

COVID 19: the Impact of Lockdown announcement on Indian Stock Market

Samrat Banerjee

(Assistant professor in commerce, St. Xavier's University, Kolkata)

Sagnik Ghosh

(B.Com Hons. from St. Xavier's University, Kolkata)

Abstract

This empirical research paper studies the Impact of Covid 19 Lockdown on the Indian Stock Market Indices. The paper undertakes Event Study methodology to showcase the short-term effect of the Lockdown on the various Indian Stock Market Indices, mainly SENSEX and NIFTY. The paper follows the hypothesis of how an event can have an impact on the stock market as it takes into account all current political and social situations into its financial information. Through this paper, six Indian Stock Market Indices like BSE SENSEX, NIFTY 50, BSE AUTO, BSE BANKS, BSE HEALTHCARE, NSE AUTO, NIFTY BANK, NSE PHARMA and their returns have been analyzed before and after the imposition of Lockdown. The correlation among these indices then have been calculated to understand the relation between these indices. A period of 50 days has been taken into account to conduct the descriptive statistical research.

Keywords: Lockdown, Abnormal returns, Stock Market

Date of Submission: 08-06-2021

Date of Acceptance: 21-06-2021

I. Introduction

Indian stock market which was introduced as a mean to bring transparency in the equity market, started to become excessively exposed to the global market since post liberalization in the 1900's. Most of the exchange of securities in India happen over NSE and BSE. SEBI played an important role in handling the Indian Stock market in a matured way. The Indian Stock grew rapidly by adhering and undertaking globally accepted procedures. The SENSEX of Bombay Stock Exchange was created in the 1990's which was majorly concentrated to assist the Indian Stock Market to be connected to the global stock markets. This meant both the global investors and domestic investors would shape up the economy of India, thus help in increasing the reserve and growth. At a time when the global investors are looking to invest heavily into the midcap and large cap funds, this COVID-19 comes as a big halt. It has been recorded that since the pandemic outbreak, the S&P 500 indices have a return of -12.2% (Parag Verma and Ankur Dumka). As on the date before the lockdown was announced, the 30-share index ended at 29,915, rising 1,629 points and the 50-share barometer closed 483 points higher at 8,745 (BusinessToday.in) In Europe, the Financial Times Stock Exchange 100 index witnessed a sharp one-day fall since 1987 (BBC News, 2020). In March 2020, the leading stock exchange of UK, FTSE saw a decline of 12%. **"The global stock market has struck out about US\$6 Trillion in one week from 24th to 28th February"**(Arun O. , 2020). Many studies on this pandemic have empirically proved that the shocks from this pandemic can have an inconsequential negative impact on the economic and financial system across globe.

II. Literature Review

Elt on et al (1981) concluded in his study that abnormal stock movements can be recorded if there are unexpected earnings in excess of expectations during the earnings announcement period.

MacKinley (1997) in this empirical study argued that the event study methodology spanning from the 1930's to the late 1960's improved in context of identifying biases

Iqbal and Mallikarjunappa (2007) examined the market response to quarterly salary announcement of 149 organizations listed on the Bombay Stock Exchange for September 2001 through using each parametric and non-parametric test. It is determined that throughout event window, runs exams are full-size at 5% level, which signifies that bizarre returns appear randomly. On the different hand, t-test rejects the existence of peculiar returns on day-by-day basis., which gives a possibility to beat the market and earn ordinary returns. The learn about concludes that Indian inventory market is now not environment friendly in semi-strong form.

Kruger, Nthoesane and Mlonzi (2011) observe that whether or not there are any good-sized ordinary returns round the public announcement of revenue and to set up whether or not the environment friendly capital market speculation applies to the small ALtX market. The learn about centred on all the organizations listed on

the JSE-ALtX market. Methodologies like Capital Asset Pricing Model (CAPM) had been used to calculate the anticipated returns. The find out about concluded that the shareholder's wealth was once eroded throughout the recessionary length in the ALtX market, on the other hand the vulnerable shape of market effectivity affords a probability for entrepreneurs and traders to take advantage of the market for earnings when the market is performing well. **Donadelli et al. (2017)** and **Zouaoui et al. (2011)** documented that they have an effect on of a sickness outbreak on an investor's sentiment is greater outstanding in culturally interdependent countries.

Another associated investigation on the impact of flu epidemic on inventory market evaluation with the aid of (**Dong and Heo 2014**) offers an immediately proof that confined consideration delivered about by using exogenous interruption influences the inventory market members and widely wide-spread investors. In particular, they appeared at the progressions of professional forecast behavior at some point of flu pandemics when investigators are confronting barriers triggered with the aid of interruption of encountering influenza facet consequences with the aid of their relatives, household members, associates, and themselves.

The study is close to the impact on of Covid-19 on Global Stock Market indices (**Mohammed N. Abu-Alfoul, Mohammed Bani Hani, 2020**). Analysis of the effect of Covid 19 on the Global Economy for the time duration of starting of 2020 to March when Covid unfold to most of the different international locations (**Ozili and Arun, 2020**)

Mondal (2020) has fastidiously analysed the bad influence of the lethal pandemic on the Indian inventory market.

