“Impact of the COVID-19 outbreak on stock returns of Indian healthcare and tourism sectors”

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ARTICLE INFO	Mayank Joshipura and Ashu Lamba (2023). Impact of the COVID-19 outbreak on stock returns of Indian healthcare and tourism sectors. *Investment Management and Financial Innovations*, *20*(1), 48-57. doi:10.21511/imfi.20(1).2023.05
DOI	http://dx.doi.org/10.21511/imfi.20(1).2023.05
RELEASED ON	Wednesday, 28 December 2022
RECEIVED ON	Tuesday, 20 September 2022
ACCEPTED ON	Monday, 26 December 2022

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
46	0	4

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

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IMPACT OF THE COVID-19 OUTBREAK ON STOCK RETURNS OF INDIAN HEALTHCARE AND TOURISM SECTORS

Abstract

The rapid spread of the novel coronavirus pandemic (COVID-19) has adversely impacted global economies and stock markets. This study employs an event study methodology to assess the impact of COVID-19 on stock returns in the healthcare (66 stocks) and tourism (39 stocks) sectors in Indian markets surrounding two events: a) the first COVID-19 case reported in India and b) the announcement of a nationwide lockdown. The findings indicate that investors' reactions to both events were distinct and asymmetric in healthcare and tourism sectors. The tourism sector stocks react more negatively to the second event than the first, with –2.46% vs. –0.59% event day abnormal returns, respectively. The corresponding figures for healthcare sector stocks are –0.68% and –0.16%, respectively. As expected, pandemic events had a minor negative impact on the healthcare sector. Surprisingly, the tourism industry did not react negatively to the first event. Investors in the tourism industry underreacted to the first reported case; they could not predict the potential consequences and then overreacted to the lockdown announcement. The findings support the behavioral finance theory of underreaction and overreaction, particularly in stressful situations. The study has implications for investors and money managers looking for profitable investment opportunities due to temporary dislocations in stock prices caused by investors' irrational reactions to certain black swan events.

Keywords event study, COVID-19, behavioral finance, stock market, healthcare, tourism

JEL Classification G14, G11, G40, D53

Received on: 20th of September, 2022
Accepted on: 26th of December, 2022
Published on: 28th of December, 2022

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Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

Military conflicts, pandemic outbreaks, and global financial crises trigger negative stock market reaction. These events disrupt economic activities and increase risk, drag global stock markets. The COVID-19 outbreak and its rapid spread emerged as a black swan event that triggered global healthcare and economic crises. Lockdowns, travel restrictions, and other intense measures deployed by various countries to contain the spread resulted in crawling economic activity, causing a significant drop in global financial and commodity markets (Hunjra et al., 2021). Most countries witnessed overwhelmed healthcare systems and worsening economic crises. India, a large developing country with a large population and little fiscal bandwidth, faced a challenge to strike a delicate balance between containing the spread of the pandemic and supporting economic activities. Indian government declared a 21-day nationwide lockdown on March 24, 2020. It resulted in the suspension of transportation, educational services, and various industries.[1] Such policy decisions restricted people's movement, caused a significant drop in domestic demand and exports, and had an overall adverse economic impact.

1 https://economictimes.indiatimes.com/news/politics-and-nation/india-will-be-under-complete-lockdown-starting-midnight-narendra-modi/articleshow/74796908.cms

http://dx.doi.org/10.21511/imfi.20(1).2023.05

Global experience shows that the COVID-19 outbreak has adversely impactedstock returns across markets and sectors (Baker et al., 2020; Anh & Gan, 2020; Al-Qudah & Houcine, 2022), but such impact varied across countries and sectors. For instance, travel, tourism, and hospitality industries bore the brunt of travel restrictions and were among the worst-affected sectors globally (Foo et al., 2020; Sharma et al., 2021).

While sectors such as travel and tourism suffered, COVID-19 provided opportunities for growth in the healthcare and pharmaceutical industries. Given these disparities, it is critical to assess the impact of events such as a) the first reported COVID-19 case and b) the announcement of a nationwide lockdown on the stock returns of the Healthcare and Tourism sectors in India, a large emerging economy and the stock market.

