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The Impact of the Covid-19 Outbreak on the Indian Stock Market

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ABSTRACT

Theonset of the COVID-19 pandemic and lockdown bulletins with the aid of governments have created uncertainty in enterprise operations globally. For the first time, a fitness shock has impacted the inventory markets forcefully. India, one of the fundamental rising markets, has witnessed a large fall of around 40% in its essential inventory indices' value. Therefore, we examined the momentary have an impact on of the pandemic on the Indian inventory market's important index (NIFTY50) and its constituent sectors. For our analysis, we used three special fashions (constant return model, market model, and market-adjusted model) of match learn about methodology. Our consequences are heterogeneous and generally rely on the sectors. All the sectors have been impacted temporarily, but the monetary zone confronted the worst. Sectors like pharma, purchaser goods, and IT had high-quality or constrained impacts. We talk about the potential explanations for the same. These consequences may also be beneficial for buyers in safeguarding fairness portfolios from unexpected shocks and making higher funding selections to keep away from large, surprising losses.

Keywords: NIFTY50, COVID-19, sustainable, India, risk; funding

INTRODUCTION

The monetary device performs an vital position in the world economic system (Maiti et al. 2021). Systemic activities purpose large economic instability that disrupts the functioning of the financial system, which in flip creates shocks in the actual economic system (Duca and Peltonen 2013; Thanh et al. 2020). Systemic shocks or contagious idiosyncratic shocks lead to systemic crises, as a result severely impairing the economic device and destabilising the financial system (De Bandt and Hartmann 2000). Therefore, academia and policymakers intently observe the stability and soundness of an economy's economic system. An necessary constituent of the Indian economic device is the Indian inventory market. India is one of the rising economies. It follows an open financial system coverage and is one of the biggest recipients of FDI (foreign direct investment) in main sectors. Over the past two decades, the Indian inventory market has proven dazzling growth, mainly in phrases of turnover rate, market capitalisation, and the wide variety of listed companies. Having stated that, globalisation additionally makes the us of a inclined to a variety of world dangers (Maiti 2020). For example, the latest trends in asset markets rely on global capital flows. Therefore, any reversal of these flows creates an destructive have an impact on on future capital elevating and asset valuations. According to the Global Risk Report posted with the aid of the World Economic Forum (2018), policymakers and entrepreneurs, specially in the rising economies, are not nicely organized to face serious monetary or economic turmoil. Therefore, analysing the impact of foremost activities on the rising economies like India is very important. The impact of any such dangers is without delay mirrored in inventory markets.

Stock markets are distinctly unstable and frequently unfold the dangers brought about through systemic events such as asset bubbles, macro imbalances, terrible externalities, correlated exposures, information disruptions and contagions, etc., to the current financial and monetary markets using quite a number channels. In general, buyers in the inventory market are viewed as negative Bayesian decision-makers and evidence indicates that they overreact to latest information. Investor optimism leads to a discount in salary volatility, whereas investor pessimism causes an enlarge in salary volatility. As a result, inventory expenditures deviate from their underlying quintessential cost (De Bandt and Thaler 1987; Lee et al. 2002). Having said that, the choices on the economic markets are dominated by using "collective belief." Investors pay attention to the way a collective opinion is fashioned and react as a result (Orleéan 2004, 2008). This effects in herding and inventory fees deviating from their underlying fundamental value. Therefore, the investor overreaction speculation (IOH) challenges the effectivity of markets. Studying the impact of a variety of unanticipated occasions on the inventory rate is important. One such unanticipated match that these days crashed the world economic system and created adverse impact in the international inventory market is the COVID-19 pandemic. COVID-19, or coronavirus sickness 2019, precipitated by way of the SARS-CoV-2 virus, used to be first detected in Wuhan, China. Consequently, severa instances had been traced around the world and the World Health Organization declared it a world pandemic on eleven March 2020. Unlike in developed economies, rising markets such as India with (i) fairly bad public health infrastructure, (ii) a distressed and stressed banking quarter and bond markets, and (iii) slowdown in financial boom face intense difficulties whilst the consequences of the pandemic unfold. On 24 March 2020, a nationwide lockdown used to be introduced in India to limit the damaging consequences. Such social distancing measures and restrictions on transportation negatively impacted firms' productiveness by means of growing operation costs, decreasing revenue, and money glide challenges. The ordinary consumption sample used to be affected due to the developing panic amongst consumers. All these led to market abnormality (Bora and Basistha 2021). NIFTY hastily dropped 40% of its market price in contrast to its fee at the start of the year. The unexpected fall in the indices affected the character portfolios of investors.

