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Impact of COVID-19 Pandemic on Performance of Stock Market in India

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Abstract: Covid 19 pandemic has negatively affected global economic growth beyond anything experience in nearly a century. Unemployment numbers remain dizzyingly high, even as the U.S. stock market continues to defy gravity. We're headed into a global depression. The main objective of this study is to examine the impact of COVID 19 pandemic on Indian share market. The study is based on secondary data. Data on daily closing prices of Nifty index and Sensex index have been taken from the BSE and NSE websites. Data are collected from 1st October 2019 to 30th September 2020. The time period from 1st October 2019 to January 29, 2020 is considered as pre covid period and January 30, 2020 to 30th September 2020 as during covid period as the first positive case of covid was found on January 30, 2020 in India. The result of this study shows that the both the indices i.e. SENSEX and NIFTY become volatile during the pandemic period.

Keywords: Covid-19, volatility, GJR GARCH.

I. INTRODUCTION

The two most frequently and widely felt impacts or symptoms of the corona virus are uncertainty and confusion. The word virus is derived from Latin means "venom" which describes a very micro agent that causes infectious disease. According to the World Health Organization (WHO), These viruses have been responsible for several outbreaks at different times around the world, including the Severe Acute Respiratory Syndrome (SARS) pandemic of 2002-2003 and the Middle East respiratory syndrome (MERS) outbreak in South Korea in 2015 and most recently, a novel corona virus (Newest known virus from the corona Family). COVID-19 is one of seven types of corona virus, including the MERS and SARS. The other corona viruses cause colds and pneumonia that aren't a serious threat. COVID-19 which is also known as SARS-CoV-2 is a Severe Acute Respiratory Syndrome. It can affect your upper respiratory tract (sinuses, nose, and throat) or lower respiratory tract (windpipe and lungs). SARS-CoV-2 or COVID-19 triggered an outbreak in China in December 2019 and became the biggest ever international concern not only health but also economic. WHO director-general "Dr. Tedros Adhanom Ghebreyesus" said that this is not just a public health crisis, it is a crisis that will touch every sector and so every sector and every individual must be involved in the fights.

The effect of Corona virus is badly felt and noticed in the world's most developed countries like USA, Britain and Germany etc. In March 2020, the US stock market hit the circuit breaker mechanism four times in ten days. Since its inception in 1987, the breaker has only ever been triggered once in 1997. Together with the US crash, stock markets in Europe and Asia have also plunged. FTSE, the UK's main index dropped more than 10% on 12 March, 2020, in its worst day since 1987. The stock market in Japan plunged more than 20% from its highest position in December 2019. Similarly India is also affected by this pandemic. Like other developed countries such as Spain and Italy, India put all its machinery and material into motion to curb and prevent the disease. Started with one day *Janta Curfew* on 22.03.2020 and lockdowns by some of the state

