

A Study on Impact of COVID-19 on Indian Stock Market with Reference to BSE Sensex and Sectoral Indices

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Abstract

The breakout of COVID-19 has thrown the world economy into disarray. COVID-19 began in Wuhan, China, and has since expanded throughout the world. In this situation, a worldwide economic downturn and disruption in demand and supply is expected to result in an unavoidable financial crisis and slowdown as a result of the extended global lockdown. The current empirical study looks at the effects of COVID-19 on the performance of the Indian stock market, namely the BSE Sensex and Ten Sectoral indices. The objective of the study is to analyse the impact of COVID-19 on Indian stock market and how it had impacted BSE Sensex and Sectoral indices considering two time period i.e., before and during the crisis period and making comparison. Also aims to examine the volatility of stock returns during the crisis. The research is only based on historical data for a 10-month period, from August 2019 to May 2020. Descriptive statistics and a linear regression model are used to analyse the data. The study's main findings demonstrate that the standard deviation of all indices has increased, skewness has become negative, and kurtosis values are very large. However, according to the study, the crisis had little immediate influence on the stock market, indicating that the impact was just temporary.

Keywords: COVID-19, BSE Sensex, Indian Stock Market, Sectoral Indices, volatility, Crisis, Pandemic, Economy

INTRODUCTION

COVID-19 has had an unpredictably negative impact on the global financial sector. COVID-19, a human-transmitted disease, was discovered for the first time in China in December 2019. Then it expanded over the rest of the world at a rapid rate. On March 11, 2020, the World Health Organization declared it a Pandemic because of the risk to public health as an International Emergency [1]. This has resulted in a decline and disruption in the world economy. The United

Nations Department of Economic and Social Affairs (UN DESA) had predicted that in the worst-case scenario, the world economy could contract by 0.9 percent in 2020.

A slowdown in demand and supply will almost certainly result in a financial crisis and a financial market slowdown.

Pandemic is the primary cause of the global economy's contraction. Since investors have become risk averse, capital markets around the world have been declining. They were relocating their funds from riskier assets to more secure

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investments. We cannot overlook the reality that the Indian market would follow the global or US market's lead. During COVID-19, the Indian markets experienced the steepest drop since the financial crisis of 2008. This is the first time in Indian market history that this has happened.

As far as India's concern it was reacting largely to the Corona Virus impact even the fact that cities were getting infected and fall in the international price of crude oil. Which is basically a reaction of Saudi Arabia to Russia not cutting the production of crude oil. So Saudi Arabia also decided to increase the production which had led to fall of almost 30 to 40% in the price of crude oil in which they are selling around the world. Oil impact has also contributed to the impact of COVID-19. Other than this certain sector such as hospitality, entertainment and tourism have been impacted adversely and stocks of such companies have been reduced by more than 40%. The COVID-19-induced crisis had a detrimental impact on the majority of stock markets. Following the significant link with global market patterns and indices, the BSE Sensex and Nifty both plummeted by 38 percent. Since the COVID-19 attack, markets have been paralysed by dread as unpredictability reigns supreme.

The stock market has reflected the moods of domestic and international investors affected by the pandemic. Companies have slowed down; layoffs have increased, and employee remuneration has been impacted, resulting in minimal growth in the last few months [2]. Because of their nature, the stock market is said to be unable to foresee the impact of events with precision.

HOW STOCK MARKET WORKS?

Any firm that wants to raise money and intends to go public must sell a small portion of its equity on the stock exchange. People begin buying and selling a company's shares on a regular basis once it is listed on a stock exchange with the goal of making a profit [3].

The price of shares fluctuates due to three factors:

1. Divergent viewpoints
2. Breaking News
3. Happenings

What happens to the stock once you purchase it? –They will be held in a De-mat a/c environment. The holding term is the length of time you want to keep the stock, which might range from a few minutes to a few years. It is thought that high-priced shares are being sold and low-priced shares are being purchased in order to profit.