Cepoi (2020) used statistical quantile regression learn about to exhibit the asymmetry relationship between the inventory market of exclusive rising economies and the COVID 19 associated news.

III. Objective of the Study

The objective of this study is to empirically analyse the returns of the stock market indices like BSE SENSEX, NIFTY 50, BSE BANKEX, NIFTY BANKS, BSE HEALTHCARE AND NSE PHARMA The paper empirically tries to reevaluate the effect of the pandemic lockdown announcement on these aforementioned indices. The paper tries to examine the selected companies' stocks based on the announcement of the Lockdown by the government of India.

IV. Research Methodology

The data from which we will apply the statistical methodology is secondary data. The data we have collected for the above indices is from Yahoo Finance and InvestingIndia.com. The time period taken into consideration is from 15th November, 2019 to 20th August 2020. Now, in this empirical study we have applied some statistical methods that have been used to observe if there is any noteworthy effect of the Lockdown on the India's Financial Stock Indices.

This study aims to check how the stock market indices of India react to the COVID-19 Pandemic lockdown event, using the standard event study methodology of Warner and Brown (1985). Browner and Warner (1985) in their empirical study applied this methodology which would help us understand the economic impact of the COVID-19 on the stock market indices. Other statistical tools like Standard Deviation and Correlation have been used to find the volatility in the pre-lockdown announcement and post-lockdown announcement period. In order to maintain uniformity of our research, we have collected data of historical prices with regards to NSE and BSE. We have collected secondary data from the time period of 15 November, 2019 to 15 August, 2020.

The data focussed in this research paper are the historical prices(daily) of the BSE and NSE stock indices. The study of this event, the deviation of the stock index to its historical average is measured. This study works on the working of calculation of abnormal returns and the cumulative abnormal returns. The analysis provides positive or negative abnormal returns based on how the market reacts to the announcement, can be both favourably or unfavourably.

1.1.1 Event Date: On the evening of 24th March, 2020, Hon'ble Prime Minister of India announced the nationwide lockdown due to the corona virus for a period of 21 days. After such an announcement, the eyeballs and attention of people across the country were caught. Thus, the event date for this empirical study has been considered as the 25th March, 2020.

1.1.2 Event Window: The event window refers to the time period that has been taken into consideration for analysing the impact of COVID 19 containment protocols on the stock market. For this an event window of 10 days have been considered to see if the stock indexes/market reflect all true information of the economic market or not in the short run. The t day is referred to as the event day that is the 25th March, 2020.

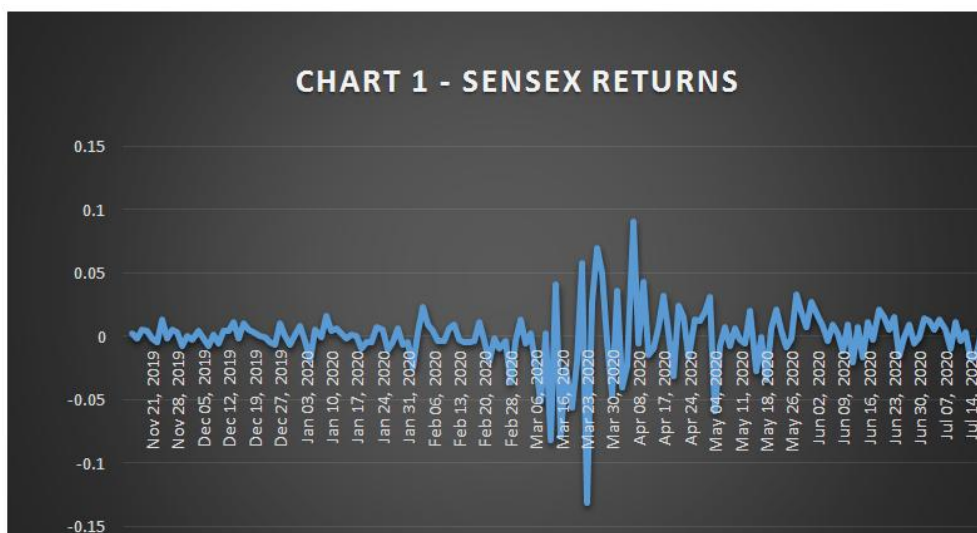
1.1.3 Estimation Window: This window is the time period within which all the historical data compiled of are averaged and results in the expected return. In this research paper, the estimation window is considered for 80 days that is from the (-91) to (-10) days prior to the event day. A total of 80 trading days have been considered to find the average historical returns.

In the next section, we will study and analyse the event study results. We will begin by analysing the Index charts – Abnormal Return and Cumulative Abnormal Returns. We have calculated the abnormal returns and cumulative abnormal returns of stock indices (BSE SENSEX, NIFTY50, NIFTY BANKS, BSE BANKEX, NIFTY PHARMA, BSE HEALTHCARE, BSE AUTO, NIFTY AUTO). The Cumulative Abnormal Returns have been calculated for (5) days and (10) days post the event and (-5) days and (-10) days before the event announcement. Then we move on to descriptive statistics where we divide the event between pre-event and post event time period. In this process we use the statistical tools like Mean, Variance, Standard Deviation, Skewness and Kurtosis on the daily returns of the Indices aforementioned – to check the desirability and the volatility of the indices based on the event of Pandemic Lockdown announcement.