governments, the entire country was declared to be under lockdown from the midnight of 24.03.2020 to 31.05.2020. India was not only being affected because of its domestic slowdown but also because of international recession. Benchmark BSE SENSEX has a steep dive of 13.2% on 23rd March, 2020, which was the biggest single day fall ever surpassing the infamous fall of 28th April, 1992 after the news of Harshad Mehta Scam. Nifty was no different when it declined almost 29% in the last three months of the financial year 2020, overtaking the disaster of 1992. The severity was such that only one tenth of the Nifty stocks saw a surge while rest has bitten the dust. Covid-19 related necessity called 'social distancing' has made sure that factories and workplaces are shut across the world. As a result of that production has virtually come to standstill. The lack of movement of people has also curtailed the demand barring the items needed to survive. Other than the daily to use items, the public spending has decreased on most of the items. As a result of that only FMCG companies saw their stock surging whereas rest saw a steep decline. On the other hand, the most prominent sector among the losers is banking. In the last three months, Nifty bank index lost more than 40 percent of their market value where one third of the banking stocks related to the index nosedived more than 50 percent. The reasons are not difficult to visualize. Most of the medium scale and few of the large scale businesses has come to a standstill gradually for the past three months leading to the lockdown. As a result of that, new loan growth has shrunk and loan repayments have also declined eroding the value of the assets. On top of that, a three months moratorium period on loan repayments is offered by many banks as suggested by RBI. This has further dampened the growth prospects of banks. Most importantly, as people are not able to move out of their house or able to move out only cautiously, the propensity to hoard more cash has increased. This has not only put a halt to new deposit growths, it has also eroded the present deposits as more ATM withdrawal happened. In the meantime, the payment commitments by the banks have not reduced making it unsustainable for them to do business with ease. The asset erosion in the form of decline in quality of receivables and demand as well as time deposits, coupled with a burden of liability has created an asset-liability mismatch. The YES Bank fiasco at the same time has only aggravated the sorry outlook of the banking sector. Though government has bailed YES Bank out of the fiasco, few other banks have been asked to share the burden of it further damaging the financials of those banks including SBI. All these factors have made banking sector lose value consistently over the last three months. Among the other sectors, pharma may see a surge in near future if any covid-19 related medicine come in forefront. Overall, it may be a good time to invest as the unprecedented global economic meltdown due to the pandemic made sure that stocks are hitting the lowest it could after many years. Just like the purification in nature has taken place around the world, the grossly overvalued Indian stock market too probably needed the much needed correction.

II. REVIEW OF LITERATURE

Existing literature concentrates on illness-associated economic cost arising from morbidity as well as mortality due to disease. **Siu and Wong (2004)** studied the spread of Hong Kong's SARS epidemic, and addressed its economic impact and suggested that the most serious negative impacts were seen on the consumer side, with the short term severely affected by local consumption and the export of tourism and air travel-related services. The economy did not face any supply shock, as the manufacturing base present in the Delta of the Pearl River was unaffected and products were usually exported to Hong Kong. **Lee and McKibbin (2004)** evaluated the global economic impacts of the severe acute respiratory syndrome (SARS) by using the G-Cubed (Asia Pacific) model and according to them the effect of the SARS epidemic on human society all over the world is severe, not only because the disease spreads rapidly through countries by global travel, but also because of financial integration and globalization, any economic shock to one country spreads rapidly to others. **Nippani and Washer (2004)** examined the effect of SARS on Canada, China, Hong Kong, Indonesia, China, Singapore, Philippines, Vietnam and Thailand and concluded that SARS only affected the stock markets of China and Vietnam. **Chen, M. H. et al (2007)** checked the SARS outbreak impacts on the efficiency of Taiwanese hotel stocks using an event study approach and found that during the SARS outbreak period, seven publicly traded hotel companies experienced steep declines in income and stock price. Taiwanese hotel stocks showed significant negative cumulative mean abnormal returns on and after the day of the SARS outbreak, indicating a significant impact of the SARS outbreak on performance in hotel stock. According to **Morales and Callaghan (2012)** the

global stock markets were becoming more interdependent and crisis in one country would soon spread to another. Stock market movements become increasingly correlated. Events like infectious disease outbreaks can induce negative changes in investors' sentiment that strongly affects their investment decisions and, consequently, stock market prices. In countries that are culturally more susceptible to herd-like actions and overreaction or countries with low institutional participation, the effect of investor sentiment on stock markets is more pronounced.

Mei-ping Chen et al (2013) analyzed the effect of the SARS epidemic on China's long-term relationship with four Asian stock markets their findings support the existence of a time-varying co-integration relationship in aggregate stock price indices, and they also found that the SARS epidemic has weakened China's long-term relationship with the four markets. **Wang et al. (2013)** investigated how outbreaks of infectious diseases affected the performance of biotechnology stocks, showing that Taiwan's biotechnology industry had significant abnormal returns due to statutory infectious diseases.