Conceptual Background

The Outbreak of COVID-19: The Novel Corona virus was initially discovered in the Chinese city of Wuhan in December of this year. Because this virus affected so many individuals around the world, the World Health Organization labelled it a Pandemic. This COVID-19 epidemic has caused significant damage to financial markets and the worldwide economy. Markets throughout the world have been stunned by this threat to the global economy, with stock prices and bond yields collapsing [4]. The epidemic had a devastating effect on economic activities and resulted in the deaths of many people. This unique corona virus has impacted almost every sector of the global economy, including stock markets, aviation, small and medium-sized businesses, oil and gas, healthcare, tourism, and information technology. Because of the epidemic, a world that has always been bustling with huge activities has come to a halt, and all resources have been directed to meet the never-before-seen calamity. WHO estimated the impact of COVID-19 to be between 2.2 and 4.8 percent of GDP, which appears to be correct. Fears about the Corona virus have sent shockwaves across the global financial markets [5]. Due to rate cuts and falls in stock markets around the world, Indian capital markets are considering a fund flow to Western equity markets. According to NSDL statistics, FPIs withdrew massive sums from India in March 2020, 247.76 billion from the equity market and 140.50 billion from the debt market, and it was predicted that the capital markets would be volatile during this epidemic [6].

Literature Review

Bora, D., & Basistha, D. (2021) [7]: According to their research, the stock market, particularly the BSE Sensex, became more volatile throughout the pandemic period. In the case of another stock index, the NSE Nifty, the COVID-19 period has no substantial impact on the volatility of NSE stock prices (Basistha, 2021).

Baker et al. (2020) [8]: Their research looked at the impact of COVID-19 on current stock market activity and compared it to past virus outbreaks. Bird flu, SARS, Swine flu (H1N1), Ebola, and COVID-19 were all compared by the author. The author found that no previous infectious disease has caused daily stock market fluctuations that resembled the reaction to COVID-19 developments in the previous month (Baker, 2020).

Raja Ram A. (2020) [9]: According to his research, COVID-19 disrupted the global stock markets. The Indian stock market saw severe volatility as a result of the global financial markets' collapse. On analysing the history of all unexpected situations, the author has labelled COVID-19 as a 'Black Swan' event (A, 2020).

Alam, M.N., Alam, M.S., & Chavali, K. (2020) [10]: Stock Market React During the COVID-19 Lockdown Time in India: An Exploratory Research (2020) discovered positive AR surrounding the shutdown period and confirms that the lockdown has a positive effect on economic growth until the circumstance in the Stock Market Index recovers. The finding is applicable to the selected sample of BSE-listed companies as well as the study period. The study's findings suggest that investors should take precautions before trading stocks during the lockdown period, and conservative investors should avoid buying and selling during the lockdown period to minimize the occurrence arising from movements in market volatility (Alam M.N, 2020).

S. Ravi (2020) [11]: His research found that he contrasted the Indian stock market's pre-COVID-19 and post-COVID-19 conditions. According to the analysis, the NSE and BSE traded at their maximum levels prior to COVID-19 showing that the stock market is in a good place. Following the emergence of COVID-19, the stock market had a 38 percent drop in fear of the pandemic (.S, 2020).

OBJECTIVES OF THE STUDY

- To understand the effect of COVID-19 on Indian stock market [12].
- To analyze the impact of COVID-19 on BSE stock returns during COVID-19 crisis and comparing it with pre COVID-19 period.
- To examine the impact of COVID-19 on volatility of stock returns of BSE Sensex and sectoral indices.

Hypothesis

- *H0*: There is no immediate impact of COVID-19 on the stock market.
- *H1*: There is immediate impact of COVID-19 on the stock market.

Research Methodology

Data

The research is based on secondary information. The data for this study was gathered from a variety of sources, including journals, websites, and newspapers. The closing prices of the Sensex indexes were gathered from the BSE's official websites. The study only takes into account trading days and ignores any holidays or other days when the market is closed [13]. The analysis in this study is based on daily price data for the BSE Sensex and 10 sectoral indexes obtained from the BSE websites.

