

Testing the impact of COVID-19 on trading behavior of the investors: An empirical evidence from Indian Stock Market

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ABSTRACT

Purpose: Globally, the galloping spread of the deadly COVID-19 pandemic has wreaked a havoc in every sphere of the economy and left the human life out of gear. It has caused significant disruptions in the conduct of business activities and exposed the global economies to a jeopardy, resulting in a severe economic crises. India has suffered drastic consequences due to the outbreak of COVID-19 disease and the consequent lockdowns. A significant number of people lost their lives, which, in turn, had a negative impact on every aspect of the country's macroeconomic system. Moreover, the contagion has also increased the volatility of the stock markets, which is believed to have a detrimental impact on the stock returns. The main purpose of this study is to examine the impact of COVID-19 outbreak on the trading behavior of Indian investors. **Methodology:** In this context, the trading volume of Bombay stock exchange was taken as a proxy for trading behavior of the investors and used as a dependent variable. On the other hand, the daily COVID-19 caseload and COVID-19-related deaths were used as proxies for COVID-19 and considered as regressors. In this study, the multiple linear regression model was used to examine the relationship between the investors' trading behavior and the impact of COVID-19. **Findings:** The study outcomes reveal that the spread of COVID-19 has not significantly affected the trading behavior of the investors in Indian stock market. **Implications:** The trading behavior of the investors in Indian stock markets appears to be less sensitive toward the spread of the pandemic during the study period. **Originality:** Unlike the studies conducted earlier, this study attempts to find the impact of the unprecedented health emergency on the trading behavior of the investors by analyzing the trading volume of the Indian stock market during the chosen period, when the country was in the grip of the pandemic.

Key words: Bombay stock exchange, COVID-19, stock market, trading behavior, trading volume

JEL Classifications: G1, G11, G12

INTRODUCTION

On December 31, 2019, the World Health Organization (WHO) announced the first case of COVID-19 in Wuhan, China (WHO, 2020). Further, COVID-19 was proclaimed as a pandemic (Cucinotta and Vanelli, 2020) on March 11, 2020 and it soon became the fifth documented pandemic,

since the flu of 1918 (Moore, 2021). As of September 11, 2022, a total of 608 million confirmed cases of COVID-19 has been registered across the world. In this count, an approximate of 6.5 million deaths caused by the disease. The first incidence of the virus was reported in India on January 27, 2020 (Andrews et al., 2020). The virus spread across the nation at a breakneck pace. The deadly COVID-19 disease

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led to a global health emergency and made a number of nations go into severe business bankruptcy and loss of employment (Fu and Shen, 2020). India is not an exception to this global problem. The pandemic inevitably had a negative impact on the markets throughout the globe and the same was evident in India as well.

Various pandemics have been encountered by the human beings earlier including the ones caused by the H1N1 Virus from 1918 to 1920, H2N2 virus in 1957 and 1958, SARS from 2002 to 2003, the Swine flu in 2009 and 2010, MERS of 2012 and Ebola of 2014–2016 (WHO, 2022; Huremović, 2019). The occurrence of such pandemics not only affects the human health and lives, but also adversely affects the economies in general and stock markets in particular (Apergis and Apergis, 2020; He et al., 2020). It is evident from the extant literature that the stock markets reacted to epidemics and the pandemics dynamics. Various researchers studied about different types of pandemics such as (Chen et al., 2007a; Nippani and Washer, 2004b) and (Chen et al., 2018b) upon S.A.R.C. outbreak, (Ichev and Marinč, 2018) about Ebola and (Del Giudice and Paltrinieri, 2017) about Ebola and Arab Spring outbreaks. Several academicians have investigated the impact of COVID-19 on the performance of stock markets (Ashraf, 2020; Al-Awadhi et al., 2020b; Akhtaruzzaman et al., 2020; Baig et al., 2020; He et al., 2020; Mishra et al., 2020b; Ozkan, 2021; Jabeen et al., 2022; Dima et al., 2022; Tan et al., 2022).

