

COVID-19: A STUDY OF ITS IMPACT ON STOCK MARKET

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Abstract *Economic sectors in India have been hit worse than those in the United States during the 2008 financial crisis. As a result of the financial sector's influence, a stock market collapse, liquidity crisis, and different changes in the monetary market have occurred. The pandemic has hit the Indian economy dream of reaching a USD 5 trillion with a 7% GDP by the year 2024. The virus has deeply affected our supply chains and manufacturing operations. It continues to do so daily. It has already forced major European economies and the US to shut down its operations and it will continue to do so in developing nations like India. The virus has resulted in an 8% crash on BSE Sensex and Nifty Fifty on a single day on March 12 and it reportedly wiped off 10 Million in a single day. It is the primary objective of this research to analyses the impact of the unexpected breakout of COVID-19 on the Indian Stock Markets. Because predicting a stationary series is easier and more reliable, secondary data was employed in order to meet the goal. The series will be made stationary in the future.*

Keywords COVID-19, Stock Market, Financial Sector and Forecasting

INTRODUCTION

Over the last several quarters, the Indian economy has seen a notable decline. The Indian economy expanded at a six-year low pace of 4.7 percent in the third quarter of the financial year 2019-2020. The government has implemented a number of steps to stimulate the economy, which has seen a decrease in investment and consumer demand. A robust rebound was expected in the last quarter of the fiscal year 2019-2020. Coronavirus pandemic has made the near-term recovery challenging. The pandemic has brought new hurdles to the Indian economy, which would have a significant influence on the economy's supply and demand, which might derail India's economic narrative. Uncertainty about the increase in cases and lack of treatment options meant that the market was very volatile, which in turn caused massive crashes and wealth depreciation, which had an effect on overall economic consumption. A significant decline in the local equities markets occurred on March 12 when both the BSE Sensex and the NSE Nifty fell by almost 8 percent in a single day, mirroring global equity markets. The fall reportedly wiped out Rs. 10 lakh crores of market capitalization in a single day. The NSE Nifty fell by 868 points whereas BSE Sensex fell by 2919 points. The fall continued as investors resorted to relentlessly sell amid rise in coronavirus cases. The market then plunged to a new low on March 19 when Sensex closed 581 points lower a 28288 and Nifty fell 205 points to end at 8263. The worst was seen on March 23, 2020 when Nifty was halted from trading for 45 minutes during the early deals when it reached the circuit of 10%. Nifty had hit the lower circuit for the first time since May 2009 in the opening deals. Nifty tanked 1135 points or 13% at the end of the day and closed at 7610. The BSE Sensex closed 13% below at 25981 levels with all 30 constituents ending in the red. With the fall on March 23,

Rs.13.88 trillion was lost and in the month of March investors lost around Rs. 56.22 trillion. India's whole economy has been hit hard by the coronavirus epidemic that has swept the world. After the Great Depression, economist John Maynard Keynes proposed the idea of trading cycles. The last step is to calculate the country's real GDP and growth rate. This would be India's poorest growth since the liberalization strategy of 1991, according to the International Monetary Fund (IMF). Economic sectors in India have been hit worse than those in the United States during the 2008 financial crisis. As a result of the financial sector's influence, a stock market collapse, liquidity crisis, and different changes in the monetary market have occurred. Because to the epidemic, India's 2024 GDP is projected to grow by 7%, from its current level of USD 5 trillion to USD 5 trillion in 2024. The virus has deeply affected our supply chains and manufacturing operations. It continues to do so daily. It has already forced major European economies and the US to shut down its operations and it will continue to do so in developing nations like India. The virus has resulted in an 8% crash on BSE Sensex and Nifty Fifty on a single day on March 12 and it reportedly wiped off 10 million in a single day.