Descriptive Statistics & Linear Regression Model

Descriptive statistics are employed in order to assess the variation i.e., standard deviation, skewness and kurtosis and central tendency [14 15]. The descriptive statistics has been revealed for two periods

i.e., prior to COVID-19 period (August to December 2019) and during the crisis (January to May 2020). Linear regression model is used to understand the relationship between COVID-19 & Indian stock market [16].

Scope of the Study

1. The study analyses the effect of COVID-19 on the BSE Sensex and Sectoral indices. The movement in stock prices of BSE Sensex and Sectoral indices are measured for the study.
2. The research expands on the fundamental premise of how the market reacts to instant risk assessment. Market predictability indicators, particularly volatility in returns during and before the crisis, are studied.

DATA ANALYSIS AND INTERPRETATION

In this study We know how effective or significant the pandemic was on Indian stock market [17]. For the purpose of the study BSE Sensex and the Following 10 Sectoral indices of BSE are taken into consideration:

- S&P BSE Information Technology Index
- S&P BSE Healthcare Index
- S&P BSE Oil & Gas Index
- S&P BSE Industrial Index
- S&P BSE Realty Index
- S&P BSE Auto Index
- S&P BSE Bankex Index
- S&P BSE Consumer Durables Index
- S&P BSE Capital Goods Index
- S&P BSE FMCG Index

Following the measurement of equivalent window lengths for the sub-samples, the period was divided into two parts, namely before and during the crisis. The period from August 2019 to December 2019 was considered as ‘before the crisis’ and the period from January 2020 to May 2020 was considered as ‘during the crisis’, since the first COVID-19 case in India was reported in January 2020.

The following is a descriptive analysis of the BSE Sensex and 10 sectoral (BSE industrials, BSE oil & gas, BSE Auto, BSE Bankex, BSE Consumer Durables, BSE Capital Goods, BSE Fast Moving Consumer Goods, BSE Health Care, BSE Information Technology, and BSE Realty) indexes of the Indian stock exchange, based on daily returns [18].

INTERPRETATION

BSE Sensex

It has been determined that daily mean returns were positive prior to the crisis, but negative during the crisis, implying a negative impact on stock returns. Standard deviation has risen during the conflict period compared to before the COVID era, implying that stock price volatility has increased during the crisis period as shown in Table 1. A negatively skewed return with a higher Kurtosis value suggests that the stock market may suffer a large loss during the crisis period. (Rashmi Chaudhary, 2020).

BSE IT Index's

Mean daily returns are higher before the crisis, but negative during the crisis, indicating a large loss in the stock market. The standard deviation is higher during the collapse than before COVID-19, implying that stock returns are more erratic during this time. During both periods, stock returns are negatively skewed, signaling higher future returns as well as significant volatility. Kurtosis is Mesokurtic during a crisis. Prior to the crisis, Leptokurtic prevailed. (Rashmi Chaudhary, 2020).

Table 1. Showing Descriptive Statistics for BSE Sensex and 10 Sectoral Indices Before And During Crisis Period [19].