1. LITERATURE REVIEW

Before COVID-19, scholarly research had primarily focused on stock market reactions to political actions, natural disasters, financial crises, and terrorist acts (Buigut & Masinde, 2021; Suryani & Pertiwi, 2021; Becchetti & Ciciretti, 2011; Papakyriakou et al., 2019). Adverse events frequently depress investor sentiment and cause stock prices to fall. Terrorist attacks, financial crises, wars, and natural disasters have piqued academics' interest worldwide. McTier et al. (2013) investigate how the flu affected the stock market in the United States and find that increased flu activity hurt trading activity and stock returns.According to Hoffmann et al. (2013), stock markets react negatively to natural disasters and financial crises. Valizadeh et al. (2017) report the negative consequences of the 2011 Japan earthquake using an event study methodology. Nippani and Washer (2006) document the negative impact of SARS on the Chinese and Vietnamese stock markets. Boubaker et al. (2015) report the significant short-term negative impact of terrorist attacks on the Egyptian stock markets.

The event study methodology was used to investigate the effects of COVID-19-related events on financial markets and economic activity, such as the declaration of a pandemic, the implementation of lockdowns and travel restrictions, and the confirmation of the first death(Baker et al., 2020; Ibrahim et al., 2020; Heyden & Heyden, 2021). A disease outbreak is a negative news that adversely affects stock market valuation (Kusumahadi & Permana, 2021). Adnan (2022) documents that discovering the first COVID-19 cases in major Asian countries had significantly negative abnormal returns. The declaration of COVID-19 as a pandemic and related media coverage resulted in adverse global stock market reactions (Khanthavit, 2021). Ledwani et al. (2021) document the negative impact of the COVID-19 outbreak on Brazil, Russia, India, China, and South Africa (BRICS) and G-7 countries, and Elhassan (2021) documents the negative stock market reaction in Gulf Cooperation Countries to the discovery of the first COVID-19 cases. The stock market reacted more negatively to the increased cases than the increased deaths (Ashraf, 2020; O'Donnell et al., 2021).

Liu et al. (2020) report the asymmetric impact of COVID-19 on the stock returns of 21 leading global stock markets using an event study; Asian stock markets reacted more negatively than others. Similarly, Topcu and Gulal (2020) report that during the COVID-19 outbreak, Asian emerging economies reacted more negatively to their European counterpart. Singh et al. (2020) show that among G-20 countries, developing countries have a more significant short-term negative impact than developed countries. Al-Awadhi et al. (2020) investigate the impact of COVID-19 on the Chinese stock market using panel data and document negative impact due to the daily rise in total confirmed cases and deaths caused by COVID-19 on the equity markets of greater China. Endri et al. (2021) report negative stock market reactions and increased volatility in Indonesian stock markets due to the COVID-19 pandemic.

Some studies looked into the effect of COVID-19 on various sectors of the global or specific country stock markets. Telecommunications, pharmaceutical, and healthcare stocks outperformed other sectors' stocks in Australia following the COVID-19 outbreak, according to Alam et al. (2021). Similar

findings have been reported by Narayan et al. (2021). The COVID-19 pandemic favored the sectoral returns of health care, information technology, and consumer staples, while other sectors were either unaffected or saw negative returns in Australian markets. According to He et al. (2020), stocks in the manufacturing, information technology, education, and healthcare sectors were more resilient and less vulnerable to the COVID-19 outbreak in Chinese markets. Ramelli and Wagner (2020) document a negative impact of the COVID-19 outbreak on the transportation and energy sectors in US markets. However, the telecom and healthcare sectors performed admirably during the crisis. Smales (2021) contends that COVID-19 should not affect stock returns in US stock markets. However, investor attention caused asymmetric stock returns across sectors, with healthcare, consumer staples, and information technology sectors benefiting from such investor attention. Disease-related fear drags on stocks, but disease-related news lifted pharmaceutical stocks in US markets, eventually benefiting the sector's stocks (Donadelli et al., 2017). Maneenop and Kotcharin (2020) report a sharply negative reaction in the airline industry. Airlines, hotels, and tourism stocks all fell in response to the COVID-19 pandemic, but stocks of larger companies with lower leverage fell less. Pharmacy, digitalization, and agriculture themes gained traction and delivered positive abnormal returns in the post-March 2020 global stock market crash (Carter et al., 2022; Sun et al., 2021). Phuong (2021) discovers that the nationwide lockdown had a significant negative impact on the returns of the Vietnamese banking index. COVID-19 negatively impacted tourism industry stocks in Chinese markets (Wu et al., 2021). Likewise, Yiwei et al. (2021) document negative reaction and increased volatility for Chinese and US tourism sector stocks due to the COVID-19 outbreak.