LITERATURE REVIEW

The efficacy of government interventions to limit the spread of COVID-19 has been tested in several research studies. There was a significant reduction in the average number of COVID-19 cases during a 14-day period in research by Koh, Naing, and Wong (2020) that examined 142 nations. There were similar findings in 131 countries by Li et al. (2020), which showed a decrease in COVID-19 following the implementation of containment policies, in as little as 1–3 weeks; by Cho (2020), which occurred in as little as 5 weeks;

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by Cowling et al. (2020), which occurred in as little as 7 days; and by Hartl, Wälde and Weber (2020), It happened in Germany in under 7–8 days. Implementing steps promptly improves effectiveness in nations with lower population densities and cooler temperatures, but also in countries with a higher proportion of older people and better health systems. (Deb, Furceri, Ostry & Tawk, 2020). A study by Dergiades et al. (2020) found that early government interventions were more effective in lowering or reversing death rates. It was also observed that therapies like as mask use and localized quarantines might replace costly countrywide lockdowns without significantly raising the epidemic's peak, according to Chen and Qiu (2020). "More than a dozen research studies have looked at the impact of COVID-19 on the financial markets. From January to April 2020, Capelle-Blancard and Desroziers (2020) investigated 74 nations and found that stock markets disregarded the epidemic until February 21 before responding sharply to the rising number of afflicted persons from February 23 to March 20." After central banks intervened from March 23 to April 30, the volatility increased significantly. But investors were unconcerned at this point in the company's health care dilemma. While macroeconomic fundamentals were important before the financial crisis, they were not as important as short-term responses during the crisis. A research by Akbar and Tahir (2020) indicated that COVID-19 cases and fatalities were related with stock returns and realized volatility in the US equity market throughout the day. Bakker et al. (2020) found a similar result for the United States; "Alfaro and Greenland (2020) for China; Zhang and Hu (2020) for the 10 stock markets in countries with the most confirmed cases during January–February 2020; Zhang and Hu (2020) for the 10 stock markets in countries with the most confirmed cases during the same time period; and Zhang and Hu (2020) for the same period." The COVID-19 pandemic had a detrimental impact on stock markets, according to Ashraf (2020b), who analyzed data from 64 nations to arrive at this conclusion. Though there was an increase in the number of confirmed cases, it had no effect on the overall number of fatalities.

According to the literature, during a financial crisis, market integration shifts. During the global financial crisis, the Asian stock market network was more linked than it was before or after the crisis, according to Aswani (2017), who studied the network dynamics in three stages (i.e. before, during, and after the crisis). Hong Kong's stock market was shown to be a critical link in these networks, and a shock to these markets might cause a chain reaction. To the same effect, Wu (2020) looked at stock market integration across ASEAN-5 nations and China, Japan, and Korea, and found that although interconnectivity among these markets appeared to be significant in the overall picture, it was mostly driven by global forces.

GAP IDENTIFICATION

There have been conducted many studies regarding stock market in other countries. But in India, only few studies have been done especially regarding the impact on stock market. So this study is helpful to cover this gap. With the help of this research we would be able to measure the impact of COVID-19 on Indian stock market and also highlighted the factors what affects stock market in a country.

OBJECTIVES OF THE STUDY

- To analyses the impact of the unexpected breakout of COVID-19 on the Indian Stock Markets.
- To study the investor's behavior towards Indian stock market.

HYPOTHESES

H0: There is no significant impact of COVID-19 on the Indian Stock Markets.

RESEARCH METHODOLOGY

In this research, data from 30/01/2020 to 24/04/2020 is taken from secondary sources. The World Health Organizations' official website and the National Stock Exchange were used to gather data.

Research Design

Because the explanatory factors may be used to forecast the dependent variable, this is a useful technique. As a result, the variable is statistically examined and probability sampling is used to explain the variables' cause and effect. As a result, descriptive design is the most effective method for demonstrating cause and effect relationships.

Statistical Tool and Technique

It is necessary to make the series stationary in order to attain this goal since predicting a stationary series is simpler and more trustworthy. So the ADF test (Aggravated Dickey Fuller test) is used to render the series stationary. In addition to the ADF test, the Ordinary Least Squares (OLS) approach is used to predict the values of a continuous response variable using one or more explanatory variables (s). It also shows how strong the link between variables is.