Descriptive Statistics for BSE Sensex and Sectoral Indices Before Crisis period (Aug 2019-Dec 2019)											
	<i>BSE Sensex</i>	<i>BSE IT</i>	<i>BSE Health Care</i>	<i>BSE Oil & Gas</i>	<i>BSE Industrial</i>	<i>BSE Realty</i>	<i>BSE Auto</i>	<i>BSE Bankex</i>	<i>BSE CD</i>	<i>BSE CG</i>	<i>BSE FMCG</i>
Average	0.0011	0.0001	0.0007	0.001	0.0005	0.0012	0.002	0.0015	0.001	-0.0	0.00
Median	0.0010	0.0013	0.0009	-0.00	-0.0010	0.0040	-0.00	0.0018	0.00	-0.0	-0.00
S.D	0.0097	0.0012	0.0084	0.013	0.01325	0.0161	0.017	0.0157	0.0132	0.011	0.0090
Skewness	1.5716	-1.904	-0.186	0.951	1.7498	-0505	1.602	1.599	0.935	2.311	1.637
Kurtosis	7.6361	9.1563	0.4645	2.970	7.2412	1.7848	8.574	7.272	10.94	10.33	6.76
Maximum	0.0532	0.0233	0.0240	0.059	0.0676	0.0445	0.098	0.0820	0.0745	0.079	0.042
Minimum	-0.021	-0.070	-0.024	-0.02	-0.0259	-0.060	-0.04	-0.026	-0.053	-0.03	-0.019
Observation	100	100	100	100	100	100	100	100	100	100	100
Descriptive Statistics for BSE Sensex & Sectoral Indices During Crisis period (Jan 2020-May 2020)											
	<i>BSE Sensex</i>	<i>BSE IT</i>	<i>BSE Health care</i>	<i>BSE Oil & Gas</i>	<i>BSE Industrial</i>	<i>BSE Realty</i>	<i>BSE Auto</i>	<i>BSE Bankex</i>	<i>BSE CD</i>	<i>BSE CG</i>	<i>BSE FMCG</i>
Average	-0.002	-0.000	0.0017	-0.00	-0.0029	-0.004	-0.0	-0.004	-0.0	-0.0	-0.00
Median	-0.002	0.0013	0.0017	0.0009	-0.0005	-0.001	0.00	-0.003	-0.0	-0.0	-0.00
S.D	0.0289	0.02752	0.0218	0.029	0.0261	0.029	0.031	0.0367	0.025	0.02	0.0238
Skewness	-0.833	-0.3272	-0.393	-0.375	-1.7996	-0.975	-0.37	-0.694	-1.04	-1.5	-0.129
Kurtosis	4.7757	3.01762	5.769	4.6994	6.8744	1.836	4.167	4.239	5015	7.14	5.9134
Maximum	0.0897	0.0836	0.0895	0.0905	0.0538	0.062	0.103	0.107	0.071	0.07	0.0823
Minimum	-0.132	-0.0924	-0.083	-0.123	-0.1363	-0.106	-0.13	-0.168	-0.12	-0.1	-0.104
Observation	101	101	101	101	101	101	101	101	101	101	101

BSE Healthcare Index

The table shows that mean returns were higher during the crisis period than during the pre-crisis period. Because the standard deviation is higher in the COVID-19 period, stock returns were more erratic during the crisis than before the crisis. During both periods, skewness is negative. Kurtosis, on the other hand, is platykurtic before the crisis and leptokurtic during it. Because it was the primary frequency to the COVID-19 disruption during the crisis, the healthcare index outperformed, and it is primed to gain from favorable monetary tailwinds (Rashmi Chaudhary, 2020).

BSE Oil & Gas Index

The daily mean returns were higher before the crisis, but they were negative during the crisis, indicating a stock market loss. When compared to the pre-crisis period, stock returns were more volatile during the crisis. Prior to the crisis, the skewness was positive, indicating a long right tail and more higher values, however it was negatively skewed during the crisis, suggesting lower values. Before the crisis, the kurtosis was platykurtic, which meant that extreme results were less frequent. It is leptokurtic throughout the crisis.

BSE Industrial Index

The mean returns during the crisis period were negative, whereas they were positive during the pre-crisis period. When compared to the pre-crisis period, the standard deviation is higher, showing that stock returns were more volatile during the crisis. A negatively skewed return with a greater Kurtosis score suggests the risk of a substantial stock market loss during the crisis.

BSE Realty Index

During the pre-crisis period, daily mean returns were higher, however during the crisis era, they were lower. Stock returns were more volatile during the crisis than before the crisis because the standard deviation was higher during the crisis. In both circumstances, stock returns were negatively skewed. Kurtosis is less likely to cause dramatic outcomes during both periods as it is platykurtic. (Rashmi Chaudhary, 2020).

BSE Auto Index

It is observed from the table that Daily mean return of Auto index was comparatively more before the crisis where it shown negative return during the crisis period. More volatility of stock returns during the crisis compared to pre covid period. Before crisis stock returns are positively skewed where it is negatively skewed during the crisis period indicating higher expected return as well as higher volatility. Both the period shows Leptokurtic kurtosis (Rashmi Chaudhary, 2020).