V. DATA FINDINGS AND ANALYSIS

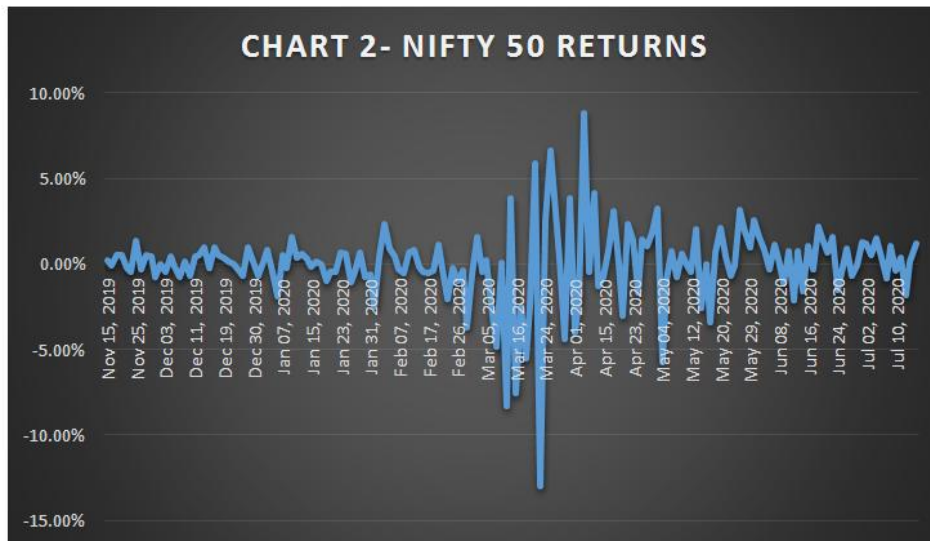
BSE SENSEX INDEX

The volatility of the BSE SENSEX has been measured using statistic mechanisms. The returns of the BSE SENSEX were calculated for a period of 167 days including both pre lockdown and post lockdown announcement. As we can observe from the above Chart 1, the daily returns of the BSE SENSEX index have been recorded for a time period from November 2019 to July, 2020. We can understand that the peak rise in the Index above is lower than the sharp decline in the Index i.e., the fall is almost near 15%.



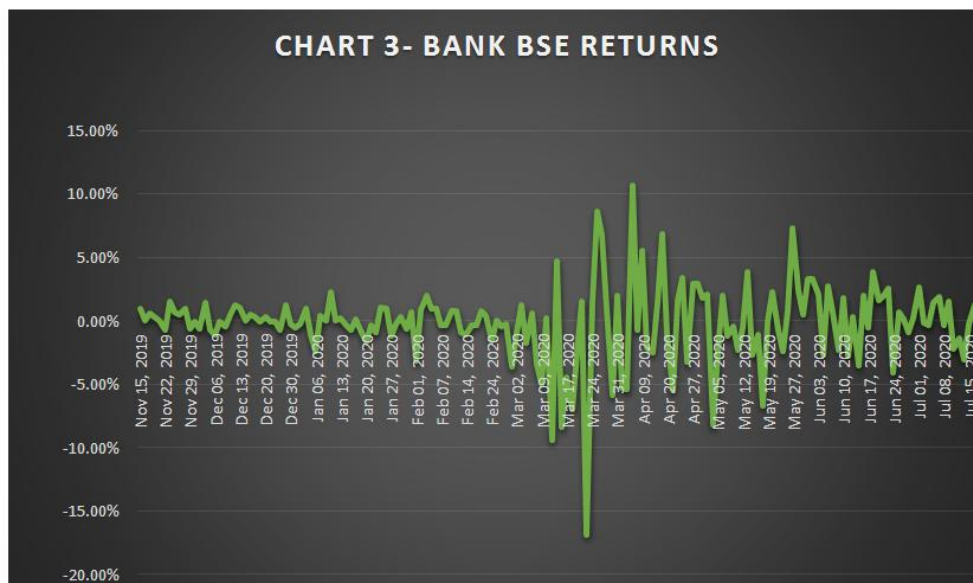
NIFTY 50 INDEX

The Chart 2 below shows the daily return graph of NIFTY 50 returns. This graph represents the change or volatility of returns in the NIFTY 50 stock index from the time period of November, 2019 to July, 2020. In the month, the pandemic lockdown was announced, there was a sharp increase and fall in the return of the stock index, especially around the date of March, 24, 2020. Even in this stock index, we observe that the fall or decline (almost, 15%) is more than the rise in the average return of the index.



