Covid-19 and the Indian Stock Market Behaviour : Do Government Initiatives Really Matter?

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Abstract

The primary purpose of this study was to investigate the effect of the COVID-19 pandemic on the major Indian stock exchanges with specific regard to the government's initiatives to control the same. The study covered a period of seven months, from February 2020 to August 2020, spanning three phases – infant, lockdown, and unlock phase – during the first wave of the COVID - 19 pandemic. The stock market indices at the closing time of the market were taken as the dependent variable, while the daily infection reported, the number of equity stocks traded, and the total turnover in the stock market were taken as independent variables. Using the data on daily reported COVID infections in India, the impact assessment was carried out with the help of a panel data regression analysis for the short-run and long-run in relation to the Government initiatives and control measures. During the infant phase, we found a strong negative relationship between daily reported COVID infections and stock market indices. Subsequently, even despite an increase in infections in the following phases, it was established that the stock markets responded positively due to the government's proactive COVID -19 management initiatives.

Keywords : **COVID-19, stock market, BSE, NSE, impact assessment**

JEL Classification : C3, D53, G1

Paper Submission Date : October 20, 2021 ; Paper sent back for Revision : February 11, 2022 ; Paper Acceptance Date : February 25, 2022

The root cause of the deadly infectious COVID-19 is SARS-CoV-2 (Severe Acute Respiratory Syndrome CoronaVirus 2). Originally discovered in the Wuhan city of China in December 2019, it was declared a global pandemic by WHO on March 11, 2020. COVID-19 does not know its boundaries or even the geographical ones. During its dawning ten-month period, it had already brought 188 countries of this planet under its clutch, involving more than 27.9 million victims and ending more than 9,04,000 human lives. India, being the second largest populous country, recorded its first case on 30th January 2020, and soon enough recorded the second-highest number of confirmed cases in the world (September 6, 2020). India also reported the highest spike globally in COVID-19 cases in a day with 78,761 cases on August 28, 2020. None of it were we prepared and trained for. Over several months of research and observations from all over the world, assisted in controlling the unprecedented and chaotic situation that the pandemic created. The government declared a series of curfews, lockdowns, and shutdowns at different time intervals till the end of May followed by unlocking the economy from 1st June in a phased manner. The present study focuses only on the first wave of corona in India.

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DOI : https://doi.org/10.17010/ijrcm/2022/v9i1/170402

The stock market, barometer of the Indian economy, also reflects the fever of COVID-19 since its outbreak. Indian stock markets witnessed their worst fall since June 2017 after WHO declared the outbreak as a pandemic. The BSE SENSEX dropped 8.18% which was its lowest in 23 months while the NIFTY dropped 9%. Numbers of studies were carried out to establish the nexus between the changes in the economic and political environment and investors' behavior or stock price movements in major countries of the world (Broadstock & Zhang, 2019 ; Shi & Ho, 2021; Smales, 2014). COVID-19 is probably the worst disaster the world is experiencing and it has shown a highly negative influence on major stock markets that range between 27% and 38%. The uncertainty and fear in the market are bound to influence not only the investors' behavior but also the livelihood of the common masses. Numerous authors, globally and in India, have researched on various aspects of pandemic and its impact on stock market behavior. But the impact of the Government's initiatives to control the covid and its effect on investors' behaviour is hardly captured. With this background, this paper aims to answer the research question i.e. the nature of the relationship among the variables and the nexus between the number of COVID-19 daily infections and prices of two major stock indices in India. Our study is expected to provide a new dimension to understanding the stock market behavior in such a situation with respect to government intervention.

Literature Review

During the first eight months of the COVID-19 outbreak, hundreds of research papers were published focusing on the impact of the COVID-19 pandemic on economic and financial markets. The global pandemic attracted many researchers to employ their intellect. According to Mishra et al. (2020), BSE Sensex and stock liquidity index were severely affected by COVID-19. They highlighted a negative growth in stock prices of BSE Sensex and a negative return on all stock indices during their period of study. In the words of Liu et al. (2020), the Asian and Chinese stock markets have been significantly affected by the outbreak of COVID-19. They noticed fluctuations in stock prices caused by the investors' response to the pandemic and investors were more focused on the pharmaceutical sector. He et al. (2020) concluded that the corona outbreak has a negative yet short-term effect on the stock markets. Qin et al. (2020) found that during the pandemic, Chinese firms have chosen to increase their cash holdings to deal with the systematic risks. Their study reported a significant positive impact of COVID-19 on listed companies' cash holding levels. The study conducted by Apergis and Apergis (2020) showed that the Chinese stock market return is significantly and negatively affected by the COVID-19 and this negative effect is stronger when the pandemic is measured by total cases of deaths. According to Huo and Qiu (2020), Chinese retail investors reacted more strongly to the announcement of the corona outbreak.