BSE Bankex Index

The stock market suffered a big loss during the crisis because mean returns were negative, but daily mean returns were higher before the crisis. In comparison to the pre-crisis period, the stock market was more volatile during the COVID-19 period. A negatively skewed return with a greater Kurtosis score suggests the risk of a substantial stock market loss during the crisis (Rashmi Chaudhary, 2020).

BSE Consumer Durables Index

The stock market suffered a big loss during the crisis because mean returns were negative, but daily mean returns were higher before the crisis. In comparison to the pre-crisis period, the stock market was more volatile during the COVID-19 period. A negatively skewed return with a greater Kurtosis score suggests the risk of a substantial stock market loss during the crisis. Previously, it was positively skewed with leptokurtic kurtosis, indicating a greater potential for extraordinarily high or low returns before the crisis. (Rashmi Chaudhary, 2020).

BSE Capital Goods Index

The mean returns were negative both before and after the crisis, i.e., before and after the crisis. During the crisis, stock returns were more volatile. A negatively skewed return with a greater Kurtosis score suggests the risk of a substantial stock market loss during the crisis. Previously, it was positively skewed with leptokurtic kurtosis, indicating a greater potential for extraordinarily high or low returns before the crisis. (Rashmi Chaudhary, 2020).

BSE FMCG Index

The stock market experienced a big loss during the crisis because mean returns were negative, but daily mean returns were higher before the crisis. In comparison to the precrisis period, It was more volatile during the COVID-19 period. A negatively skewed return with a greater Kurtosis score suggests the risk of a substantial stock market loss during the crisis. (Rashmi Chaudhary, 2020) [18].

Hypothesis

H₀: There is no immediate impact of COVID-19 on the stock market.

H₁: There is immediate impact of COVID-19 on the stock market.

BSE SENSEX

Interpretation

The significance F in the preceding regression result is 0.5, indicating that the link between the independent variable (X) i.e. COVID-19 period (before and after the crisis) and the dependent variable (Y) i.e. BSE SENSEX stock returns is not statistically significant. The least R square, 0.002105, indicates the least link between the two variables as shown in Table 2. The coefficient has a negative sign, indicating that there is a negative correlation between two variables. Because the P-value of 0.5 is greater than 0.05, the null hypothesis that COVID-19 has no immediate influence on the stock market should be accepted. The results are not statistically significant.

Table 2. Showing regression statistics of BSE sensex & COVID-19 [19].

Regression Statistics					
Multiple R			0.044889		
R Square			0.002015		
Adjusted R Square			-0.00303		
Standard Error			0.021753		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00041	0.00200888	-0.61734	0.79	0.527928
-100	-1.7E-05	2.6642E-05	-0.63229	0.52	

S&P BSE INFORMATION TECHNOLOGY

Interpretation

The significance F in the preceding regression result is 0.99, indicating that the association between the independent variable (X) i.e. COVID-19 period (before and after the crisis) and the dependent variable (Y) i.e. BSE IT stock returns is not statistically significant. The R square is 2.4E-11, indicating that the two variables have a link. The coefficient has a positive sign, indicating that there is a positive correlation between two variables. Because the P-value of 0.99 is greater than 0.05, the null hypothesis that COVID-19 has no immediate impact on the stock market should be accepted (Table 3). The findings aren't significant statistically.

Table 3. Showing regression statistics of BSE IT & COVID-19 [19].

Regression Statistics					
Multiple R			4.9E-06		
R Square			2.4E-11		
Adjusted R Square			-0.00505		
Standard Error			0.021467		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	0.00023	0.001518	-0.15295	0.89	0.99
-100	-1.8E-09	2.63E-05	-6.9E-05	0.99	

S &P BSE HEALTHCARE INDEX

Interpretation

In the above regression output, the significance F is 0.4 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE HEALTHCARE INDEX is not statistically significant as shown Table 4. The sign of the coefficient is positive which means that there exist positive correlation between two variable. The P-value which is 0.4 that is greater than 0.05 hence should accept the null hypothesis that there is no immediate impact of COVID-19 on the stock market. The results are not statistically significant.

