IMPACT OF COVID-19 ON NIFTY AND THE SECTORAL INDICES

[1]Trishala Saxena, [2]Dr. Surekha Nayak

[1]MBA (Finance Management) Student, [2]Assistant Professor
[1]School of Business and Management,
[1]CHRIST (Deemed to be) University, Bengaluru, India.

Abstract: The COVID-19 pandemic has turned out to be a black swan event which has drastically changed the way world functioned and has affected almost every country around the globe. The present study attempted to analyze the impact of COVID-19 on the major stock market index in India – NIFTY and its sectoral indices. The daily returns for the 335-day period starting from 1st November 2019 to 24th March 2020 and 25th March 2020 to 30th September 2020 are taken as pre-and post-pandemic phases respectively. Statistical tools like Augmented Dickey Fuller Test and regression analysis were used to arrive at the results. It was found that there exists a significant impact of COVID-19 on Nifty 50, Nifty Auto, Nifty Consumer Durables, Nifty FMCG, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, and Nifty Pharma.

Index Terms - COVID-19, Stock Market, Regression, Nifty, Sectoral, Augmented Dickey-Fuller Test.

1. INTRODUCTION

The first instance of COVID-19 in India was registered on 30th January, 2020. To curb the effect of the pandemic in India, a nationwide lockdown was announced as a preventive measure on 24th March, 2020. There were four phases to the nationwide lockdown whereas the unlock phases have been divided into seven phases as of now. Major companies in India temporarily reduced their operations and also there were huge number of lay-offs around the nation. As the rise of COVID-19 led to the crashing of stock markets across the globe so did the Indian markets following a close link with trends and global indices, Nifty 50 dropped sharply by 38%.

Stock markets in India recorded the worst losses in the history on 23rd March, 2020, however 25th March, 2020 recorded the biggest gains in 11 years in response to the news of the lockdown in India. Aviation and tourism were among the worst hit industries by the pandemic whereas the pharmaceutical industry has been on the rise ever since COVID-19 stepped into the picture. However, there are several businesses that were affected by the pandemic in the bigger picture but they revived faster than other sectors. These sectors include healthcare, telecommunications, retail and banking.

The present study attempts to examine the effect of COVID-19 on Indian Stock Markets by taking NIFTY and its sectoral indices into consideration.

2. REVIEW OF LITERATURE

Qing He et. al (2020) explored the direct effects and spill-overs of COVID – 19 on the stock markets using conventional t-tests and Mann Whitney tests to analyze the daily returns of global stock market indices including that of China, South Korea, Germany, Spain, France, Japan and United States of America. The study shows that COVID-19 has a negative but short-term impact on the stock markets of the eight affected countries taken for the study (People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the USA). The impact of COVID – 19 on the European and American stock markets has a spill-over effect on the Asian stock markets according to the foreign timeline followed by the scholars.

Dr. Kishore and Shalini (2020) studied the impact of COVID-19 on the GDP and the different sectors in India in the short and long term. The consumer retail business sector contributed 18% to the GDP of India since the outbreak of COVID-19 and 16.5% contribution came from the food and agriculture sector. The telecom sector had the highest FDI equity inflow since the pandemic made work from home (WFH) and the virtual world important.

Mohammed et. al (2020) conducted an event study on 31 companies of Bombay Stock Exchange which tells that on initial announcement of the lockdown, the stocks of most companies in the sample got boosted. The study confirms that the lockdown had a positive effect on the stock market, which could be a prediction to eliminate COVID-19 with lockdown in India. For the intent of the analysis, an incident window of 35 days was taken with 20 days before the event and 15 days after the event. The study confirms that the investors panicked in the pre-lockdown period.

Alok et. al (2020) found that the BSE Sensex experienced a negative growth of 22.6% during the COVID-19 phase and the stock returns of all the indices were negative during the COVID-19 phase. Realty sector was the worst affected sector with the stock price decline of 41.67% and the BANKEX returns were the most volatile. The net FII flows were found to be most volatile during the GST phase in comparison to the COVID-19 phase.