However, energetic retail traders determined this as an probability to time the market, invest, and earn good sized returns. A whole of 10 million new demat debts have been opened in 2020 owing to the low value of trades and an industry-wide shift to on line trading1 Reports show that the MSCI World Index, which consists of shares from 23 developed countries and 24 rising markets, misplaced 10.7% of its fee between 23 January and 6 March

2020. The outbreak of COVID-19 affected economies globally and India used to be one of them. The pandemic created an remarkable international shock, growing the economic market volatility. The international financial system crashed, unemployment increased, and oil costs fell at some stage in the initial stage however expanded notably at the later segment (Alam et al. 2020). Since the Indian stock market is nicely built-in and responds to international situations, elucidating the impact of COVID-19 on the Indian inventory market is important. One such approach to measure this impact is the use of match find out about methodology, delivered through Fama et al. (1969).

Event learn about methodology is included into investments and accounting to assess the volatility of inventory costs and to test whether or not an match can have an effect on the performance of quite a number shares and produce ordinary returns. Generally, match evaluation is used (1) to check whether or not any new data is correctly included via the markets and (2) to take a look at the impact of an match on the safety holder's wealth, assuming that the market environment friendly speculation holds true, at least with admire to the statistics available to the public (Binder 1998).

The vital traits of match evaluation is that it does not take into account the problems of stationarity and seasonality in a time series, whereas autoregressive transferring common (ARMA) fashions are solely utilized to stationary time series and are now not relevant at once on a seasonal time series. This technique additionally examines whether the correlation between the variables is nice or negative. Hence, match study analysis is broadly used in finance literature. Numerous research have examined the effect of emergencies on inventory charge the use of match learn about analysis, such as the influence of terrorist attacks (Arin et al. 2008; Drakos 2010), political occasions (Beaulieu et al. 2006; Bash and Alsaifi 2019), nuclear failures (Kawashima and Takeda 2012), the extreme acute respiratory syndrome (SARS) pandemic sickness outbreak (Chen et al. 2007), epidemics (Chen et al. 2007; Ichev and Marinˇc 2018; Salisu and Vo 2020), etc. The goal of this learn about is to study the have an impact on of the international pandemic in the Indian inventory market.

The National Stock Exchange (NSE), one of the two foremost stock exchanges in India, is globally the 0.33 biggest inventory trade in terms of the variety of equity trades and has the world's biggest derivatives by means of volume. Therefore, this paper studies the impact of the COVID-19 outbreak by means of using tournament find out about methodology on the NIFTY50 index and its constituents. The NIFTY50 index is the benchmark index of the NSE. One of the salient facets of the paper is analyzing the impact of the pandemic on the major constituent sectors of the NIFTY50 index—financial services, client goods, IT, and pharma. The relaxation of this paper is organised as follows: Section two temporarily evaluations the existing literature about the influence of the COVID-19 pandemic on inventory returns. Section three describes the records and methodology. Section four reviews and discusses the empirical findings, and Section 5 concludes the study.

Methodology

The effect of an event is immediately realized in the stock price, unlike other productivity-related measures that require months of observation. An event's impact is assessed by measuring abnormal returns. Event study methodology helps to check whether such unanticipated events caused abnormal returns. An abnormal return is defined as the difference between the actual ex-post security's return over the event window and the expected normal return (Mackinlay 1997). Three models—the constant mean return model, the market adjusted model, and the market model were used to measure the associated abnormal returns.

Step 1: Define event window and estimation window

The initial step in an event analysis is to define the event of interest and the event window. The Government of India imposed a nationwide lockdown on the evening of 24 March 2020.Since the impact of that announcement on the stock market is realised the next day, 25 March 2020 was the event of interest. The event window is the time period during which the security prices are impacted by a particular event. The event window consists of two components—the anticipation window and the adjustment window.

The day of impact or the event day is set as day 0. The 15 days prior to the event are called the anticipation window and the 15 days after the event constitute the adjustment window. This study deviated from the usual practice of selecting a 10-day anticipation and adjustment window. Since the virus is throwing surprises daily and is still in the stage of being discovered around the globe, a 15-day event window helps capture investor behaviour in a prominent manner. The next step was to define the estimation window. The estimation window is a pre-decided time frame before the occurrence of an event. The estimation period is day −135, −16, i.e., it ends 15 days prior to the event day and covers a period of 120 trading days.