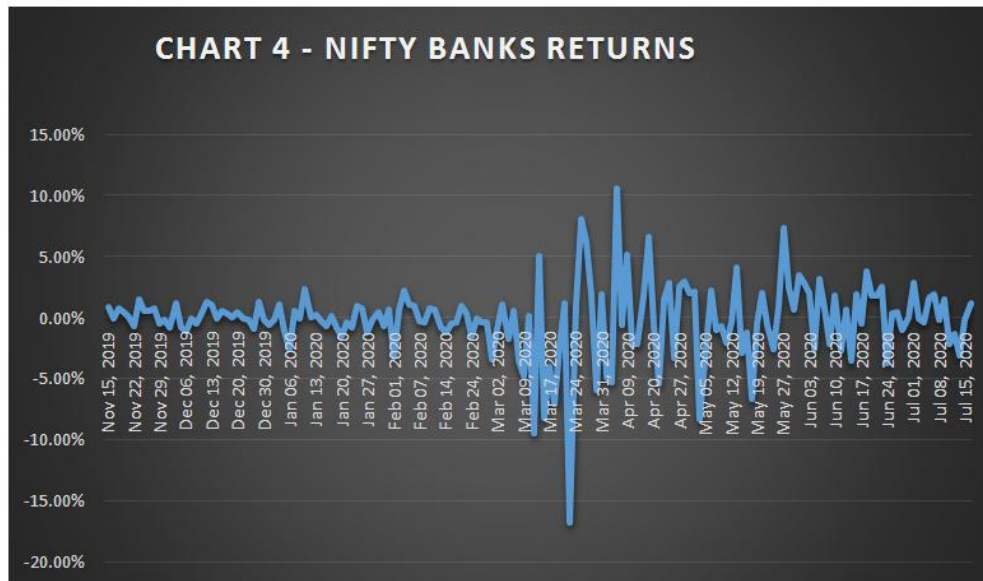
BSE BANK INDEX

The Chart 3 is an indicator of how the Banks listed on the BSE index were recording returns from a time period of November,2019 to July,2020. In this chart, the volatility is in its peak during the announcement of the lockdown. The time period before the year 2020 shows not much volatility however the fall in the BANK BSE returns is steep and in larger percentage.



NIFTY BANKS INDEX

The banks listed on NIFTY 50 are more or less secured and don't have much risk associated to it. However, in the time frame of March15, 2020 to April,01,2020, the returns of this index are largely volatile. The daily returns of this index during this period are fluctuating and shows huge difference in the returns. (as shown in the Chart 4).



The table below reports the ARs and CARs of the stock indices BSE SENSEX, NIFTY 50, BSE BANKEX, NIFTY BANKS, NIFTY AUTO, BSE AUTO, NIFTY PHARMA, BSE HEALTHCARE for the days pre and post announcement of the Pandemic Nationwide Lockdown – containment protocols measures. The CAR (5) days CAR (10) DAYS, CAR (-5) days and CAR (-10) days have been calculated. Of the 8 indices that have been taken into consideration, 5 indices have significant high CAR for the 5 days and 10 days event window.

BSE SENSEX had negative ARs and significant positive CARs for both 5-day and 10-day event window. However, following up to the event, we observe that the CARs of (-5) days and (-10) days have been significant negative returns. For NIFTY50, we observe insignificant Abnormal Returns post the event and significant positive CARs (5) and (10) days of event window. However, NIFTY 50 has a rather more insignificant CARs (-5) and (-10) days pre the event announcement as compared to BSE SENSEX. BSE BANKEX and NIFTY BANKS both have significant and equivalent CARs (5) and (10) days. However, NIFTY BANKS have insignificant negative ARs and BSE BANKEX have recorded significant positive ARs post the announcement of the lockdown. BSE AUTO has recorded negative ARs while it recorded only a minimal CAR in the 5 days event window. However, the CAR of BSE Auto increased exponentially in the 10-day event window. This means in the first few days just after the announcement of the lockdown, people were not desiring to invest heavily in the automobile companies listed in the BSE. However, in the days before the event, automobile industry was undergoing a slump and that reflects well and clear in the CAR (-5) and (-10) days event window. NIFTY Pharma if observed properly, we will notice has significant CAR (10) days event window. It has a positive CAR of 32.14% as compared to -13.72% CAR of (-10) days event window. The cumulative abnormal returns of BSE Healthcare in the 5 days and 10 days event window are 5.89% and 27.29% respectively. In the (-5) and (-10) days event window, the CAR of BSE Healthcare was a negative -5.94% and -16.04%.

Overall, if we observe the chart below, we realise that the lockdown protocols have led to a positive impact on the economic activity of the country. The stock indexes have recorded a positive CAR in the 5 days and 10 days event window.

The pharma and healthcare industries have in particular recorded higher CAR in the 10 days event window, which reflects that the lockdown protocols reassured the investors to be investing more in the healthcare and pharma industries. Even though the stock indices recorded a positive CAR in the 5-day event, we observe that the CAR of BSE AUTO and NIFTY AUTO was an insignificant percentage, largely because of the reason that lockdown meant, less usage of private transportation. Investors felt that auto industries will be making losses, which resulted in the prices or returns of those industries.

