However, after India reported its first case and announced its first lockdown, it moved to the bottom of the slope in late March 2020. As of April 2020, there is a positive trend again. This is because the government took relaxation measures when it began implementing the blockade policy in April.



Fig. 2 – NSE Index (NIFTY50) from December 2019 to May 2021

5. Conclusion:

This article considers the impact of COVID19 on the performance of India's two major stock exchanges, BSE and NSE. By comparing the two time frames before and after the first positive COVID19 case in India, the GJH GARCH model is used to assess the volatility of the stock market. The dependent variables are these two periods and the independent variables are the daily closing prices of the BSE and NSE indices. The results show that during the pandemic, the stock market, especially the BSE Sensex, became extremely volatile. In the case of another stock index, the NSE Nifty, the COVID19 era has no major effect on the volatility of NSE stock prices. The mean return is determined separately for the pre-COVID19 and COVID19 periods. The results showed that the stock market would lose money during the pandemic if mean returns are negative, while in the pre-COVID19 phase, mean returns are positive. By comparing the SD, it can be shown that the deviation is much larger during the COVID19 period than it was before COVID19. COVID19 has shattered the stock market's backbone. To raise the stock market, the government must take appropriate policy steps. The crisis would have been the worst if it hadn't been for some exceptional policy support. At this time, there is a lot of volatility in the economy. To balance their work and escape risk, investors must change their investment from a grim prospect to a bright one. In this regard, the pharmaceutical industry is currently appealing. Domestic policies would need to be crafted to ensure inclusive and sustainable development. The supreme authority must provide financial assistance to the damaged necessary sectors. In summary, the findings speak of Coronavirus pandemic has influenced stock prices and increased volatility in Indian stock markets, as well as affecting the economy. As a result, using the example of the Indian stock market, this paper attempted to come up with a study of the COVID19 pandemic on the stock market.

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