Phan and Narayan (2020) observed that stock markets overreacted to the pandemic situation and with the availability of more information the market tends to correct itself. With the help of panel data, Cao et al. (2020) analyzed the negative impact of COVID-19 on the stock market index. They concluded that the increased rate of survival of COVID-19 patients and the anticipated development of a vaccine contribute to the recovery of the stock markets. In the context of Vietnam, Anh and Gan (2021) found that the Covid outbreak negatively affected the stock market. Contrary to the popular observations and findings, Waheed et al. (2020) reported positive growth in stock returns in Pakistan and a significant increase in the KSE-100 index during the pandemic. On the contrary, the increasing number of covid infection cases increased volatility and distorted the favorable relationship between inflation and stock market relations in the case of Nigeria (Jelilov et al., 2020). Salisu and Vo (2020)reported that stock returns are negatively and significantly affected by health news. In this regard, Zhang et al. (2020) observed a substantial increase in the financial market risks at a global level due to the pandemic. Cepoi (2020) highlighted that the information relating to the corona pandemic has varying relations with stock markets and therefore proper channels of communication should be used to reduce the financial turbulence. Mazur et al. (2021) found that the food, healthcare, natural gas, and software sectors of the US have performed abnormally well during the pandemic. In relation to the behavior of investors, Ortmann et al. (2020) observed an increase in

trading activities particularly weekly trading. They also noticed a marginal increase in the short-selling of the stocks of travel-related industries. Veeravel et al. (2022) found that daily total confirmed cases are having a positive impact, and the total confirmed death cases have a negative effect on stock market returns.

The Indian stocks belonging to the Nifty registered a negative trend during the COVID -19 pandemic (Thomas et al., 2020). According to Sahoo and Ashwani (2020), trade, manufacturing, and MSME sectors of India were severely affected by the corona outbreak. Topcu and Gulal (2020) observed that the impact of the covid pandemic was negative and significantly higher in emerging economies. According to Yan et al. (2020), the corona outbreak caused a short-term panic selloff resulting in short-term profit for investors. Corbet et al. (2021) reported that companies having a similar or a related name to the pandemic experienced a negative and indirect effect on their return as compared to the actual economic effects. Further, the analysis of Akhtaruzzaman et al. (2021) revealed an increase in the conditional correlations of stock market returns across the Chinese and G7 countries. These findings have also been supported by Okorie and Lin (2021), who reported a fractal contagion effect of COVID-19 on stock markets' returns and volatility.

The stock market is extremely volatile and it is also affected due to various other reasons. According to Srivastava et al. (2019), the top 500 companies of India listed in the S&P BSE index have a significant relationship with macroeconomic variables such as inflation and the index of industrial production. The Indian financial market has witnessed some significant policy changes over the last few decades and those changes have caused significant rifts in the financial market. Kaur and Singh (2018) reported that major government announcements such as demonetization have a significant impact on the banking companies' share prices. The disturbances in FDI, exports, and imports also caused variations and fluctuations in several stock indices (Bhuvaneshwari & Ramya, 2018). Das and Megaravalli (2017) found a positive correlation between stock market indices and exchange rate, foreign institutional investment, call money rate, and consumer price index (CPI).

Data and Methodology

The present study is empirical in nature. We have adopted a retrospective experimental research design. It is purely based on secondary data and the sample domain is the major stock indices of the Indian stock market. We have purposely selected the S&P BSE Index of the Bombay Stock Exchange (BSE) and the Nifty-50 Index of the National Stock Exchange (NSE). The data relating to the closing stock prices were collected from the official website of BSE (www.bseindia.com) and NSE (www.nseindia.com). Data relating to Covid infections were collected from the web portal of COVID - 19 India (www.covid19india.org). The study covered a period of seven months from February 01, 2020 to August 31, 2020. The variables considered for this study include Stock Market Indices as the dependent variable and daily COVID-19 infections, number of stocks traded, and total volume of transactions as the independent variables. To get a better picture of the impact of COVID-19 on the stock market, different time windows or time segmentations, bearing justifiable characteristics, were used for analysis as proposed by He et al. (2020).

Considering the whole journey of COVID-19 so far, we have segmented the total period into three-time phases. The infant phase covered the period from February 1, 2020 to March 23, 2020, when the government did not take any notable actions. The second phase, i.e. the lockdown phase, covered the period from March 24, 2020 to May 31, 2020 in which the government has taken stringent measures to control covid infections. The last phase, i.e. the unlock phase, consisted of the period between June 1, 2020 to August 31, 2020 during which the government reopened the markets for its recovery.