1 : Abnormal Returns¹ and Cumulative Abnormal Returns of 8 Stock Indices of India following the

STOCK INDEX	AR%	CAR5%	AR%	CAR10%	AR%	CAR (-5)%	AR%	CAR (-10)%
BSE SENSEX	-3.94%	7.26%	-1.37%	16.69%	-5.45%	-4.50%	11.76%	-18.29%
NIFTY 50	0.39%	7.06%	0.39%	16.87%	0.39%	-5.11%	12.17%	-18.89%
BSE BANKEX	0.39%	8.02%	0.39%	16.76%	0.39%	-13.87%	0.39%	-30.37%
NIFTY BANKS	-0.70%	8.12%	-0.70%	16.58%	-0.70%	-14.88%	23.00%	-30.73%
NIFTY AUTO	-0.70%	1.17%	-0.70%	18.89%	-0.70%	-13.05%	-0.70%	-24.55%
BSE AUTO	-1.29%	0.81%	-2.04%	18.53%	-4.74%	-12.20%	13.01%	-23.67%
NIFTY PHARMA	-2.10%	6.14%	2.76%	32.14%	-3.93%	-3.72%	9.86%	-13.72%
BSE HEALTHCARE	-1.52%	5.89%	1.44%	27.29%	-4.71%	-5.94%	11.83%	-16.04%

The table 2 below is a representation of the Abnormal Returns recorded in the event window