DATA ANALYSIS AND INTERPRETATION

Here, we investigate the impact of the COVID-19 epidemic on the Indian stock market. As a means of achieving the goal, data is gathered from WHO and NSE websites. ADF and OLS tests are used to examine the data that has been gathered, and the results are compared to each other (OLS method). There are three variables used in the tests: CumDead, DGR CC (“Recovered, Deceased, and Canceled”) Confirmed cases of COVID-19 in India.

Augmented Dickey Fuller Test

First, the variables must be evaluated for linearity so that unit roots may be found and deleted in order to make the series stationary. With the exception of variable CumRec, which has a p-value greater than 5% and thus indicates the presence of the series’ unit root, this can be accomplished using the Augmented Dickey Fuller test. It is found that all variables stationarity tested have p-values of both the independent and dependent variables lower than 5%. The p-value falls below 5% when the series is made stationary by performing a single differencing operation. This fixes the issue. Those findings have been included in Table 1.

Ordinary Least Square Model

We use the OLS model to examine the importance of the variables since the series of the variables are stationary. OLS models were studied by observing samples of the dependent variable, i.e., stock market returns, in order to determine their relationship (SMR). P-value of 0.0128 suggests that Cum Deceased is statistically significant. To put it another way, there is no statistical significance to the variable DGR CC (p-value of 0.0019). P-values of 0.0013 indicate that CumRec is the most insignificant variable. Moreover, “SMR

p-values” of 0.0287, the fifth lag value, suggests that data from the preceding five days had an impact. To reject the null hypothesis, a p-value less than the significance threshold (0.0287) indicates that the dependent variable is statistically significant. There is a negative correlation between “SMR,” “DGR CC,” and “d CumRec” with all three other variables, with coefficient values of -0.425973 each (see Table 2).

“Equation for the OLS model:

$$\text{SMR} = -0.000881881 - 0.00831016 \cdot \text{DGR_CC}$$

$$+ 0.000279326 \cdot \text{d_CumRec} +$$

$$0.000634251 \cdot \text{d_CumRec (5)} +$$

$$0.000673351 \cdot \text{d_CumRec (6)} -$$

$$0.00055129 \cdot \text{Cum Deceased} +$$

$$0.000535573 \cdot \text{Cum Deceased (1)}$$

$$+ 0.000979537 \cdot \text{Cum Deceased (2)} - 0.00153685 \cdot \text{Cum Deceased (3)} -$$

$$0.425973 \cdot \text{SMR (5)}.$$

Table 1: Results of ADF Test

Variables	Level of Variable		First Difference of Variable	
	Test with Constant	With Constant and Trend	Test with Constant	With Constant and Trend
DGR_CC	7.506e-008	5.89e-007	-	-
CumRec	0.7672	0.5331	2.05e-007	1.181e-006
CumDeceased	9.856e-005	0.001665	-	-
SMR	5.622e-009	4.67e-008	-	-

Table 2: Model 1: OLS, Using Observations 2020-02-10:2020-04-17 (T = 50)

Dependent variable: SMR, HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	Std. Error	T-Ratio	P-Value	
Const	0.000881810	0.000995387	-0.8859	0.3853	
DGR_CC	-0.00831016	0.00235424	-3.530	0.0019	***
DGR_CC_1	-0.00205125	0.00207053	-0.9907	0.3326	
DGR_CC_2	0.000994638	0.00283658	0.3506	0.7292	
DGR_CC_3	0.00119950	0.00394131	0.3043	0.7637	
DGR_CC_4	0.00417761	0.00223986	1.865	0.0756	*
DGR_CC_5	0.00119396	0.00143546	0.8318	0.4145	
DGR_CC_6	-0.00242111	0.00263776	-0.9179	0.3686	
d_CumRec	0.000279326	7.55390e-05	3.698	0.0013	***