Most of the studies concluded that the pandemic had a detrimental impact on the stock market returns. This is mainly due to the negative sentiments among the investors. In the event study conducted earlier, (Ahmad et al., 2021) argued that the unexpected events like the “Black Swan Event” influence the investing behavior of the investors. The research studies show that the reportage of media about the unexpected events influences the investor’s sentiments since negative media reports impact the investor’s moods and produce either a high or a low market trading volume (Tetlock, 2007).

As per the literature, market volatility got inflated due to the panic situations created by the continuous flow of news about the coronavirus by media houses (Haroon and Rizvi, 2020). However, the unfortunate situation, in which the whole world is fighting against the deadly virus, has provided the country an opportunity to gauge the impact of the virus on the behavior of investors’ trading activities. In this context, the present study makes a modest attempt to understand the impact of the COVID-19 pandemic on the trading behavior of Indian investors.

LITERATURE REVIEW

The existing studies in this domain are reviewed to conceptualize the understanding about the topic, the current level of knowledge, and interest in studies. The review is divided into three sections. The first section makes an attempt to shed some light on the studies conducted earlier to analyze the impact of various epidemics or pandemics on the stock market’s behavior and performance. The second section covers the available literature on COVID-19 disease (Coronavirus) and its implications on the stock market performance. Finally, the studies examining the impact of lockdown, necessitated by the outbreak of COVID-19, on stock exchanges have been presented.

Impact of Epidemics and/or Pandemics on the Performance of Stock Markets

Pandemics and epidemics not only affect the health of the citizens, but also the economy of the nations. The economic repercussions of pandemics and the epidemics of the past vary heavily from one another. The variations depend on multiple factors such as the location, intensity, and era during when the pandemics and epidemics happened. Since these outbreaks cause disastrous economic consequences, there is a need exists to understand its impact on the economy, particularly stock markets. In the past two centuries, the human race has encountered a number of contagious diseases. Several studies have been carried out earlier to study the influence of different types of epidemics on the performance of stock markets. Chen et al. (2007) studied the impact of SARS outbreak that occurred between 2002 and 2003 on the stock performance of the Taiwanese hotels. The authors concluded that SARS had a catastrophic impact on both tourism as well as the hotel stock performance. Further, it also created a negative impact on the overall economy of Taiwan.

In a different study, (Nippani and Washer, 2004) examined the effects of SARS on stock performance using the most representative stock market indices from eight different nations. In this study, Mann–Whitney non-parametric tests were applied and the results infer that SARS had no discernible impact on these nations excluding two countries which were negatively hit by the contagion. It is obvious that the SARS disease weakens the long-term ties among the Asian countries, according to the research conducted by (Chen et al., 2018) who examined the influence of the disease on stock market integration. (Jiang et al., 2017) attempted to correlate between H7N9 influenza and the stock market performance of China, the origin of the outbreak. The

researchers concluded that the epidemics caused economic loss as revealed by the stock price movements.

In addition, they found that the disease had a significant negative impact on small-sized enterprises than the large-sized corporations. (Del Giudice and Paltrinieri, 2017) investigated the impact of Arab Spring and Ebola on the performance of mutual funds in African Stock Exchange. The authors found a negative correlation between the net flow of the mutual funds during Ebola and Arab Spring events. Further, it was found that the impact of the Ebola outbreak in 1976 was significant in terms of investment decisions. Researchers are of the opinion that the infectious diseases have high relevance toward the investor's sentiments since it creates fear, anxiety, risk aversion, and pessimism among the investors. These characteristics ultimately decide the trading decisions of the investors (Ichev and Marinč, 2018). In the literature, the researchers attempted to analyze the behavior of the investors during epidemics and the pandemics. According to the researchers (Dong and Heo, 2013), the participants in the financial markets had attentional limitations as a result of distractions caused by flu.