Macciocchi et al. (2016) studied the short-term economic impact of the Zika virus outbreak on Brazil, Argentina and Mexico, and their results showed that, with the exception of Brazil, the market indices of these three Latin American and Caribbean Countries (LCR) did not show large negative returns the day after each shock. The average return was 0.90 percent but on different occasions and countries it ranged from 0.90 percent to 4.87 percent. **Marinc (2016)** investigated whether the geographical proximity of information disseminated by the 2014 Ebola outbreak, coupled with widespread media coverage has affected US asset prices. The results show that the effect on stock prices is generally negative, while local media reporting also has a significant impact on local trading and the effect is more pronounced in smaller and more volatile stocks and less stable industries. **Chan, M.P. 2018** examined the daily stock return for nine Asian markets for the period of 1996 to 2003 and found that there was a high correlation among sample Asian countries during the period of crises. Sun and Hou found that in Southeast Asia, Malaysia, Vietnam, and Thailand were most financially integrated with China.

A survey by **FICCI (2020)** found that most industry respondents did not foresee positive demand account during the entire fiscal year. Demand side impact on tourism, hospitality and aviation is among the worst affected sectors that are facing the maximum brunt of the present crisis. Consumption is also getting impacted due to job losses and decline in income levels of people particularly the daily wage earners due to slowing activity in several sectors including retail, construction, entertainment, etc. Some sectors like automobiles, pharmaceuticals, electronics, chemicals products etc. are facing an imminent raw material and component shortage.

The coronavirus triggered a new type of recession that was different from the past triggers of a recession. For instance, the Asian debt crisis of 1997 was caused by the collapse of the Thai baht in July 1997, which created panic that caused a region-wide financial crisis and economic recession in Asia (**Radelet and Sachs, 1998**). The 2008 global financial crisis, which translated to a recession, was caused by loose monetary policy which created a bubble, followed by subprime mortgages, weak regulatory structures, and high leverage in the banking sector (**Allen and Carletti, 2010**). The 2016 recession in Nigeria was caused by the fall in the price of crude oil, balance of payment deficit, adoption of a fixed-float exchange rate regime, an increase in the pump price of petrol, activities of pipeline vandals and infrastructure weaknesses (**Rady, 2017**).

III. RESEARCH METHODOLOGY

The main objective of this study is to examine the impact of COVID 19 pandemic on Indian share market. The study is based on secondary data. Data on daily closing prices of Nifty index and Sensex index have been taken from the BSE and NSE websites. Data are collected from 1st October 2019 to 30th September 2020. The time period from 1st October 2019 to January 29, 2020 is considered as pre covid period and January 30, 2020 to 30th September 2020 as during covid period as the first positive case of covid was found on January 30, 2020 in India. Data on Covid-19 positive cases are collected from the reports of the Ministry of Health and Family Welfare, Government of India. Descriptive statistics, unit root test and GJR GARCH model has been applied through E view software for analyzing the data.

IV. DATA ANALYSIS AND INTERPRETATION

This study firstly calculates the descriptive statistics of the price and return series of BSE SENSEX and NSE NIFTY indices. Table 1 shown that the mean return of both the indices is positive in the pre covid period but daily mean returns are negative during the covid period, implying an adverse impact on stock returns. The *standard deviations* of both the indices have increased during the covid period which implies that the volatility of the indices has increased during the Covid-19 pandemic.

Table 1: Descriptive Statistics

Descriptive Statistics	SENSEX INDEX		NIFTY INDEX	
	Pre COVID Period	During COVID period	Pre COVID period	During COVID period
Mean	8.63E-05	-0.000225	0.000421	-0.000417
Median	-0.000296	0.000217	0.000395	2.86E-05
Maximum	0.020012	0.038201	0.022463	0.036265
Minimum	-0.014786	-0.042568	-0.007965	-0.061768
SD	0.005787	0.013983	0.003862	0.012543
Skewness	0.30123	-0.095879	1.79654	-1.215678
Kurtosis	3.63519	3.63113	12.1643	8.23946

To check whether a time series is stationary or nonstationary, augmented Dickey–Fuller (ADF) unit root test have been used. Table 2 revealed that both the log series of BSE SENSEX and NSE NIFTY indices have probability value more than 0.005, so the null hypothesis of nonstationary is accepted. Although, log indices have been found stationary in the first difference as probability value is less than 0.005. So both the indices are found stationary at first difference.