In the Indian context, Verma et al. (2021) report that, while Indian stock markets reacted negatively to the lockdown announcement event, most sectors delivered positive abnormal returns after the event. On the other hand, Kumar et al. (2021) document a negative reaction to the lockdown announcement on Indian stock markets. The increased number of COVID-19 cases and lockdowns negatively impacted Indian stock markets, but the impact varies by sector (Dharani et al., 2022).

Most studies showed COVID-19's adverse impact on global stock markets. The impact, however, was asymmetric across countries and sectors. For example, hospitality and tourism were among the hardest hit sectors, whereas sectors such as healthcare and pharmaceutical saw a positive reaction after the initial negative reaction.

Given the numerous vital events, beginning with the COVID-19 outbreak in India, it is critical to examine the impact of various events on the stock returns of sectors with diverging fortunes (i.e., healthcare and tourism) linked to a COVID-19 outbreak and subsequent containment measures such as a nationwide lockdown. Based on the study's literature review and aim, the following research hypotheses have been framed.

H1a: The first reported COVID-19 case has no impact on stock returns in the healthcare sector.

H1b: The first reported COVID-19 case has no impact on stock returns in the tourism sector.

H2a: The news of the nationwide lockdown to contain COVID-19 has no impact on stock returns in the healthcare sector.

H2a: The news of the nationwide lockdown to contain COVID-19 has no impact on tourism sector stock returns.

2. METHODOLOGY

The S&P Bombay Stock Exchange (BSE) Healthcare Index, which includes stocks from hospitals, pharmaceuticals, and medical testing labs, has been used as a proxy for the healthcare sector in the study. Because there is no specific index in the tourism sector like there is in the healthcare sector, the study relies on the sectors available on www.moneycontrol.com, a popular business and financial market web platform in India. The Tourism sector proxy comprises stocks from Hotels-Resorts-Restaurants (34 firms) and Airlines (5 firms).

The study deploys a standard event study methodology (Brown & Warner, 1985) to examine the effect of COVID-19 on sectors of interest. It is a

http://dx.doi.org/10.21511/imfi.20(1).2023.05

widely accepted method to assess the impact of various events and corporate actions on the performance of stock returns (Valizadeh et al., 2017; Boubaker et al., 2015; Liu et al., 2020).

The study focuses on two key events: 1) the first reported COVID-19 case and 2) the announcement of the nationwide lockdown. Daily adjusted stock prices fromCapitaline databaseare used to calculate stocks returns. The market model (equation 1) estimates model parameters from AD– 220 to AD– 21 days, where AD is the event day. S&P BSE Sensex, a bellwether and the oldest Indian stock market index is used as a market proxy.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}. \quad (1)$$

The study employs a variety of event windows ranging from $AD - 1$ to $AD + 1$ days to $AD - 20$ to $AD + 20$ days around both events. Equation 2 below is used for calculating the abnormal returns of a stock on a given day.

$$AR_{it} = R_{it} - \left(\alpha_i + \beta_i R_{mt}\right), \quad (2)$$

where R_{it} = return of stock i on day t; R_{mt} = market return on day t; α_i and β_i are regression parameters computed for each stock from the estimation period (non-contaminated window); ε_{it} has an expected value of zero and a constant variance of $\sigma 2$ (ε_i) and AR_{it} = Abnormal Return of stock i on day t.