This was understood either by themselves or through their friends, family, and coworkers. As a result, they were unable to serve as an additional source of information disclosure in those times. The results infer that the investors were more positive about the high-performing stocks and more negative about the low-performing stocks (Dong and Heo, 2013). In the Asian flu outbreaks that occurred in 1957 and 1958, the US stock markets declined followed by the US economic recession in August 1957, which lasted up to April 1958 (Sylla et al., 2020). However, the impact of the Spanish Flu was minimal though it was one of the deadliest epidemics recorded so far (Taylor, 2020).

Impact of COVID-19 on Stock Market Performance

COVID-19 was first reported in Wuhan, China, and rampantly spread across the globe, infecting billions of people and millions of deaths. The contagion has not only caused illness and fatalities, but also brought economic turmoil. In this framework, the financial analysts and investors tried to comprehend the impact of COVID-19 pandemic on financial and stock markets. COVID-19 is referred to as a "Black Swan Event" (Ngwakwe, 2020), that is, the events that cannot be predicted at all and have severe consequential effects on the stock markets, money markets, and the general economy. Such events create fear, shock, and panic among the investors either they may be domestic or foreign. All of this amounts to sharp panic-selling (Liu et al.,

2020). Some of the researchers examined the relationship of COVID-19 with financial market performance including (Ashraf, 2020; Mishra et al., 2020b; Al-Awadhi et al., 2020; Bora and Basistha, 2020; Le et al., 2020; Topcu and Gulal, 2020). A good number of research studies have demonstrated that the COVID-19 disease had a detrimental effect on the stock markets' performance. Al-Awadhi et al., (2020a) studied about the companies listed on Chinese stock exchange during the outbreak of COVID-19. The results inferred the presence of a negative relationship among stock returns, daily increase in the total number of confirmed cases, and the daily increase in the number of deaths attributable to COVID-19.

When examining the effect of the COVID-19 pandemic on stock returns' performance in the Indian stock market, (Mishra et al., 2020a) found a strong negative correlation between the two variables. (Bora and Basistha, 2020) conducted a study in which the researchers applied GARCH model to investigate the two main securities markets in India such as the Bombay stock exchange (BSE) and the National stock exchange. The each-day closing prices of both the indexes were examined in relation to the time before COVID-19 and during the COVID-19 outbreak. The study found that COVID-19 had a negative impact on stock prices and enhanced the volatility in Indian exchanges. (Sinha et al., 2020) found a rising trend in the security prices of the stocks listed in Sensex and Nifty, that is, two principal stock markets in India, amidst the slow economic growth due to the COVID-19 pandemic lockdown. They contend that numerous initiatives were taken by the government to boost the economy since the investors were upbeat about the future.

According to Liu et al. (2020), Asian countries were negatively impacted by the COVID-19 disease compared to the rest of the world. The researchers studied the best representative indices from the countries with most of infections to determine the impact of the event. The researchers proved that the fear of the investors acts as a mediator and also a transmission channel for the COVID-19 outbreak's impact on the stock markets (ibid). Salisu et al., (2020) used the "Uncertainty of Pandemics and Epidemics (UPE)" index in their study to analyze the response of the emerging stock exchanges toward COVID-19 disease. The markets were classified on the basis of Morgan Stanley Capital International (MSCI) classification method for countries.

According to the study, the emerging stock markets are highly susceptible than the developed stock markets. This is attributed to the fact that the negative impacts such as the health risks, in those markets, were higher than the

developed stock markets during COVID-19 pandemic. The researchers recommended that the developed stock markets are a better choice for the investors during these uncertain times. It can offer a better UPE edge than the emerging stock markets. [Shehzad et al., \(2020\)](#) examined the financial markets of the US, Germany, Italy, Japan, and China. The researchers found a negative impact of COVID-19 on the returns of S&P 500. However, it had no significant effect on the Nasdaq Composite index. [Takyi and Bentum-Ennin, \(2020\)](#) evaluated the impact of the deadly disease on the financial markets of 13 African countries using the Bayesian structural time-series approach. Their study found that the stock performance got reduced in the range of -2.7% and -21% . The study identified 10 nations with financial markets that were seriously affected by the epidemic. However, the study was unable to find any specific evidence to justify the impact of COVID-19's on African stock markets.