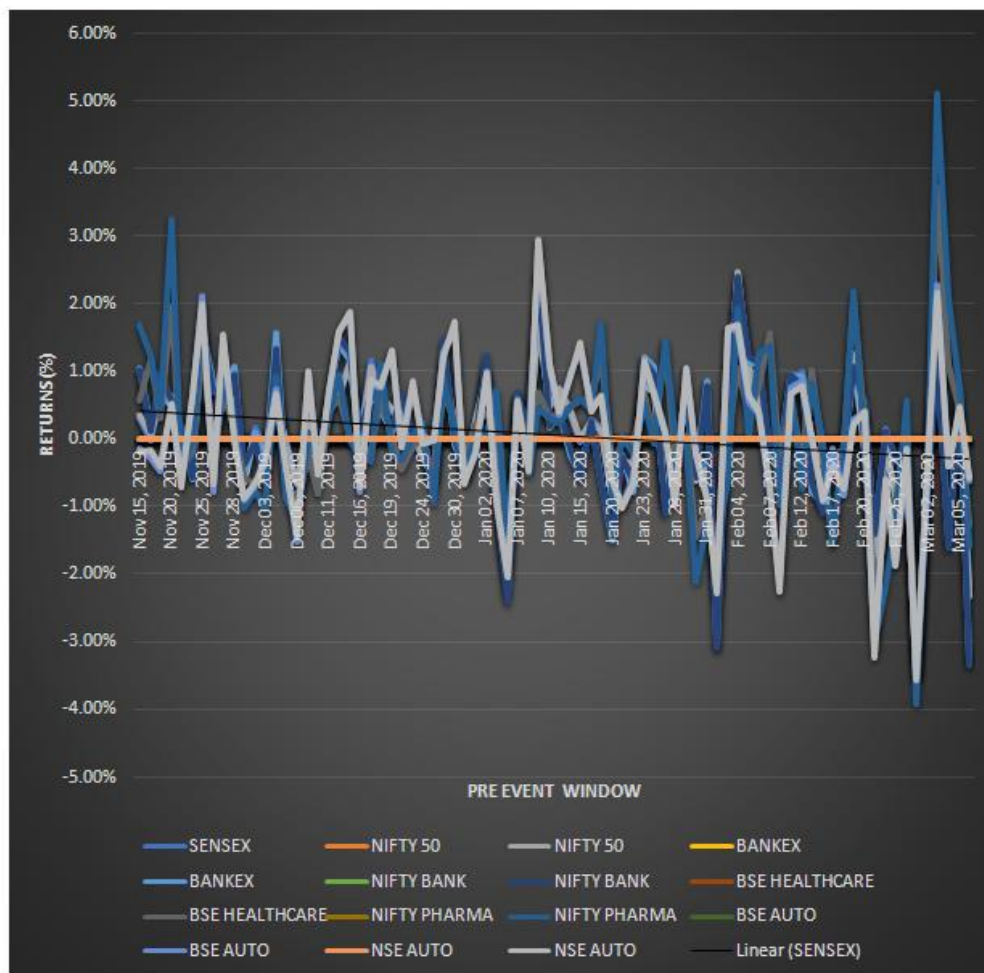


Figure 1 - Stacked Line Graph of 8 stock indices in the pre-event period

¹ Source: Own study

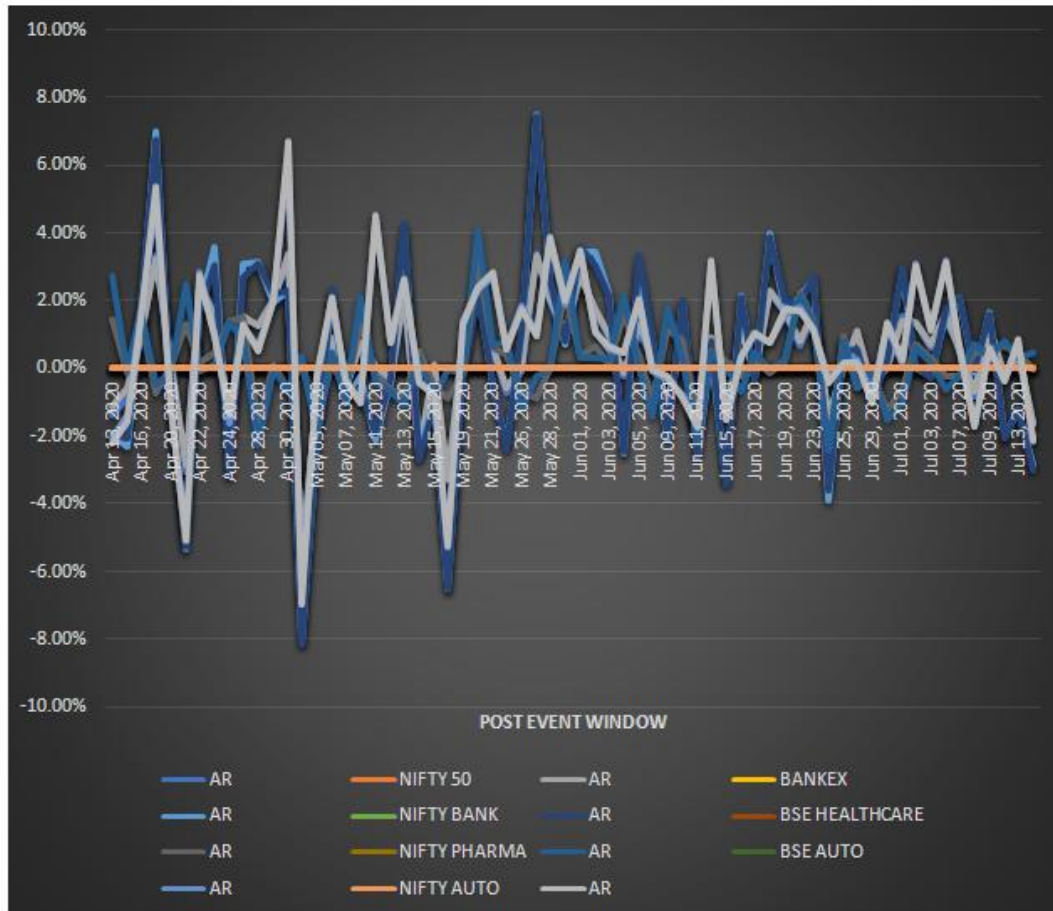


Figure 2- Stacked Line Graph of the 8 stock indices in the post event window

2 - Descriptive Statistics in the Pre-Event Period

	SENSEX	NIFTY 50	BANKEK	NIFTY BANKS	BSE HEALTHCARE	NIFTY PHARMA	BSE AUTO	NSE AUTO
MEAN	0.07%	0.06%	0.05%	0.05%	0.18%	0.18%	0.02%	0.03%
VARIANCE	0.000540854	0.00051831	0.000918412	0.000918412	0.000312191	0.000394365	0.000651211	0.000678426
STD DEVIATION	0.000270427	0.000259155	0.000459206	0.000459206	0.000156095	0.000197182	0.000325606	0.000339213
KURTOSIS	1.034592124	0.957369363	0.790086434	0.790086434	0.799484475	2.110985389	0.101371878	0.096803377
SKEWNESS	0.274097405	0.282585639	0.107035084	0.107035084	0.138041526	0.871596638	0.195723079	0.182469045

In the table above, the descriptive statistical tool have been used with regards to the pre-lockdown announcement period, ranging from November 15th,2020 to January 24th, 2020. The period is a total of 50 days. We observe that the average return of SENSEX stock index is around 7%, however the variance is 0.000540854 which means the numbers in the data set are more or less identical and the spread is low. This results in smaller standard deviation, that shows us that the price of the stock in general hasn't moved much further away from the mean return of the indices. We also see that the daily returns are negatively skewed meaning that if any negative shock takes places across any of the indexes, the investors would expect to receive negative yield thus, leading to increase in disinvestment in the stock market. A positive kurtosis value can be observed that means, the distribution is peaked and possesses thick tails. This means that the values are located more towards the tails of the distribution rather than around the mean. But as we observe, even though the kurtosis are highly positive, the

standard deviation are equally low, that means it's a positive indicator. BSE AUTO AND NSE AUTO however have shown negative kurtosis, which means that they have flat distribution and thin tails. SENSEX and NIFTY 50 have negative skewness. The Kurtosis values are huge and the Skewness values are positive, that means there is not a high function of risk in the market. Kurtosis values are large which means tails are smaller and the data in the data set are not on the extreme sides. However, if we observe

3 - Descriptive Statistics in the Post Event Period

	SENSEX	NIFTY 50	BANKEX	NIFTY BANKS	BSE HEALTHCARE	NIFTY PHARMA	BSE AUTO	NSE AUTO
MEAN	0.25%	0.31%	0.22%	0.22%	0.20%	0.21%	0.48%	0.50%
VARIANCE	0.00018102	0.00016996	0.0005867	0.0005867	9.7153E-05	0.000144703	0.000294216	0.000304346
STD DEVIATION	9.0509E-05	8.49799E-05	0.00029335	0.00029335	4.85765E-05	7.23514E-05	0.000147108	0.000152173
KURTOSIS	0.35128553	0.55380117	0.958568025	0.958568025	1.427737072	1.872886333	1.851808972	1.692046435
SKEWNESS	0.4268399	0.52161157	0.07284107	0.072841071	0.379986213	0.75266441	0.529261124	0.530399481