Through literature, it is already established that there is a negative and limited impact of COVID-19 on stock market indices in the short-run (He et al., 2020; Mishra et al., 2020; Thomas et al., 2020). This forms the theory to the hypothesis formulation for our study. We have used the Pearson coefficient of correlation to establish the

relationship between the variables and regression models for assessing the impact of the reported number of COVID-19 infections on various stock indices.

The following model was proposed for impact the analysis :

$$SI = \beta_0 + \beta_1 DCI + \beta_2 NST + \beta_3 TO + \varepsilon \quad \text{.....} \quad (1)$$

where,

SI stands for the stock market Index value;

DCI stands for daily COVID-19 infections reported;

NST stands for the number of equity stock traded in the concerned market ; and

TO stands for total turnover in the concerned market.

Analysis and Results

We began the analysis by calculating the descriptive statistics the results of which are shown in Table 1. The reported number of daily covid infections has a maximum number of 78,512. The summary statistics clearly show that there is a huge difference in the number of stocks traded and the total turnover from both the markets combined during the sampled period.

The BSE Sensex experienced a decline of 28.86% while the Nifty 50 registered a 34.74 % decrease during the infant phase. The decrease witnessed was due to the fear and uncertainty and the government's inadequate precautionary initiatives to deal with the situation leading to the change in the perception of investors. During the second phase, the Indian government imposed a nationwide lockdown to restrict the number of infections. Countries, all over the globe, came forward and appreciated the Indian government's measures to control the Covid infections. The markets, too, felt its positive effects. In this phase, BSE Sensex increased by 23.07% whereas the NSE Nifty 50 index registered a growth of 22.81%. The probable reason for such behavior might be due to the positive change in investors' behavior. In the third phase, the Indian government reopened the economy in a phased manner and allowed the regular flow of trade and commerce. Consequently, the stock markets reacted positively. There was a 12.79% growth in the BSE Sensex and a 13.71% increase in the NSE Nifty 50 index. The prices fell during all the phases but they eventually recovered in the subsequent days. This may be because of the strong and timely precautions taken by the government of India in response to the covid infections. Thus, it can be concluded that the Indian stock market was resilient to the pandemic, unlike the developed nations' financial markets.

In Table 2, the results of correlation analysis are reported and it shows that the number of daily covid infections is not significantly associated with any stock market variables. There is a significant and negative association between the number of stocks traded and total turnover. The correlations are significant at the 0.01 level.

Based on the objectives of our study, following hypotheses were formulated and tested as under :

Table 1. ***Descriptive Statistics***

Variable	*N*	Minimum	Maximum	Mean	Std. Deviation
SI	288	7610.25	41565.90	22782.03	12800.43
DCI	288	0	78512	17379.82	22984.65
NST	288	1286975	1811564187	363476313.93	393616545.72
TO	288	15439.55	2246741806.49	182931505.77	262790835.96

Table 2. ***Correlation***

Variables	*SI*	*DCI*	*NST*	*TO*
SI	1			
DCI	0.094	1		
	0.113			
NST	–0.904***	–0.044	1	
	0.000	0.452		
TO	0.682***	0.064	–0.641***	1
	0.000	0.282	0.000	

Note. ***p < 1% (two-tailed).

↳ **H1 :** There is a negative and limited impact of COVID-19 on stock market indices during infant phase of Covid pandemic.

↳ **H2 :** There is a negative and limited impact of COVID-19 on stock market indices during lockdown phase of Covid pandemic.

↳ **H3 :** There is a negative and limited impact of COVID-19 on stock market indices during unlock phase of Covid pandemic.

↳ **H4 :** There is a negative and limited impact of COVID-19 on stock market indices during the long - run post-Covid pandemic.

Table 3 represents the findings of the regression model analyzed where stock index value is the dependent variable. Models 1, 2, and 3 showcases the regression results for the infant phase, lockdown phase, and unlock phase respectively. The result table enumerates the coefficients and standard errors (within parentheses) of the

Table 3. ***Phase-Wise Results of Regression***

	Model 1	Model 2	Model 3
	Infant Phase	**Lockdown Phase**	**Unlock Phase**
DCI	–64.891*	0.310**	0.033**
	(35.727)	(0.121)	(0.015)
NST	–0.00001***	–0.00003***	–0.00003***
	(0.000002)	(0.000001)	(0.000001)
TO	0.00004***	0.000002	0.000005***
	(0.00004)	(0.000001)	(0.000002)
Constant	24093.620***	29914.411***	33072.477***
	(1942.170)	(630.533)	(962.120)
F	79.93***	592.207***	523.592***
p-value	0.0000	0.0000	0.0000
R^2	0.7842	0.9559	0.9247
Adjusted R^2	0.7744	0.9543	0.9229