Table 2: Unit Root Test

Index	Augmented Dickey Fuller Test (on level)	Augmented Dickey Fuller Test (on first difference)
SENSEX	-1.293754 (0.7426)	-11.82376 (0.0003)
NIFTY	-1.73268 (0.5643)	-15.30579 (0.0001)

This study used Glosten–Jagannathan–Runkle generalized autoregressive conditional heteroscedasticity (GJR GARCH 1,1) model to capture the volatility in BSE SENSEX INDEX and NSE NIFTY INDEX. GJR GARCH model used a dummy variable in both mean and variance equation to capture the volatility. Dummy variable assigned 0 value for pre covid period and 1 for during covid period. Table 3 depicts the results of the GJR GARCH (1,1) model on BSE Sensex Index. this table results indicates the existence of the ARCH effect in the BSE Sensex index series which means that volatility clustering is existed in BSE Sensex. The coefficient of the dummy variable is found negative but not significant in the mean equation. however in the variance equation, it is found positive and significant. This indicates that during covid period volatility in the BSE SENSEX has increased.

Table 3: BSE SENSEX GJR GARCH (1,1) Results

Mean equation parameters	Coefficients	Z-statistics	p-value
β_0	-0.02295	-1.65961	0.0639
γ_1	-0.003119	-0.124812	0.6925
Variance equation			
α_0	1.07E-05	9.32015	0.0043
β_1	1.53628	245.0361	0.0016
λ_1	0.037522	1.46511	0.0025
α_1	-0.0476001	9.9384	0.0001
δ_2	3.28E-05	3.56491	0.0003

From the results of table 4 it is clear that arch effect is also existed in NSE NIFTY index indicating that past news has impact on the current volatility. It is found that the coefficient of dummy variable (D_1) in the mean equation is negative and insignificant and in the variance equation, it is positive and significant. These results indicate that during Covid period volatility in the NSE NIFTY index has also increased.

Table 4: NSE NIFTY GJR GARCH (1,1) Results

Mean equation parameters	Coefficients	Z-statistics	p-value
β_0	-0.01263	-1.71345	0.0872
γ_1	-0.001002	-0.143062	0.7735
Variance equation			
α_0	1.05E-05	9.74638	0.0003
β_1	1.370081	289.0028	0.0001
λ_1	0.050023	1.69326	0.0043
α_1	-0.062961	10.1974	0.0002
δ_2	3.79E-05	3.94711	0.0000

V. CONCLUSION AND DISCUSSION

This paper examined the effect of COVID-19 pandemic on the Indian stock market. For checking the performance of Indian stock market two leading indices i.e. SENSEX and NIFTY were taken. The result of this study shows that the both the indices i.e. SENSEX and NIFTY become volatile during the pandemic period. Covid 19 pandemic has created challenges for all countries in the world. Almost all sectors is affected by this pandemic. The backbone of the financial market has been distorted due to this pandemic. Government has taken various policy measures to boost the share market. Without some extraordinary policy support, the crisis would have been the worst. Reserve bank of India (RBI) takes many liquidity measures in the financial markets. Government should announce many Fiscal measures to face this pandemic such as tax relief (e.g. VAT reductions and deferred payroll charges), wage subsidies, unemployment benefits, the deferment of utility bills and rent payments, mortgage relief, lump-sum payments to households (i.e. so-called 'helicopter money'), loans and loan guarantees to businesses, as well as equity investments by governments in distressed companies.

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