AAR_t is calculated as the cross sectional average of all stocks in a sector for day t. Statistical significance of such average abnormal returns is calculated using equation 3. Finally, Cumulative Average Abnormal Returns (CAAR) for each stock are computed for a range of event windows ranging from (0, 1) to (–20, 20). $CAAR_t$ is the sum of a stock's daily abnormal returns over the event window. The magnitude and direction of event impact are captured by calculating CAAR across multiple windows. Market reaction to event-related news is not limited to the announcement day itself due to information leakage, underreaction and overreaction by market participants, and various other factors. Equation 3 and 4 are used to calculate the statistical significance of AAR and CAAR, respectively.

$$t_{AAR} = \sqrt{N}\frac{AAR_t}{\sigma_{AAR}}, \quad (3)$$

$$t_{CAAR} = \sqrt{N}\frac{CAAR_t}{S_{CAAR}}, \quad (4)$$

where t_{AAR} and t_{CAAR} are t-statistics, N is the sample size, and σ_{AAR} and S_{CAAR} are standard deviations of AAR_t and $CAAR_t$, respectively.

3. RESULTS

The reaction of stocks in the healthcare and tourism sectors in India, a large emerging economy and the stock market, to two important events linked to COVID-19, a black swan event of rare accordance, provides insights into investor behavior to rare events. The study's results are presented in this section.

3.1. Healthcare and tourism sectors' reaction to the first reported COVID-19 case in India (e1)

Table 1 displays the AAR and t-statistics for the sectors of interest for the event window spanning AD–20 to AD +20 days surrounding the first event. It demonstrates a significant negative impact of the first reported COVID-19 case on the returns of healthcare and tourism stocks. The healthcare sector's AARs are significant and more negative compared to the tourism sector's AAR. On the event day, the healthcare sector delivered significant negative abnormal returns of –0.68%. Stocks in the tourism sector delivered negative but not significant abnormal returns on the event day.

Table 2 shows CAARs and their significance levels for different event windows surrounding first event. It demonstrates that CAARs for the longest event window (–20, 20) are the highest and most positive, but only for the healthcare sector. In the event windows, the sector delivered significantly positive cumulative average abnormal returns, namely (–20, 20), (–10, 10), (–10, 10), and (–5, 5). For the healthcare sector, returns in the post-announcement window were lower than those in the pre-announcement window. In the (0, 2) window, the sector generated significantly negative CAARs of 1.15%. Except for a negative CAAR for the (–3, 3) window, the tourism sector had no significant negative im-

Table 1. Abnormal returns and t-statistics of healthcare and tourism sectors surrounding the first reported COVID-19 case (e1)

	Healthcare		Tourism			Healthcare		Tourism	
Days	AAR	t-stat$_{AAR}$	AAR	t-stat$_{AAR}$	Days	AAR	t-stat$_{AAR}$	AAR	t-stat$_{AAR}$
–20	0.83%**	2.22	1.32%***	2.81	0	–0.68%**	–2.47	–0.59%	–1.19
–19	0.57%**	1.97	0.24%	0.48	1	–0.19%	–0.61	0.29%	0.80
–18	–0.97%***	–3.95	–0.39%	–0.90	2	–0.31%	–0.67	–1.14%	–1.70
–17	0.46%	2.36	0.29%	0.85	3	–0.47%	–1.01	–0.93%	–1.40
–16	0.32%	1.47	–0.12%	–0.32	4	1.31%***	2.93	0.23%	0.33
–15	0.18%	0.94	1.13%***	2.69	5	0.34%	1.07	0.43%	0.97
–14	0.31%	1.22	0.02%	0.05	6	1.83%***	5.12	0.68%	1.31
–13	0.36%**	2.06	0.37%	0.81	7	0.80%**	2.46	1.41%*	1.72
–12	1.06%***	3.89	0.12%	0.26	8	–0.04%	–0.12	–0.88%	–1.52
–11	0.97%***	4.80	1.48%**	2.04	9	–0.91%**	–2.15	–1.18%**	–2.09
–10	0.77%***	2.65	0.18%	0.40	10	0.57%	1.39	–1.75%***	–4.86
–9	0.67%***	2.73	–0.08%	–0.22	11	–0.38%	–1.04	–0.40%	–0.79
–8	1.02%***	3.43	0.40%	0.67	12	–1.24%***	–4.04	–0.77%*	–1.79
–7	–0.01%	–0.04	0.48%	1.27	13	–0.15%	–0.42	–0.62%	–1.30
–6	0.61%***	3.00	0.16%	0.33	14	1.15%***	2.88	0.46%	0.87
–5	0.18%	0.82	0.54%	1.26	15	0.78%**	2.56	1.14%*	1.78
–4	–0.07%	–0.35	0.21%	0.48	16	–0.08%	–0.18	0.50%	0.77
–3	2.37%***	5.80	–0.16%	–0.32	17	–0.29%	–1.03	–0.74%**	–2.50
–2	–0.12%	–0.60	–0.31%	–0.73	18	–0.03%	–0.07	–0.08%	–0.14
–1	0.11%	0.36	0.04%	0.08	19	–0.04%	–0.13	–0.24%	–0.73
					20	–1.62%***	–3.68	–0.79%	–1.51