3. Statement of the Problem

Since the COVID-19 came into the picture, markets around the globe have felt the jitters of COVID-19 and there has been a huge upheaval in the financial markets around the world. Some sectors, such as hotels, travel and entertainment, have been adversely affected and the stocks of such companies have declined by more than 40%. This study is an attempt to understand the movement and activity of the stock market in India taking NIFTY into consideration and to understand the impact sector-wise.

4. Objective of the Study

The objective of the study is to understand and evaluate the impact of COVID-19 on NIFTY and its sectoral indices.

5. Hypothesis

To test the stationarity of the data Augmented Dickey Fuller test has been used. The hypothesis framed for the purpose were:

Hypothesis 1
H0: The data pertaining to Nifty 50 Index Returns has a unit root or is non stationary.
H1: The data pertaining to Nifty 50 Index Returns does not have a unit root or is stationary.

Hypothesis 2
H0: The data pertaining to Nifty Auto Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Auto Index Returns does not have a unit root or is stationary.

Hypothesis 3
H0: The data pertaining to Nifty Consumer Durables Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Consumer Durables Index Returns does not have a unit root or is stationary.

Hypothesis 4
H0: The data pertaining to Nifty Financial Services Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Financial Services Index Returns does not have a unit root or is stationary.

Hypothesis 5
H0: The data pertaining to Nifty FMCG Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty FMCG Index Returns does not have a unit root or is stationary.

Hypothesis 6
H0: The data pertaining to Nifty IT Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty IT Index Returns does not have a unit root or is stationary.

Hypothesis 7
H0: The data pertaining to Nifty Media Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Media Index Returns does not have a unit root or is stationary.

Hypothesis 8
H0: The data pertaining to Nifty Metal Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Metal Index Returns does not have a unit root or is stationary.

Hypothesis 9
H0: The data pertaining to Nifty Oil & Gas Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Oil & Gas Index Returns does not have a unit root or is stationary.

Hypothesis 10
H0: The data pertaining to Nifty Pharma Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Pharma Index Returns does not have a unit root or is stationary.

Hypothesis 11
H0: The data pertaining to Nifty Realty Index Returns has a unit root or is non-stationary.
H1: The data pertaining to Nifty Realty Index Returns does not have a unit root or is stationary.

For the purpose of regression analysis the following hypothesis were used:

Hypothesis 1
H0: There is no significant impact of COVID-19 on Nifty 50 Index Returns.
H1: There is significant impact of COVID-19 on Nifty 50 Index Returns.

Hypothesis 2
H0: There is no significant impact of COVID-19 on Nifty Auto Index Returns.
H1: There is significant impact of COVID-19 on Nifty Auto Index Returns.

Hypothesis 3
H0: There is no significant impact of COVID-19 on Nifty Consumer Durables Index Returns.
H1: There is significant impact of COVID-19 on Nifty Consumer Durables Index Returns.

Hypothesis 4
H0: There is no significant impact of COVID-19 on Nifty Financial Services Index Returns.
H1: There is significant impact of COVID-19 on Nifty Financial Services Index Returns.

Hypothesis 5
H0: There is no significant impact of COVID-19 on Nifty FMCG Index Returns.
H1: There is significant impact of COVID-19 on Nifty FMCG Index Returns.

Hypothesis 6
H0: There is no significant impact of COVID-19 on Nifty IT Index Returns.
H1: There is significant impact of COVID-19 on Nifty IT Index Returns.

Hypothesis 7
H0: There is no significant impact of COVID-19 on Nifty Media Index Returns.
H1: There is significant impact of COVID-19 on Nifty Media Index Returns.

Hypothesis 8
H0: There is no significant impact of COVID-19 on Nifty Metal Index Returns.
H1: There is significant impact of COVID-19 on Nifty Metal Index Returns.

Hypothesis 9
H0: There is no significant impact of COVID-19 on Nifty Oil & Gas Index Returns.
H1: There is significant impact of COVID-19 on Nifty Oil & Gas Index Returns.

Hypothesis 10
H0: There is no significant impact of COVID-19 on Nifty Pharma Index Returns.
H1: There is significant impact of COVID-19 on Nifty Pharma Index Returns.