Table 4. Showing Regression Statistics of BSE HC & COVID-19 [19].

Regression Statistics					
Multiple R			0.05141049		
R Square			0.00264304		
Adjusted R Square			0.00239412		
Standard Error			0.01656394		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	0.00121786	0.00117129	1.039758	0.29972	0.46965
-100	1.4695E-05	2.0287E-05	0.724368	0.469695	

S&P BSE OIL & GAS INDEX

Interpretation

In the above regression output, the significance F is 0.6 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE OIL & GAS INDEX is not statistically significant (Table 5). The sign of the coefficient is negative which means that there exist negative correlation between two variable. The P-value which is 0.6 that is greater than 0.05 hence should accept the null hypothesis that there is no immediate impact of COVID-19 on the stock market. The results are not statistically significant.

Table 5. Showing regression statistics of BSE OIL & GAS & Covid [19].

Regression Statistics					
Multiple R			0.037161		
R Square			0.001381		
Adjusted R Square			-0.0036		
Standard Error			0.0022703		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00027	0.001605	-0.1685	0.86636	0.601381
-100	-1.5E-05	2.78E-05	-0.52326	0.601381	

S&P BSE INDUSTRIAL INDEX

Interpretation

In the above regression output, the significance F is 0.4 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE INDUSTRIALS INDEX is not statistically significant. The sign of the coefficient is negative which means that there exist negative correlation between two variable. The P-value which is 0.4 that is more than 0.05 hence should accept the null hypothesis that there is no immediate effect of COVID-19 on the stock market (Table 6). The results are not statistically significant table

Table 6. Showing Regression Statistics of BSE Industrials Index & COVID-19 [19].

Regression Statistics					
Multiple R			0.0579		
R Square			0.003354		
Adjusted R Square			-0.00168		
Standard Error			0.020856		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00117	0.001475	-0.7923	0.429133	0.41532
-100	-2.1E-05	2.55E-05	0.81628	0.41532	

S&P BSE REALTY INDEX

Interpretation

In the above regression output, the significance F is 0.2 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE REALTY INDEX is not statistically significant. R square is the least i.e., 0.007079 which indicates least relationship between the two variables. The sign of the coefficient is negative which means that there exist negative correlation between two variable. The P-value which is 0.23 that is more than 0.05 hence should accept the null hypothesis that there is no immediate effect of COVID-19 on the stock market (Table 7). The results are not statistically significant.

Table 7. Showing regression statistics of BSE realty index & COVID-19 [19].

Regression Statistics					
Multiple R			0.084134		
R Square			0.007079		
Adjusted R Square			0.002064		
Standard Error			0.024094		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00154	0.001704	-0.90507	0.366528	0.236224
-100	-3.5E-05	2.9E-05	-1.18808	0.236224	

S&P BSE AUTO INDEX

Interpretation

In the above regression output, the significance F is 0.55 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE AUTO INDEX is not statistically significant. R square is the least i.e., 0.001768 which indicates least relationship between the two variables. The sign of the coefficient is negative which means that there exist negative correlation between two variable. The P-value which is 0.55 that is greater than 0.05 hence should accept the null hypothesis that there is no immediate effect of COVID-19 on the stock market as shown in Table 8. The results are not statistically significant.

Table 8. Showing regression statistics of BSE auto index & COVID-19 [19].