Notes: *means Significant at the 10% level, **means Significant at the 5% level, and ***means Significant at the 1% level.

Table 2. Cumulative Average Abnormal Returns of healthcare and tourism sectors surrounding the first reported COVID-19 case (e1)

	Healthcare		Tourism	
Event window	CAAR	t-stat$_{CAAR}$	CAAR	t-stat$_{CAAR}$
(–20,20)	9.95%***	4.78	1.75%	0.60
(–10,10)	7.78%***	5.10	–1.10%	–0.51
(–5,5)	2.68%**	2.40	–1.03%	–0.66
(–3,3)	0.52%	0.56	–2.29%*	–1.84
(–2,2)	–1.19%	–1.59	–1.62%	–1.49
(–1,1)	–0.76%	–1.49	–0.25%	–0.38
(–2,0)	–0.68%	–1.49	–0.62%	–0.87
(0,2)	–1.15%*	–1.76*	–1.47%*	–1.69
(–1,0)	–0.55%	–1.38	–0.42%	–0.77
(0,1)	–0.86%**	–2.02	–0.30%	–0.53

Notes: *means Significant at the 10% level, **means Significant at the 5% level, and ***means Significant at the 1% level.

pact. In summary, based on the results of Table 1 and Table 2, it is evident that stocks in the Indian healthcare sector reacted negatively. In contrast, tourism did not react to the first event. Thus, the results reject hypothesis *H1a* but support hypothesis *H1b*.

3.2. Healthcare and tourism sectors' reaction to the lockdown announcement (e2)

Table 3 reports the AAR and its significance levels during the event window surrounding the second event. The healthcare sector did not re-

http://dx.doi.org/10.21511/imfi.20(1).2023.05

act negatively in the run-up to or on the day of the event. The sector delivered significant positive returns in the post event days. In contrast, the tourism sector delivered significant negative ARs two days before, on the day of the event, and the following day. The market anticipated the potential lockdown, but it needed to account for the full impact of such an announcement. While the negative impact on tourism eased after a few days, the overall lockdown announcement was a significant negative event for tourism sector stocks while benefiting healthcare sector stocks.

Table 4 shows CAARs and their statistical significance for various event windows for sectors of interest surrounding the event day. CAARs show that healthcare and tourism sectors reacted negatively to the lockdown announcement. However, the tourism sector had a more significant impact than the healthcare sector. For example, the CAAR in the (0, 1) window healthcare sector was –1.95%, while the CAAR in the tourism sector was -6%. Looking at CAARs for long windows (–10, 10) and (–20, 20), it is clear that the healthcare sector delivered significantly positive returns in the immediate aftermath of the lockdown announcement. In contrast, the tourism sector delivered significantly negative returns. In summary, Table 3 and Table 4 results reveal that stocks in Indian healthcare and tourism sectors showed an initial adverse reaction to the second event; hence, hypotheses *H2a* and *H2b* stand rejected. However, after initial adverse reactions, both sectors witnessed contrasting trends; stocks in the healthcare sector reacted positively, whereas tourism sector stocks reacted adversely.