In the table 3, as shown above, we see post the lock announcement, in a time period of 50 days there are a lot of changes as compared to table 3. We have seen a rise in the mean/average returns of these stock indices, approximately by 30-40%. This shows that the investors have higher expectations and the negative price fluctuations have minimalized. In the above table, we have considered the time period of 50 days from the event date of 25th March,2020, that is to check how the indices have performed post the announcement of the lockdown. The table reflects the standard deviation to be larger than the standard deviation noted in the table 2. Standard deviation is the prime measure of risk, this shows that even though average return of the stock indices have decreased, but the standard deviation values haven't increased exponentially. This means the stock investors do not have huge fear of investment.

4 - Correlation Matrix

	SENSEX	NIFTY50	BSE BANKEX	NIFTY BANKS	BSE AUTO	NSE AUTO	BSE HEALTH	NIFTY PHARMA
SENSEX	1							
NIFTY50	0.995901912	1						
BSE BANKEX	0.940784638	0.938297618	1					
NIFTY BANKS	0.940784638	0.938459199	0.938297618	1				
BSE AUTO	0.877005188	0.881605247	0.822835008	0.822835008	1			
NSE AUTO	0.87588886	0.882916708	0.825714039	0.825714039	0.999133449	1		
BSE HEALTH	0.701495702	0.717664146	0.577196023	0.577196023	0.640935614	0.635836693	1	
NIFTY PHARMA	0.632748891	0.6503135	0.507247732	0.507247732	0.57078093	0.565584951	0.975257634	1

Correlation is a statistical methodology which helps in analyzing that if two of variable are related/ dependent on each other or not. The result of correlation is called correlation coefficient which is indicated as "r". The value lies between +1 and -1. The relation of the pair of variables depends on the correlation coefficient. If r=0, then we say that the pair of variables are not related to each other. If r is positive, we say that the set of 2 variables are directly related to each other meaning if in one variable set gets a positive shock in it's data set the other variable set would also showcase a positive shock too. If r is negative, we say that the pair of variables are inversely related to each other meaning if one data set observes a positive shock, the other data set would observe a negative shock.

In the above correlation matrix, we study the correlation between returns of 8 stock indices of India, namely the BSE SENSEX, NIFTY50, BSE BANKEX, NIFTY BANKS, BSE AUTO, NSE AUTO, BSE HEALTHCARE and NIFTY PHARMA. We test if any of the one stock index undergoes a negative or positive shock, the other stock index/indices replicate any similar shock or not by any magnitude.

From table 4, we can observe that the SENSEX being the independent variable and the NIFTY 50, BSE Bankex and NIFTY Banks being the dependent variable, the correlation is 0.99590, 0.94078 and 0.94078 respectively. In fact, the correlation between SENSEX and NIFTY BANKS AND BANKEX are the same. This shows that there is multi-collinearity and the values are less dispersed from each other. This is a positive sign as it shows all the indices are growing towards the same direction. However, we can notice that NSE AUTO and BSE AUTO maintains not so close relationship as it maintains a moderate strong relationship.

VI. Conclusions And Recommendations

This study conducted has brought forth many distinct conclusions regarding the short-term impact of the announcement of the Lockdown Protocols by the Government of India on the stock indices of India. This paper very strategically has taken basic statistical methodologies which are Event Study Methodology and Correlation Test to showcase how in the short run (a period of not more than 50 days) can the announcement of an event have an impact on the stock indices. The information is reflected in the prices of the stock market, which is the main hypothesis of this research study. We observed that the CARs of the stock indices prior to the announcement of the lockdown was highly negative, but post the lockdown protocols, the CARs became positive. This means that the protocol brought a positive shock to the market and relieved the panic.

Correlation Analysis gave us an idea of how the stock indices are connected to each other. The crisis of COVID 19 has brought a close connection between the indices. Descriptive statistical tools have been used too to understand and Analyse the stock market indices. The average returns of the stock indices have decreased post the lock down period, however, the kurtosis of the indices are exceptionally large, indicating that the returns follow a leptokurtic distribution, especially in the post lockdown period. There is further scope of research as we are coming across more waves of this pandemic.