Unlike a short event window (at most 1 month prior and 1 month after), a long event window (i) decreases the power of the test statistics, (ii) leads to confounding effects, and (iii) results in false conclusions (McWilliams and Siegel 1997). Since event analysis depends on forecasting, the results' accuracy decreases over time. The probability of any other event influencing the stock price and creating noise is relatively higher in long periods.Therefore, a short event window was considered for the analysis. Figure 2 shows the timeline of the event window considered in our analysis. In this work, we considered an event window of 15 days prior and 15 days after to capture a better picture of the COVID-19 pandemic-related impact, as this was not a single-day event. Instead, the event was spread over days as the COVID-19 numbers increased every day. Therefore, to capture a better picture, we increased the size of the event window by 5 more days (usually 10 days before and after the window are considered for a single-day event).

Step 2: Calculate abnormal returns

The reaction of the stock market to the arrival of new information is reflected by abnormal returns (McWilliams and Siegel 1997). It is assumed that the asset returns are iid (independently and identically distributed) through time and jointly multivariate normal.

Before conducting an event study, it is essential to determine the event window, event date, estima- tion period, and event of interest. The event stud- ied in this paper is the impact of the COVID-19 outbreak in India on the Indian stock market. A 250-day estimation window is considered, and the period starts from 260 days before the event day to 10 days before the event day. An event window of 21 days is used for the study. The event window comprises an event day, twenty days a pre-event day, and twenty days post-event day.

RESULTS AND DISCUSSION

Table 1 shows the impact of COVID-19 on theNSE-listed firms in India. The table shows thatfirms witnessed a negative impact of COVID-19with a negative AAR of 1.67%, 2.86%, and 3.26%in event day, one-day, three-day events windows, respectively. The results are significant in para-metric tests in all event windows. However, afterfive-day event windows, the share prices started to recover. The ten-day event window shows a negative CAAR of 6% approximately, and the results are significant in parametric tests. The results documented daily negative returns in terms of CAAR.

The highly negatively affected sectors are financial services, metal, plastic, banking, automobile, electrical goods, transportation services, agriculture, and construction sectors. These sectors witnessed the highest negative impact of COVID-19 with a negative CAAR of more than 10% post-event windows. The prime sector impacted by COVID-19 restrictions during the lockdown period was transportation services. Therefore, the shares of transportation services companies show a negative return in every event window. The share prices of the metal and mining sectors continued to decline as them et al and mining sector is heavily dependent on transportation and logistics sec.

The financial services sector's share pricesdrop significantly because of high liquidity pres-sure and the Franklin Templeton fiasco, whichtriggered the panic selling in debt instruments. Atthe same time, construction sectors that require significant labor resources were impacted because of the shortage of labor force as labor migrated to their homeland. Hence, share prices declined in the sectors mentioned above. The moderately negatively affected sectors are textile, chemical, health care services, tourism, paper, computer and related accessories, electricity, Fast Moving Consumer Goods (FMCG) sectors.

Table 1 - Day-wise AAR and CAAR for the NSE-listed firms to show the impact of the COVID-19 outbreak

Event window	N	AAR	*t*-stat	*P*-value	CAAR	*t*-stat	*P*-value
–10	1335	–1.53	–16.62	0.00	–1.53	–5.01	0.00
–9	1335	0.10	1.03	0.23	–1.44	–4.93	0.00
–8	1335	–0.75	–8.18	0.00	–2.19	–7.92	0.00
–7	1335	–0.52	–5.62	0.00	–2.71	–10.39	0.00
–6	1335	–0.20	–2.22	0.03	–2.91	–11.95	0.00
–5	1335	–1.55	–16.85	0.00	–4.46	–19.78	0.00
–4	1335	–2.43	–26.41	0.00	–6.90	–33.48	0.00
–3	1335	1.79	19.47	0.00	–5.10	–27.70	0.00
–2	1335	0.50	5.45	0.00	–4.60	–28.84	0.00
–1	1335	–0.19	–2.08	0.05	–4.79	–36.79	0.00
0	1335	–1.67	–18.16	0.00	–6.47	–70.18	0.00
1	1335	–2.86	–31.04	0.00	–9.33	–71.57	0.00
2	1335	1.42	15.39	0.00	–7.91	–49.55	0.00
3	1335	–3.26	–35.34	0.00	–11.16	–60.58	0.00
4	1335	–3.92	–42.49	0.00	–15.08	–73.19	0.00
5	1335	0.12	1.28	0.17	–14.96	–66.29	0.00
6	1335	0.40	4.31	0.00	–14.56	–59.74	0.00
7	1335	2.59	28.10	0.00	–11.98	–45.95	0.00
8	1335	–0.35	–3.75	0.00	–12.32	–44.57	0.00
9	1335	3.97	43.09	0.00	–8.35	–28.66	0.00
10	1335	2.19	23.78	0.00	–6.16	–20.15	0.00