Table 3. Abnormal returns and t-statistics of healthcare and tourism sectors surrounding lockdown announcement (e2)

	Healthcare		Tourism			Healthcare		Tourism	
Days	AAR	$t\text{-stat}_{AAR}$	AAR	$t\text{-stat}_{AAR}$	Days	AAR	$t\text{-stat}_{AAR}$	AAR	$t\text{-stat}_{AAR}$
–20	–0.16%	–0.35	0.78%	1.22	0	–0.16%	–0.32	–2.46%***	–3.03
–19	–0.36%	–1.28	–0.67%**	–2.30	1	–1.79%***	–3.59	–3.54%***	–4.66
–18	–0.10%	–0.26	–0.19%	–0.37	2	0.13%	0.22	0.15%	0.18
–17	–0.11%	–0.34	–0.23%	–0.69	3	0.84%	1.59	1.02%*	1.73
–16	–1.71%***	–3.83	–0.59%	–1.20	4	3.49%***	5.50	1.71%***	2.67
–15	–1.09%***	–2.78	–1.08%**	–2.34	5	0.96%**	2.01	–0.98%	–1.33
–14	1.15%***	2.59	–0.13%	–0.27	6	2.75%***	6.34	3.37%***	3.91
–13	0.42%	1.33	–2.15%***	–4.26	7	4.12%***	6.96	2.55%***	3.28
–12	0.53%**	2.04	–0.08%	–0.17	8	2.12%***	3.52	–4.24%***	–5.28
–11	–0.52%	–1.35	–1.21%**	–2.50	9	5.09%***	8.18	4.04%***	5.78
–10	2.71%***	7.22	2.81%***	3.98	10	1.52%***	2.70	–0.52%	–0.72
–9	–4.25%***	–6.50	–3.12%***	–4.77	11	3.33%***	5.36	1.65%***	2.64
–8	–4.54%***	–7.61	–1.54%*	–1.67	12	0.62%	1.23	3.03%***	4.10
–7	–0.59%	–1.12	–3.50%***	–3.64	13	0.56%*	1.72	1.40%*	1.93
–6	1.45%***	2.60	1.32%	1.56	14	–1.89%***	–5.26	–0.85%	–1.46
–5	0.54%	1.16	0.92%	1.49	15	–0.24%	–0.69	0.52%	1.00
–4	–2.15%***	–4.29	–0.05%	–0.06	16	2.04%***	3.96	–0.25%	–0.40
–3	–0.82%	–1.26	–1.46%	–1.56	17	–0.80%**	–2.04	–1.10%	–1.62
–2	–0.17%	–0.25	–3.23%***	–4.30	18	0.49%	1.27	0.89%	1.24
–1	–0.48%	–0.58	3.56%***	3.18	19	2.67%***	5.88	–1.66%**	–2.49
					20	0.89%**	2.03	–1.41%**	–2.12

Notes: *means Significant at the 10% level, **means Significant at the 5% level, and ***means Significant at the 1% level.

Table 4. Cumulative Average Abnormal Returns of healthcare and tourism sectors surrounding lockdown announcement (e2)

	Healthcare		Tourism	
Event Window	**CAAR**	**t-stat$_{CAAR}$**	**CAAR**	**t-stat$_{CAAR}$**
(–20,20)	16.50%***	5.69	–6.53%	–1.96**
(–10,10)	10.78%***	3.95	–3.19%	–1.03
(–5,5)	0.38%	0.24	–4.35%*	–1.89
(–3,3)	–2.46%**	–2.21	–5.95%***	–3.73
(–2,2)	–2.47%***	–2.76	–5.52%***	–3.63
(–1,1)	–2.43%***	–3.49	–2.44%	–1.48
(–2,0)	–0.81%	–0.95	–2.13%	–1.61
(0,2)	–1.82%*	–1.84	–5.85%***	–4.03
(–1,0)	–0.64%	–0.87	1.10%	0.85
(0,1)	–1.95%***	–2.59	–6.00%***	–4.75

Notes: *means Significant at the 10% level, ** means Significant at the 5% level, and ***means Significant at the 1% level.