Regression Statistics					
Multiple R			0.0420		
R Square			0.001768		
Adjusted R Square			-0.00327		
Standard Error			0.025488		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00013	0.001802	-0.07315	0.941759	0.554439
-100	-1.8E-05	3.12E-05	-0.59213	0.554439	

S&P BSE BANKEX INDEX

Interpretation

The significance F in the preceding regression output is 0.306, indicating that the association between independent variable (X) i.e. COVID-19 period (before and after crisis) and dependent variable (Y) i.e. BSE BANKEX INDEX stock returns is not statistically significant. The least R square, 0.005275, indicating the least link between the two variables. The coefficient has a negative sign, indicating that there is a negative correlation between two variables. Because the P-value of 0.31 is greater than 0.05, the null hypothesis that COVID-19 has no immediate influence on the stock market should be accepted (Table 9). The findings aren't significant statistically.

S&P BSE CONSUMER DURABLES INDEX

Interpretation

In the above regression output, the significance F is 0.125 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE CD INDEX is not statistically significant. R square is the least i.e., 0.011822 which indicates least relationship between the two variables. The sign of the coefficient is negative which means that there exist negative correlation between two

variable (Table 10). The P-value which is 0.12 that is more than 0.05 hence should accept the null hypothesis that there is no immediate impact of COVID-19 on the stock market. The results are not statistically significant.

Table 9. Showing Regression Statistics of BSE Bankex Index & COVID-19 [19].

Regression Statistics					
Multiple R			0.07263		
R Square			0.005275		
Adjusted R Square			0.000251		
Standard Error			0.028475		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00143	0.002014	-0.70858	0.479417	0.306756
-100	-3.6E-05	3.49E-05	-1.0247	0.306756	

Table 10. Showing Regression Statistics of BSE CD Index & COVID-19 [19].

Regression Statistics					
Multiple R			0.108728		
R Square			0.011822		
Adjusted R Square			0.006831		
Standard Error			0.019978		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.00061	0.00143	-0.42998	0.667677	0.125387
-100	-3.8E-05	2.45E-05	-1.53906	0.125387	

S&P BSE CAPITAL GOODS INDEX

Interpretation

In the above regression output, the significance F is 0.53 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE CG INDEX is not statistically significant. R square is the least i.e., 0.001949 which indicates least relationship between the two variables. The sign of the coefficient is negative which means that there exist negative correlation between two variable. The P-value which is 0.53 that is more than 0.05 hence should accept the null hypothesis that there is no immediate effect of COVID-19 on the stock market (Table 11). The results are not statistically significant.

Table 11. Showing Regression Statistics of BSE CG Index & COVID-19 [19].

Regression Statistics					
Multiple R			0.044145		
R Square			0.001949		
Adjusted R Square			-0.00309		
Standard Error			0.022746		
Observations			200		
	Coefficients	Standard Error	t Stat	P-value	Significance F
Intercept	-0.0014	0.001608	-0.87307	0.383682	0.534803
-100	-1.7E-05	2.79E-05	-0.62178	0.534803	

S&P BSE FMCG INDEX

Interpretation

In the above regression output, the significance F is 0.91 which means that the relationship between independent variable (X) i.e., COVID-19 period (before crisis and after crisis) and Dependent Variable (Y) i.e., stock returns of BSE FMCG INDEX is not statistically significant. R square is 5.86E-05 which indicates there exists relationship between the two variables. The sign of the coefficient is positive which means that there exist positive correlation between two variable. The P-value which is 0.91 that is greater than 0.05 hence should accept the null hypothesis that there is no immediate impact of COVID-19 on the stock market (Table 12). The results are not statistically significant.

Table 12. Showing Regression Statistics of BSE CG Index & COVID-19 [19].

Regression Statistics					
Multiple R			0.007658		
R Square			5.86E-05		
Adjusted R Square			-0.00499		
Standard Error			0.018145		
Observations			200		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Significance F</i>
Intercept	0.000112	0.001283	0.087417	0.930428	0.914295
-100	-2.4E-06	2.22E-05	-0.010776	0.914295	