Figure 1. Day-wise AAR and CAAR for the NSE-listed firms to show the impactoftheCOVID-19 outbreak

Table 2. CAAR for the textile, media, financial services, health care services, and drug & pharma sectors to show the impact of the COVID-19 out break in different event windows

Event window	Textile			Media			Financialservices		
	N	CAAR	*t*-stats	N	CAAR	*t*-stats	N	CAA R	*t*-stats
(–5,0)	64	–1.57	–1.54	22	–4.95	–2.70	128	–6.21	–8.07
(–1,0)	64	–0.73	–1.23	22	–2.88	–2.72	128	–3.48	–7.83
(–1,1)	64	–4.02	–5.58	22	–3.81	–2.94	128	–7.14	–13.12
(0,1)	64	–3.69	–6.27	22	–1.55	–1.46	128	–5.80	–13.06
(0,5)	64	–9.45	–9.28	22	–4.59	–2.50	128	–12.21	–15.86

Event window	Healthcareservices			DrugandPharma		
	N	CAAR	*t*-stats	N	CAAR	*t*-stats
(–5,0)	11	–10.34	–4.96	65	–1.96	–1.76
(–1,0)	11	–5.93	–4.93	65	–1.29	–2.01
(–1,1)	11	–7.20	–4.88	65	–2.23	–2.85
(0,1)	11	–4.33	–3.60	65	–1.31	–2.04
(0,5)	11	–9.14	–4.39	65	–3.02	–2.73

Unlike the US, the inventory markets in India reacted even earlier than the proper outbreak of COVID-19 at its height in India owing to the understanding from the ride of other countries (Verma et al. 2021). Therefore, this paper analyses the preliminary stage of the outbreak. The common odd returns for 50 shares constituting the NIFTY50 index had been calculated using the three exclusive models—the steady return model, the market mannequin and the market adjusted model. With a 5% importance level, the t-test used to be employed to take a look at the significance. AAR was once calculated for 30 days in the match window and is tabulated in Tables 1 and two Table 1 represents the outcomes of the steady return model. It well-known shows that, on the day of the event, i.e., day 0, there was once a big bad suggest strange return of 12.8%. The median AAR on the day of the match was once −12.9%. Two days earlier than and after the event, the AAR considerably differed from zero Table two represents the outcomes of the market mannequin and market adjusted model. It indicates that on the tournament day, the AARs of each fashions have been no longer statistically significant. The null speculation cannot be rejected and the peculiar return on the tournament day was once no longer statistically significant. However, a significant terrible peculiar return two days earlier than and after the match was once additionally recorded.

The unusual return in every zone was once analysed to elucidate the presence of positive abnormal returns on the tournament day. From Tables 1 and 2, we determined that some days did document giant AARs beforeand after the event. Firms with decrease flexibility and excessive running leverage confronted adverse impacts. Since the factors of NIFTY50 are blue-chip companies, corporations with low operating leverage, greater scalable operations, and larger operational flexibility suffered less loss in market cost (Verma et al. 2021). Therefore, the AARs calculated from the market mannequin and market adjusted mannequin at some point of the 30 days of the tournament window ranged only from −1.69 to 1.70 and from −1.72 to 1.69, respectively. Nevertheless, the evaluation of the person sectors helps discover the most affected sectors.

Impact of the Pandemic in Different Sectors of the NIFTY50 Index

The NIFTY50 index consists of thirteen special sectors—automobile, cement and cement products, construction, patron goods, fertilisers and pesticides, economic services, IT, metals, oil and gas, pharma, power, and services. Figures 3–6 exhibit the common abnormal returns from the match window of four—pharma, purchaser goods, economic services, and the IT sector, respectively. Since the monetary offerings quarter had the absolute best weightage (22%) in the index accompanied via patron items (14%), the vehicle zone (12%), and IT (10%)2, these sectors had been covered in the analysis. When there is a trade in the economic environment of a unique sector, the working stipulations of the companies in that zone are highly correlated (Moskowitz and Grinblatt 1999). Since the onset of pandemic had a direct impact on pharmaceutical companies, the pharma quarter was once protected in the analysis. From the graphs, all the sectors covered in the graphs recorded the absolute best positive ARR on the ninth day after the match owing to the reviews of tremendous trial effects on experimental virus treatment3.