4. DISCUSSION

The results show that the two events had an asymmetric impact on both sectors. Because there was little knowledge about the potential threat of the disease in early January 2020, the negative reaction to the first event was small and insignificant. It demonstrates that markets underreacted and could not anticipate the consequences of COVID-19. However, by the beginning of March 2020, fear of the disease had begun to spread. Global equity markets plunged when a pandemic was declared on March 11, 2020. Investors were concerned about the stock market's ability to continue operating as the Indian government announced a one-day curfew on March 22, 2020, followed by a 21-day strict lockdown. Fearing the collapse of economic activity, investors overreacted to the lockdown announcement. While all major sectors reacted negatively to the announcement of the lockdown, an examination of long-term-window CAARs reveals that money moved out of the tourism sector and into sectors such as healthcare. The findings are consistent with those of Alam et al. (2020) and He et al. (2020).

The tourism sector would bear the brunt of the travel restrictions and lockdown, while the healthcare sector would benefit from the widespread pandemic. However, due to negative investor sentiment, stocks in the tourism and healthcare sectors reacted negatively to the lockdown announcement. Such temporary disruption allowed prudent investors to rebalance their portfolios, going overweight in healthcare sectors and underweight or exiting tourism sectors, to capitalize on profitable investment opportunities. This evidence supports the findings of Donadelli et al. (2017), who discovered that disease-related news boosted pharmaceutical industry stock prices in US markets. Maneenop and Kotcharin (2020) and Wu et al. (2021) also document a negative reaction on tourism sector stocks due to the COVID-19 epidemic and subsequent events, and our findings are consistent with theirs.

Using the competing theoretical lenses of efficient market hypothesis and behavioral finance theories of underreaction and overreaction, it is clear that markets underestimated the impact of the first COVID-19 case detected in India and underreacted to the event. Markets fell sharply beginning in early March 2020 as it became clear that it would affect the entire world. Markets expected strict measures to limit the contagion spread, and tourism stocks delivered significant negative returns in the days leading up to the lockdown announcement. However, the market did not fully account for such an effect, and markets and stocks in the tourism sector underperformed significantly on the event day. Contrary to the efficient market hypothesis, stocks did not absorb the event-related information on the announcement's day but adjusted over time. Looking at the asymmetric responses of the healthcare and tourism sectors to both events, it is clear that investors underreacted to the first event and then overreacted by selling healthcare sector stocks and hammering tourism stocks. Such overreaction reversed quickly, and starting on the sixth day after the announcement, returns in the healthcare sector turned positive. The

http://dx.doi.org/10.21511/imfi.20(1).2023.05

announcement of the lockdown resulted in the closure of borders and the imposition of travel restrictions. Aside from that, the Indian government made no promises of financial assistance to the tourism industry.[2] The tourism sector's stocks suffered higher cumulative average abnormal losses because domestic and international borders were closed due to the lockdown. Similar findings have been reported by Yiwei et al. (2021), Sun et al. (2021), and Carter et al. (2022).

CONCLUSION

The study investigates the immediate impact of two significant COVID-19 events in India on the stock returns of the Healthcare and Tourism sectors. The findings indicate that the announcements about the COVID-19 outbreak have had a small but significant negative impact on the returns on stocks in the healthcare and tourism sectors. Furthermore, the tourism industry experienced negative abnormal returns due to the national lockdown. CAARs comparison of the two sectors reveals that the tourism industry stocks suffered far more than the second event.

On the other hand, the healthcare sector did not react negatively because it could benefit from efforts to contain the pandemic and increased healthcare spending due to increased awareness about the importance of health. The research adds to the existing and growing pandemic literature. The findings of this study can help investors and fund managers understand the impact of a black swan event and how it has an asymmetric impact on stocks in various sectors. It enables them to implement diversification and sector-specific hedging strategies. The study has theoretical implications for market efficiency and behavioral finance because markets overreact and underreact to significant events. Future research should concentrate on the long-term impact of COVID-19 on various sectors, as well as cross-country comparisons.

AUTHOR CONTRIBUTIONS

Conceptualization: Mayank Joshipura, Ashu Lamba.
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Formal analysis: Mayank Joshipura.
Methodology: Ashu Lamba.
Software: Ashu Lamba.
Supervision: Mayank Joshipura.
Validation: Mayank Joshipura.
Writing – original draft: Ashu Lamba.
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