Hypothesis 11
H0: There is no significant impact of COVID-19 on Nifty Realty Index Returns.
H1: There is significant impact of COVID-19 on Nifty Realty Index Returns.

6. RESEARCH METHODOLOGY

The present study has used secondary data to conduct the empirical study with the use of Eviews software.

a) **Population:** In order to understand the effect of COVID-19 on the Indian Stock Market, NIFTY and its sectoral indices have been taken for the study.
b) **Period of study:** The period of the study is divided into pre and post pandemic phases where 1st November, 2019 to 24th March, 2020 represents the pre phase and 25th March, 2020 to 30th September, 2020 represents the post phase.
c) **Type of data:** Secondary data has been used from www.nseindia.com for NIFTY and its sectoral indices.
d) **Sampling technique:** Non-Probability Sampling Technique- Self Selection Sampling. The sample was selected on the basis of the research focus which was to understand the movement of Indian Stock Market in the COVID-19 scenario.
e) **Sample size:** NIFTY 50 and 10 sectoral indices have been taken for the study namely Nifty Auto, Nifty Consumer Durables, Nifty Financial Services, Nifty FMCG, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, Nifty Pharma, and Nifty Realty.

f) Source of data: Official website of NSE India has been used to extract the desired data for the study.

The research methodology involves use of Augmented Dickey Fuller test and regression analysis.

7. RESULTS AND DISCUSSIONS

Summary Statistics

The results of Descriptive Statistics to understand the nature of data for the time period 1st November, 2019 to 30th September, 2020 are presented in Table 1. The study used mean which is used to measure efficiency, standard deviation is used to indicate variations in the data, skewness is used to assess data symmetry, and kurtosis is used to analyze data flatness.

Table 1 Summary Statistics

Variables	Pre COVID-19 Phase				Post COVID-19 Phase			
	Mean	Standard Deviation	Skewness	Kurtosis	Mean	Standard Deviation	Skewness	Kurtosis
LNIR	-0.0042	0.0226	-2.9970	15.0119	0.0028	0.0181	0.4550	4.3311
LNAIR	-0.0058	0.0227	-3.2624	16.7765	0.0040	0.0235	0.3787	3.9101
LNCDIR	-0.0030	0.0196	-2.6786	13.7990	0.0025	0.0176	0.0158	2.8244
LNFSIR	-0.0048	0.0262	-3.5864	18.9027	0.0018	0.0263	-0.0864	1.9886
LNFMCGIR	-0.0030	0.0190	-1.8949	15.5049	0.0017	0.0148	1.5581	7.4599
LNITIR	-0.0027	0.0229	-1.3291	8.5236	0.0040	0.0186	0.1773	2.4688
LNMEDIR	-0.0062	0.0260	-1.4369	3.4959	0.0031	0.0233	-0.2808	0.6900
LNMETIR	-0.0053	0.0291	-1.2272	3.9846	0.0031	0.0227	-0.2323	2.0614
LNOGIR	-0.0046	0.0254	-1.3430	7.9721	0.0033	0.0185	0.9803	3.4457
LNPHIR	-0.0018	0.0197	-1.3603	6.5013	0.0044	0.0187	1.1282	4.8910
LNRIR	-0.0046	0.0248	-2.4180	7.7970	0.0017	0.0242	-0.2611	1.2327

Source: Author's Compilation

The daily average returns are negative for Nifty 50 and all other sectoral indices for the pre COVID-19 period whereas for post COVID-19 phase all the variables show positive daily returns.
Average daily returns of all the variables are negatively skewed in the pre COVID-19 period whereas if we analyze the post COVID-19 period, all the data variables except Nifty Financial Services, Nifty Media, Nifty Metal and Nifty Realty show positive skewness.
The average daily returns are leptokurtic for all the variables in the pre COVID-19 period. The variables in the post COVID-19 scenario are platykurtic except Nifty 50, Nifty Auto, Nifty FMCG, Nifty Oil & Gas, and Nifty Pharma which are leptokurtic in nature.