	Coefficient	Std. Error	T-Ratio	P-Value	
d_CumRec_1	5.74279e-05	0.000101016	0.5685	0.5754	
d_CumRec_2	-0.000115405	9.84433e-05	-1.172	0.2536	
d_CumRec_3	0.000233325	0.000179313	1.301	0.2066	
d_CumRec_4	0.000329035	0.000171940	1.914	0.0688	*
d_CumRec_5	0.000634251	0.000191314	3.315	0.0031	***
d_CumRec_6	0.000673351	0.000171424	3.928	0.0007	***
CumDeceased	-0.000551296	0.000200888	-2.744	0.0118	**
CumDeceased_1	0.000535573	0.000244936	2.187	0.0397	**
CumDeceased_2	0.000979537	0.000280723	3.489	0.0021	***
CumDeceased_3	-0.00153685	0.000354052	-4.341	0.0003	***
CumDeceased_4	-0.000812400	0.000406294	-2.000	0.0580	*
CumDeceased_5	-0.000994047	0.000560280	-1.774	0.0899	*
CumDeceased_6	0.000680583	0.000666763	1.021	0.3185	
SMR_1	0.178123	0.214248	0.8314	0.4147	
SMR_2	-0.198700	0.144574	-1.374	0.1832	
SMR_3	-0.0786308	0.118115	-0.6657	0.5125	
SMR_4	0.286542	0.156718	1.828	0.0811	*
SMR_5	-0.425973	0.181965	-2.341	0.0287	**
SMR_6	-0.118457	0.126441	-0.9369	0.3590	

Mean dependent var	-0.001168	S.D. dependent var	0.007037
Sum squared resid	0.001029	S.E. of regression	0.006839
R-squared	0.575913	Adjusted R-squared	0.055442
F(27, 22)	270.8151	P-value(F)	3.15e-22
Log-likelihood	198.8342	Akaike criterion	-341.6683
Schwarz criterion	-288.1317	Hannan-Quinn	-321.2813
Rho	-0.012009	Durbin-Watson	2.011480"

CONCLUSION

Negative coefficient values for the dependent variable Stock Market Return (SMR) indicate a negative relationship between SMR and CumRec, DGR CC, and d CumRec. When we state that two variables are “negatively connected,” we indicate that the dependent variable’s relationship to the independent variables is inverse. This means that the model recommends that the variables throughout the simulation.

Outbreak of the virus COVID-19 Increasing the number of confirmed instances of COVID-19 has a favorable impact on the stock market because of cases that have been recovered (CumRec), cases that have been dead (Cum Deceased), and confirmed cases (DGR CC). Stock market return is negatively related to CumRec, DGR CC, and Cum Deceased, as shown by the negative coefficient value obtained by OLS testing. In addition, this indicates the SMR. The stock market, as we all know, is driven by the forces of supply and demand. Stock market returns during a pandemic are strongly affected by investor mood, as this regression indicates. Stock market

returns are negatively impacted by a rising number of SARS-Cov-2 related fatalities in India, according to the study’s findings. The Indian government has to implement a lockdown on the nation immediately from March 24, 2020, which has been intensified in light of the virus’s effects. It was because of this that many business stopped down operations and services for the time being. As a result, investors became more pessimistic about stock market returns as interest rates continued to fall. Many investors remain negative about the market, but there are several areas that still have a bright future for them. These occurrences elevated the risk in the market significantly, and investors began short-covering, or trading more often, as a result of the high market volatility. Due to the lack of efforts to manage the pandemic, the market has become more volatile and will stay volatile for an indeterminate amount of time. In India, the number of pandemic cases is constantly rising, making the market even more unpredictable. Volatility in the market causes a reduction in stock values, which in turn causes investors to begin withdrawing money from the investments they made. As a consequence of this increase in risk, stock volatility

risers as a result of a decrease in the stock's value. Market crises may be prevented if investors stop withdrawing and investing, which causes the stock values to decrease. Continuing this trend will result in the investor losing all of their money, causing a market crisis that is harmful to the economy.