Owing to the onset of the COVID-19 pandemic, it is evident that the pharma quarter has to lead the way through producing the requisite set of capsules and vaccines to manage and thereby decrease its unfavorable impact. On the day of the event, when the consistent return mannequin confirmed an AAR of about −6%, the market adjusted model showed a effective AAR of the identical quantum. Pharma shares did now not fall as an awful lot as the index and the shares from this region have been long, as buyers anticipated an upward growth in this area in the close to future. Certain pharma shares recorded high-quality returns on the identical day when the index fell with the aid of about 12%. Figure three data the AAR obtained from the shares protected in the pharma quarter of the NIFTY50 index.

However, the economic offerings sector, which accounted for 22% weight in the index, was the worst hit. This region was once negatively impacted due to the anticipation of an increase in NPAs (non-performing assets) in the future. Since a nationwide lockdown was introduced, the revenues of the companies had been predicted to fall. Investors additionally anticipated defaults in the private mortgage segment. Apart from these sectors, the vehicle area additionally confronted unfavourable impacts. Demand for cars diminished due to much less disposable earnings and subdued financial activity. Most of the uncooked substances and completed items in the electronics area are imported from China. The damaging have an effect on on the Chinese economic system disrupted the grant chain and due to the prevailing uncertainty in growth, the demand for white items like electronics decreased. Lack of demand has an destructive have an effect on on sectors irrespective of their economic nature. Evidence indicates that capital intensive corporations had been incredibly greater prone to the shocks. However, corporations demonstrating higher provide chain fragility did no longer face a severe influence in their market price (Verma et al. 2021). Other sectors have been additionally affected by the pandemic, with tourism and actual property falling below the class of worst affected industries. However, lockdowns and social distancing measures had a fine have an effect on onthe telecommunication area (Ramelli and Wagner 2020). Overall, uncertainty prevailed and the sentiments have been negative. This fuelled the sell-off in the Indian inventory market. The results from the market adjusted mannequin and the market mannequin suggest that relying on the constant return mannequin may also lead to spurious conclusions, as the latter produces inflated returns in contrast to the former models.

CONCLUSION

This learn about examined the have an impact on of COVID-19 on the Indian inventory market by using gaugingnthe presence of unusual returns for the duration of the onset of the pandemic. We use three different event learn about methodologies, together with the regular return model, the market adjusted model, and the market model, for our analysis. Abnormal returns have been observed on many days earlier than and after the prevalence of the event. After the announcement of completelockdown, all the fashions confirmed persistently superb AARs on most of the days. Furthermore, we performed sectoral evaluation to recognize the have an impact on of the COVID-19 pandemic on man or woman sectors.

Overall, we discovered that COVID-19 has improved the threat in the stock market. However, our effects are heterogeneous and mostly rely on the sectors. The findings are in line with Guru and Das (2021) and Shankar and Dubey (2021). All the sectors had been impacted temporarily, however the monetary area confronted the worst. Sectors like pharma, purchaser goods, and IT had wonderful or restrained impacts. Our end result is comparable to that of Bora and Basistha (2021), who discovered the pharma region to be captivating for the duration of this health-related pandemic time.

Overall, this work shows that a COVID-19-like shock would purpose a unexpected and large decline in inventory market returns, and may want to pose an existential chance to the financial sector due to the opportunity of severe downturns in its inventory prices. As the economic sector is the spine of monetary stability, insurance policies ought to be formulated to mitigate mass panic during any pandemic. Looking at the connection between the dynamics of investors' fear and monetary markets, regulators must have high quality mechanisms in location to deal with sudden severe pessimism in the market.

Furthermore, governments and central banks should talk efficiently and in a well timed manner to assist decrease the have an effect on in the financial market (Al-Awadhi et al. 2020). The volatility of monetary markets additionally depends on the pace with which notable fiscal insurance policies intervene to limit the damages caused with the aid of COVID-19. Therefore, an make bigger in assets directed toward the fitness care system should additionally have a fine have an impact on on lowering economic volatility. Furthermore, investors can study from this sort of match to protect fairness portfolios from unforeseen shocks and make higher funding selections to keep away from giant sudden losses by way of choosing effective hedging or safe-haven techniques.

This study also improves understanding of the response of various industries to the pandemic. Furthermore, since the size of a firm acts as a substantial determinant in absorbing the impact of ex- treme events, this study also helps us understand the impact of the pandemic on firms with varying sizes. The conclusions drawn in the paper help to understand the stocks' responses to extreme events in the context of emerging countries. The results show the role of information in influencing the stock market in emerging countries such as India. From a practical perspective, the finding suggests that portfolio managers should consider a proper mix of low and high beta stocks with an appropriate mix of sectors. The study has shown that smaller stocks are less impacted by panic selling after extreme events. Hence, it would be prudent for portfolio managers to give due consideration to smaller stocks. These suggestions would help maximize returns and protect investment from capital erosion in extreme events.

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