Augmented Dickey Fuller Test

In order to perform the Regression analysis, it is a prerequisite for the data to be stationary. Table 2 indicates the results of stationarity using the Augmented Dickey-Fuller for the period taken for the study and all the variables have p value less than 0.05 ($p<0.05$). However, Nifty 50, Nifty Auto, Nifty Financial Services, Nifty FMCG, Nifty Metal, Nifty Realty were found stationary at first difference while all other variables were found stationary at level. Hence, the data can be tested for regression.

Table 2 Stationarity Test for Pre COVID-19

ADF Test Results for Pre COVID-19 Phase			
Variables	**t-statistic**	**p value**	**Order of Difference**
LNIR	-13.07	0.00	1
LNAIR	-6.28	0.00	1
LNCDIR	-9.3	0.00	0
LNFSIR	-6.16	0.00	1
LNFMCGIR	-6.89	0.00	1
LNITIR	-2.33	0.02	0
LNMEDIR	-2.06	0.03	0
LNMETIR	-10.67	0.00	1
LNOGIR	-12.7	0.00	0
LNPHIR	-3.23	0.00	0
LNRIR	-10.8	0.00	1

Source: Author's Compilation

Table 3 indicates the result of stationarity using the Augmented Dickey-Fuller for the post COVID-19 period and the variables- Nifty 50, Nifty Auto, Nifty Consumer Durables, Nifty Financial Services, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, Nifty FMCG, Nifty Pharma, and Nifty Realty have p value less than 0.05 ($p<0.05$), thus the variables are stationary at level. Hence, the data can be tested for regression.

Table 3 Stationarity Test for Post COVID-19

ADF Test Results for Post COVID-19 Phase			
Variables	**t-statistic**	**p value**	**Order of Difference**
LNIR	-13.02	0.00	0
LNAIR	-11.8	0.00	0
LNCDIR	-11.45	0.00	0
LNFSIR	-12.00	0.00	0
LNFMCGIR	-11.43	0.00	0
LNITIR	-13.48	0.00	0
LNMEDIR	-9.95	0.00	0
LNMETIR	-12.32	0.00	0
LNOGIR	-12.21	0.00	0
LNPHIR	-9.79	0.00	0
LNRIR	-10.98	0.00	0

Source: Author's Compilation

Regression Analysis

The results demonstrating the effect of COVID-19 are seen in Table 4. The present study did not indicate a significant impact of COVID-19 on Nifty Financial Services Index and Nifty Realty Index. However, a significant impact was noticed in the case of Nifty 50, Nifty Auto, Nifty Consumer Durables, Nifty FMCG, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, and Nifty Pharma. The impact was found to be positive and significant in all of the above listed indices.

Table 4 Regression Analysis

Variables	Coefficient	Standard Error	t statistic	p value
LNIR	0.01	0.00	2.62	**0.01**
LNAIR	0.01	0.00	3.19	**0.00**
LNCDIR	0.01	0.00	2.22	**0.03**
LNFSIR	0.01	0.00	1.88	0.06
LNFMCGIR	0.00	0.00	2.13	**0.03**
LNITIR	0.01	0.00	2.43	**0.02**
LNMEDIR	0.01	0.00	2.87	**0.00**
LNMETIR	0.01	0.00	2.46	**0.01**
LNOGIR	0.01	0.00	2.71	**0.01**
LNPHIR	0.01	0.00	2.47	**0.01**
LNRIR	0.01	0.00	1.93	0.05

Source: Author's Compilation

8. Findings

- Among the sectors taken for the study, the Auto, Financial Services, Media, Metal, and Realty sector were the worst affected sectors due to COVID-19 pandemic.
- Though all the sectoral indices tumbled down in March, 2020 due to increased volatility in the market with the announcement of nationwide lockdown, a few of them have bounced back and have shown levels like never before like FMCG, IT and the Pharma sectors.
- Regression analysis depicts that there exists a significant impact of COVID-19 pandemic on Nifty 50, Nifty Auto, Nifty Consumer Durables, Nifty FMCG, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, and Nifty Pharma.