IMPLICATIONS

This study is helpful to check out the impact of COVID-19 on Indian stock market as well as what factors affect the market value of shares. It is also significant to highlight the behavior of investor's towards investment in Indian stock market post and during COVID-19.

SCOPE FOR FUTURE RESEARCH

After doing this research, we can extend the work by measuring the impact of COVID-19 on other stock markets. For e.g. Stock markets of other countries or we can measure the variables that affect stock market. We can also do comparison of Indian stock market with other stock market of Asian countries or various other countries than Asian countries.

REFERENCES

- Al-Awadhi, A. M., Al-Saifi, K., Al-Awadhi, A., & Alhamadi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27, pages 6.
- Alfaro, L., Chari, A., Greenland, A. N., & Schott, P. K. (2020). Aggregate and firm-level stock returns during pandemics, in real time. National Bureau of Economic Research (NBER) Working Papers, No. 26950. Washington, DC: NBER.
- Ashraf, B. N. (2020a). Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. *Journal of Behavioral and Experimental Finance*, 27, 100371.
- Aswani, J. (2017). Impact of global financial crisis on network of Asian stock markets. *Algorithmic Finance*, 6(3-4), 79-91.
- Bai, Y. (2014). Cross-border sentiment: An empirical analysis on EU stock markets. *Applied Financial Economics*, 24(4), 259-290.
- Baker, S. R., Bloom, N., Davis, S. J., Kost, K. J., Sammon, M. C., & Viratyosin, T. (2020). The unprecedented stock market impact of COVID-19. NBER Working Papers 26945, National Bureau of Economic Research, Inc.
- Capelle-Blancard, G., & Desroziers, A. (2020, June 16). The stock market is not the economy? *Insights from the COVID-19 Crisis*.
- Chang, E. C., Cheng, J. W., & Khorana, A. (2000). An examination of herd behavior in equity markets: An international perspective. *Journal of Banking and Finance*, 24(10), 1651-1679.
- Chen, M. H., Jang, S. S., & Kim, W. G. (2007). The impact of the SARS outbreak on Taiwanese hotel stock performance: An event-study approach. *International Journal of Hospitality Management*, 26(1), 200-212.
- Chen, X., & Qiu, Z. (2020). Scenario analysis of non-pharmaceutical interventions on global COVID-19 transmissions. *COVID Economics, Vetted and Real-Time Papers*, (7), 46-67. Retrieved January 26, from <https://arxiv.org/abs/2004.04529>
- Deb, P., Furceri, D., Ostry, J. D., & Tawk, N. (2020). The effect of containment measures on the COVID-19 pandemic. *VoxEU*. Retrieved January 26, from <https://voxeu.org/article/effect-containment-measures-covid-19-pandemic>
- Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V.,...Klimek, P. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour*, 4(12), 1303-1312.
- Koh, W. C., Naing, L., & Wong, J. (2020). Estimating the impact of physical distancing measures in containing COVID-19: An empirical analysis. *International Journal of Infectious Diseases*, 100, 42-49.
- Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundy, A., Wang, X.,...Nair, H. (2020). The temporal association of introducing and lifting nonpharmaceutical interventions with the time-varying reproduction number (R) of SARS-Cov-2: A modelling study across 131 countries. *The Lancet Infectious Diseases*, 21(2), 193-202.
- Worldometer. (2021). COVID-19 coronavirus pandemic. *Coronavirus*. Retrieved January 26, 2021, from <https://www.worldometers.info/coronavirus/>
- Wu, F. (2020). Stock market integration in East and Southeast Asia: The role of global factors. *International Review of Financial Analysis*, 67, 101416.
- Wu, F., Zhang, D., & Zhang, Z. (2019). Connectedness and risk spillovers in China's stock market: A sectoral analysis. *Economic Systems*, 43(3-4), 100718.
- Yang, R., Li, X., & Zhang, T. (2014). Analysis of linkage effects among industry sectors in China's stock market before and after the financial crisis. *Physica A: Statistical Mechanics and Its Applications*, 411, 12-20.
- Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance Research Letters*, 36, 101528.