FINDINGS OF THE STUDY

- It is found that the BSE Sensex was harmed negatively by COVID-19, the mean daily returns were negative during the crisis and witnessed greater standard deviation indicating more volatility of the stock prices during the crisis period but there was no immediate impact of the crisis on the index.
- It is found that the BSE IT index was negatively impacted by COVID-19, the stock returns turned negative during the crisis period and became more volatile during the crisis [20].
- It is found that the BSE HEALTHCARE index was positively impacted by the crisis. Returns were positive during the crisis since the Indian healthcare has been able to withstand COVID-19 Pandemic, but the stock returns were volatile during the crisis. It showed normal distribution during the precrisis period.
- It is found that the BSE OIL & GAS is one of the worst hit sectors during the crisis and witnessed the lowest daily mean returns compared to other sectoral indices and the stock prices were more volatile compared to the precrisis period.
- The COVID-19 was found to have a negative impact on the BSE Industrial index. A negatively skewed return with a greater Kurtosis value predicts a large loss during the crisis time, yet the index showed no immediate reaction to the crisis, according to the study.
- It is found that the BSE Realty index was negatively impacted by COVID-19. But before the crisis also the returns were negatively skewed. This index less likely to produce extreme results during both the period [21].
- The COVID-19 had a negative influence on the BSE AUTO index, with negative daily mean returns and higher stock price volatility than before the crisis. COVID-19 had no immediate effect on the index, according to the study's findings.
- It is found that BSE BANKEX index was negatively impacted by the Pandemic. It shows the highest standard deviation i.e., 0.0368 indicating more volatility of the stock prices during the crisis compared to all other indices. Initially there was no such impact on the index as per the study.
- It is found that BSE CONSUMER DURABLE index was negatively impacted with lower daily mean returns and higher volatility of stock prices during the crisis compared to precrisis period.

- It is found that BSE CAPITAL GOODS Index did not experience huge impact from the crisis since the daily returns were negative during both the period. But the stock returns were volatile during the crisis as compared to precrisis period.
- IT is found that BSE FMCG index impacted negatively by COVID-19 with stock returns being more volatile and huge loss in the stock market as the daily mean returns were negative during the crisis. But there was no immediate impact of COVID-19 on the index as per the study.

SUGGESTIONS

- It is suggested that the conservative investors should avoid trading in the stock market during COVID-19 because most of the sectoral indices show negatively skewed distribution with leptokurtic kurtosis.
- In case of short term investors who are the holders of equities it would be better if they close their position so that losses can be avoided since the stock market became more volatile during the crisis.
- Short-term players could also buy cheaply while the market is in a significant downturn and terminate the position in 5 to 10 trading days if the market makes a technical recovery, resulting in huge profits.
- Traders can earn in this extremely volatile market by using hedging strategies like safe puts, which limit the risk of losing money if the underlying asset's price drops unexpectedly.
- Buying the combined indexes can be a suitable alternative for long-term passive investors with a long investing horizon.
- Since the large-capitalization equities have lower risk outlier and favorable kurtosis than mid and small-capitalization equities, they can be bought for by an active, long-term investor.

CONCLUSION

The influence of COVID-19 on the Indian stock market, as measured by the BSE Sensex and ten sectoral indices, is examined in this study. The various descriptive statistics metrics such as mean, median, standard deviation, skewness, and kurtosis were utilized to analyse the effect. The impact of the pandemic is analysed with an equal window length, i.e., Prior to the crisis (August 2019-December 2019) and during the crisis (January 2020-May 2020), and an attempt is made to create a comparison between the two periods. To better understand the link between the two variables, a linear regression model was used. All indexes have a lower average daily return, or to be more accurate, negative returns, according to the study's primary findings. The BSE healthcare index is an outlier that has benefited from the crisis. During the crisis, all indices had higher volatility of stock returns, but the BSE bankex index had the highest volatility, possibly due to investors' anxiety that these events would lead to more bad loans. The paper indicates that, despite the fact that the crisis impacted diverse industries in different ways, the empirical findings demonstrate that COVID-19 had no immediate influence on the stock market. The reason could be that when the first case of COVID-19 was reported in January, the stock market was as normal as it had been before the crisis, but when the World Health Organization declared it a pandemic and declared a national emergency in March, the stock market crashed, but only for a short time. For the time being, stock returns have reacted badly, but in the long run, the impact may be contradictory.

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