9. Recommendations and Suggestions

The research suggests that the investors should not panic and change their investing strategies based on the sentiments in the stock market. The investors should make informed decisions of investment in the market based on solid rationale and fundamentals of a company or sector.

10. Conclusion

The impact of COVID-19 has been studied using various statistical tests and it was found that there exists a significant positive impact of COVID-19 pandemic on Nifty 50, Nifty Auto, Nifty Consumer Durables, Nifty FMCG, Nifty IT, Nifty Media, Nifty Metal, Nifty Oil & Gas, and Nifty Pharma. Media and Realty sectors were the worst affected by the pandemic. It is evident that though all indices were affected by the COVID-19 pandemic and the nationwide lockdown announcement in March, 2020 the stock market has been recovering from that phase keeping a positive hope towards the availability of vaccine and a COVID-19 free world. The FMCG, Pharma and IT sector have shown a huge rebound amidst COVID-19 because the pandemic changed the way the world behaved, IT emerged as a requirement as everything went virtual from meetings to classes whereas pharmaceutical sector saw a huge rebound due to increased use of medicines, equipment, sanitizers, masks, immunity boosters etc. The FMCG sector provided the daily essentials to every household without which a common man cannot live hence, the demand for these products went on increasing even when the lockdown was induced. It was observed that the stock market was performing well in the month of Jan'20 until the COVID-19 pandemic hit the country. It started to fall in the end of Mar'20 and it crashed in the month of Apr'20 when the country went into a nationwide lockdown. After unlock happened around the nation and the economic activities picked up slowly stock market indices started picking up. The COVID-19 has resulted into an economic, financial and medical crisis to the country but as the famous expression says "When the going gets tough, the tough gets going" the hope for greater bounce back exists.

11. Limitations of the Study

The present study is bound with certain limitations as the sample duration is short and India's pandemic has been a recent occurrence, a better picture will be possible in the near future regarding the effect of COVID-19. In the near future, the timeframe of the analysis can be improved to have a wider perspective to explore the impact and relationship between COVID-19 and the stock market returns.

12. Scope for Further Research

Further research can be conducted for examining the stock market volatility post COVID-19 using EGARCH, GARCH, etc. The causal relationship between each of the sectoral indices be explored for the detailed analysis. This research will assist the government in making appropriate policies. Various stock market investors will also be helped by the details presented in the current report.

REFERENCES

[1] ALAM, M. N., ALAM, M. S., & CHAVALI, K. (2020). Stock Market Response during COVID-19 Lockdown Period in India: An Event Study. *The Journal of Asian Finance, Economics and Business*, *7*(7), 131–137. https://doi.org/10.13106/jafeb.2020.vol7.no7.131

[2] Das, D. K. K., & Patnaik, S. (2020). THE IMPACT OF COVID 19 IN INDIAN ECONOMY – AN EMPIRICAL STUDY. *International Journal of Electrical Engineering and Technology (IJEET)*, *11*(3), 194–202. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3636058

[3] Express Web Desk. (2020, December 21). A forgettable 2020: How Covid lockdown crippled Indian economy. Retrieved from https://indianexpress.com/article/business/economy/indian-economy-covid-19-lockdown-7113477/

[4] He, Q., Liu, J., Wang, S., & Yu, J. (2020). The Impact of COVID-19 on Stock Markets. *SSRN Electronic Journal*, *8*(3), 275–288. https://doi.org/10.2139/ssrn.3676045

[5] Indian Economy – Post-pandemic Recovery And Outlook | IBEF | IBEF. (n.d.). Retrieved from https://www.ibef.org/blogs/indian-economy-post-pandemic-recovery-and-outlook

[6] Mishra, A. K., Rath, B. N., & Dash, A. K. (2020). Does the Indian Financial Market Nosedive because of the COVID-19 Outbreak, in Comparison to after Demonetisation and the GST? Emerging Markets Finance and Trade, 56(10), 2162–2180. https://doi.org/10.1080/1540496x.2020.1785425

[7] NSE https://www1.nseindia.com/products/content/equities/indices/historical_index_data.htm