References

- [1]. 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* (No. w26945). National Bureau of Economic Research.
- [2]. Ball, R., & Brown, P. (2014). Ball and Brown (1968): A Retrospective. *The Accounting Review*, 89(1), 1-26. Retrieved May 13, 2021, from <http://www.jstor.org/stable/24468510>
- [3]. Bhowmik, D. (2013). Stock market volatility: An evaluation. *International Journal of Scientific and Research Publications*, 3(10), 1-17.
- [4]. Boone, L., Haugh, D., Pain, N., &Salins, V. (2020). Tackling the fallout from COVID-19. *Economics in the Time of COVID-19*, 37.
- [5]. Bora, D., &Basistha, D. (2020). The outbreak of COVID- 19 pandemic and its impact on stock market volatility: Evidence from a worst- affected economy. *Journal of Public Affairs*, e2623.
- [6]. Cha, H., & Lee, B. (2001). The Market Demand Curve for Common Stocks: Evidence from Equity Mutual Fund Flows. *The Journal of Financial and Quantitative Analysis*, 36(2), 195-220. doi:10.2307/2676271
- [7]. Chaudhary, R., Bakhshi, P., & Gupta, H. (2020). The performance of the Indian stock market during COVID-19. *Investment Management & Financial Innovations*, 17(3),
- [8]. Chaudhary, R., Bakhshi, P., & Gupta, H. (2020). The performance of the Indian stock market during COVID-19. *Investment Management & Financial Innovations*, 17(3), 133.
- [9]. Cont, R. (2007). Volatility clustering in financial markets: empirical facts and agent-based models. In *Long memory in economics* (pp. 289-309). Springer, Berlin, Heidelberg.
- [10]. Fama, E. (1965). The Behavior of Stock-Market Prices. *The Journal of Business*, 38(1), 34-105. Retrieved May 13, 2021, from <http://www.jstor.org/stable/2350752>
- [11]. Firth, M. (1975). The information content of large investment holdings. *The Journal of Finance*, 30(5), 1265-1281.
- [12]. Georgieva K, (2020) IMF Managing Director Kristalina Georgieva's Statement Following a G20 Ministerial Call on the Coronavirus Emergency.
- [13]. Grier, P. C., & Albin, P. S. (1973). Nonrandom price changes in association with trading in large blocks. *The Journal of Business*, 46(3), 425-433.
- [14]. Ikram, S. (2014). *Market efficiency Test of Indian capital market* (Doctoral dissertation, Aligarh Muslim University).
- [15]. Jonsson, R., &Radeschnig, J. (2014). From Market Efficiency to Event Study Methodology: An Event Study of Earnings Surprises on Nasdaq OMX Stockholm.
- [16]. Keim, D. B., &Madhavan, A. (1996). The upstairs market for large-block transactions: Analysis and measurement of price effects. *The Review of Financial Studies*, 9(1), 1-36.
- [17]. Khatatbeh, I. N., Hani, M. B., & Abu-Alfoul, M. N. (2020). The Impact of COVID-19 Pandemic on Global Stock Markets: An Event Study. *International Journal of Economics & Business Administration (IJEBA)*, 8(4), 505-514.
- [18]. Khatatbeh, I. N., Hani, M. B., & Abu-Alfoul, M. N. (2020). The Impact of COVID-19 Pandemic on Global Stock Markets: An Event Study. *International Journal of Economics & Business Administration (IJEBA)*, 8(4), 505-514.
- [19]. Kraus, A., & Stoll, H. R. (1972). Price impacts of block trading on the New York Stock Exchange. *The Journal of Finance*, 27(3), 569-588.
- [20]. Lanfear, M., Lioui, A., & Siebert, M. (2017). Flight to Gold: Extreme Weather Events and Stock Returns. *Available at SSRN 2894147*.
- [21]. Mukherjee, D. (2007). Comparative analysis of Indian stock market with international markets. *Great Lakes Herald*, 1(1), 39-71.
- [22]. O'Callaghan, T. (2016). *Reputation risk and globalisation: exploring the idea of a self-regulating corporation*. Edward Elgar Publishing.
- [23]. Osagie, M., Maijamaa, B., & John, D. O. (2020). On the effects of Covid-19 outbreak on the Nigerian stock exchange performance: Evidence from GARCH Models.
- [24]. Ozili P, Arun T, (2020) Spillover of COVID-19: impact on the Global economy. MPRA paper no 99850.

- [25]. Sarkar, P., Debnath, N., &Reang, D. (2021). Coupled human-environment system amid COVID-19 crisis: A conceptual model to understand the nexus. *Science of the Total Environment*, 753, 141757.
- [26]. Seetharam, Y. (2016). *The dynamics of market efficiency: testing the adaptive market hypothesis in South Africa* (Doctoral dissertation, University of the Witwatersrand, Faculty of Commerce, Law and Management, School of Economic & Business Sciences).
- [27]. Yadav, Y. (2017). Impact of Mergers and Acquisitions on the Performance of the Indian Bank's Share Price: An Event Study Approach. *Australian Journal of Management*, Forthcoming.

References

- [28]. Dong, H. a. (2014). *Effect of COVID-19 Pandemic on Global Stock Market Values*. Retrieved from (ECONOMICA: <https://core.ac.uk/download/pdf/322522307.pdf>
- [29]. Geogieva, K. (2020, April 09). *International Monetary Fund*. Retrieved from International Monetary Fund Website: <https://www.imf.org/en/News/Articles/2020/04/07/sp040920-SMs2020-Curtain-Raiser>
- [30]. www.investing.com
- [31]. www.yahoofinance.com
- [32]. <https://statisticsbyjim.com/basics/correlations/>

Samrat Banerjee. "COVID 19: the Impact of Lockdown announcement on Indian Stock Market." *IOSR Journal of Business and Management (IOSR-JBM)*, 23(06), 2021, pp. 27-36.