Note. * p < 10%; ** p < 5%; *** p < 1%

Table 4. *Regression (Total Period)*

	Co-efficient	Std. Err.	*t*	*p*-value
DCI	0.027**	0.013	1.982	0.048
NST	–0.00003***	0.000001	–25.364	0.000
TO	0.000008***	0.000002	5.480	0.000
Constant	30155.601***	698.553	43.169	0.000
Number of Observations	288			
F	486.06***			
p-value	0.000			
R^2	0.8370			
Adjusted R^2	0.8353			

Note. * $p < 10\%$; ** $p < 5\%$; *** $p < 1\%$.

regression analysis. It is evident that at a 0.1 significance level, the reported number of daily covid infections has a negative and significant coefficient during the infant phase. This implies that during the initial coronal outbreak period, the Indian stock index values were negatively affected by the corona infections, and thus, H1 is not rejected. However, the initiation of lock-downs and subsequent unlocks of the economic market by the Indian government positively affected the stock indices, which is again evident from the positive and significant coefficients of DCI in Models 2 and 3. Thus, H2 and H3 are rejected. The results obtained are similar to the studies carried out for other developing countries like Pakistan where COVID-19 positively affected the stock market index (Waheed et al., 2020). However, during the lock-down phase, turnover did not have any significant effect on the index values. All three regression models are a good fit at a 1% level of significance.

Table 4 shows the long-run effect of the independent variables on the stock index values. It shows that the coefficient of DCI during the total period is 0.027 which is significant at a 0.05 level. This means that the reported number of daily covid infections positively affects the stock index values. Hence, H4 is rejected. The number of stocks traded (NST) during the sample period has a negative coefficient which is significant at the 0.01 significance level. This suggests that NST has a significant negative impact on the stock index values. The regression model is significant at the 1% level suggesting a good model fit. The values of R^2 and adjusted R^2 suggest that the independent variables have a very good explanatory capacity.

Conclusion

Prior studies have confirmed that the pandemic has severely disturbed the stock markets of developed economies. On the contrary, the findings of the study show that developing economies like India have not experienced any severe stock market crashes during the studied period. It also highlights that the number of daily covid infections during the infant or initial phase has negatively affected the stock prices. But with the enforcement of lock-downs, stock prices responded positively. Further, there was not enough evidence that COVID-19 has negatively affected the index values of the Indian stock market in the long-run too. The findings of this study contribute to the ongoing research on the economic effects of the pandemic on stock markets. We expect and believe that the Indian stock market will reach its previous year's position by the end of this financial year.

Research Implications

The grip of Covid did not spare any country on this earth. It disrupted every sphere of life and stock market was no

exception to it. Performance of stock market indices are considered to be one of the most appropriate indicators of an economy. Indian stock market is one of the emerging financial markets of the world and is continuously evolving in terms of technology, functionality, volume of transactions, and number of participants. Number of inbuilt and external factors influence the investor behaviour in stock market. Studying these factors will be immensely useful for the investors to take their investment decisions. Further, the present conditions makes the market more volatile and investors are excited to know the impact of COVID - 19 on stock market performance. Further, this study will provide a base for further study in this new dimension such as the Government measures and market behaviour in coming days.

Limitations of the Study and Scope for Further Research

The present study considered only the number of daily covid cases reported by the Government and its impact on two major stock market indices as a whole during the first wave of COVID - 19 in India. However, there are many extraneous factors, such as daily recovery rate, death rate, infection rate, development of medicine/vaccine, availability of medical infrastructure, level of awareness, adherence to covid appropriate behavior, etc. that might have an impact on stock market behavior, which were not considered in this study. Additionally, we have covered only the first wave period, while witnessing three waves in the last twenty-five months, characterized by covid, delta, and omicron variants. Inherently, our finding reflects only a micro aspect of the phenomenon. Hence, there are ample opportunities for further research by including all the above factors which will give a more realistic and broader view of the research problem. Further, industry-wise analysis of indices can also be performed to ascertain which industries performed better than the others.

Authors' Contribution

Dr. Dey conceived the research problem and identified the research questions. Dr. Sharma collected available literature, filtered the relevant variables, and collected the data. Both the authors finalized the methods and research design, conducted the research, and did all numerical calculations. The whole analysis, editing, and verification was supervised by Dr. Dey. Both the authors discussed the results and contributed to the final manuscript.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgement

The authors received no financial support for the research, authorship, and/or for the publication of this article.

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