In a few pioneering empirical studies, it was ascertained that the COVID-19 disease decreased the values of the asset and increased the volatility in the stock market ([Gil-Alana and Monge, 2020](#); [Ali et al., 2020](#); [Apergis and Apergis 2020](#)). According to [Chen et al. \(2020\)](#), the market instability got increased by the panic created among the investors because they looked for more information about the virus to be aware of it. ([Mamaysky, 2022](#)) claimed that the reactions to the COVID-19 news caused the fluctuations in the asset prices. ([Haroon and Rizvi, 2020](#)) confirmed that the stock market volatility got increased by the panic created by the news outlets.

Impact of COVID-19 Lockdown on Stock Markets' Performance

Across the globe, the governments took several initiatives and implemented different policy measures such as the imposition of lockdowns, travel bans, and social distancing to limit the spread of the contagion and minimize its repercussions. The imposition of the lockdown confined the effects of COVID-19 to a great extent and helped the stock markets to regain confidence ([Phan and Narayan, 2020](#)). The COVID-19 lockdown proved to be beneficial not only in breaking the chain and flattening the COVID-19 curve, but also in preventing the stock markets from going south and regaining the confidence of the investors ([Narayan et al., 2021](#)). This study was conducted based on the social distancing policy of four continents such as the Asia, North America, Africa, and Europe. The outcomes revealed that the lockdowns and the policy of social distancing negatively affected the stock prices and impaired the economy ([Ozili and Arun, 2020](#)). The study by ([Baig et al., 2020](#)) concluded that the imposition of lockdowns deteriorated the liquidity

and stability of the markets whereas the authors ([Eleftheriou and Patsoulis, 2020](#)) identified a negative relationship between the lockdown necessitated by COVID-19 and the stock exchange returns.

Various research studies were conducted to analyze the influence of COVID-19 on performance and returns of various stock markets. However, no studies were conducted to analyze the impact of COVID-19 on trading behavior of the stock market investors like the study of ([Allam et al., 2020](#)). The researchers attempted to investigate the impact of COVID-19 on individual as well as institutional investors' trading behavior in the Egyptian stock market. The results found that the spread of COVID-19 had a substantial impact on investors' behavior since the individual investors of the Egyptian stock market continued to actively trade and maintain their investment portfolios. However, the foreign and Arab institutional investors reduced their investments during the COVID-19 crises. Another study conducted by ([Ortmann et al., 2020](#)) found that the investors increased their trading activity during the outbreak of COVID-19. The researchers found that when the number of COVID-19 cases doubled, the trading activity increased by 13.9%. In addition, this study concluded that the increased trading activities positively impacted the stock and index trading and were particularly observed among male and older investors.

A critical review of the literature made here revealed that no study has been conducted so far to analyze the trading behavior of the individual investors. Moreover, there is a dearth of studies that can ascertain the short- and long-run effects of the pandemic, especially in India. In addition to these, no studies focused on the trading behavior of the individual investors during catastrophes such as COVID-19 outbreak. In light of this, a modest effort has been taken in this study to shed insights on the impact of COVID-19 spread on the trading behavior of Indian inventors over short- and long-term effects. This was achieved by the researchers in this study by relating the daily caseload, total caseload, daily fatality, and the total COVID-19-related deaths with the trading behavior of the individual investors in Indian stock market.

Research Gap

Based on the review of literature, it can be understood that the outbreak of COVID-19 pandemic had a negative impact on the stock markets' performance globally. However, some research studies contradict these results and claim that COVID-19 had a positive impact on the performance of the stock markets while other studies do not concluded so. Majority of the studies conducted recently investigated the impact of COVID-19 on market returns and stock prices.

There seems to be a dearth of literature that examines the impact of this contagion on the trading volume of the stock markets, which is also a sine-quo-non parameter for growth and development of the financial markets and the economy as a whole. Further, it also provides a clear idea about the market volatility, thereby providing an insight about the trading behavior of the investors. Therefore, it is inevitable to analyze the impact of COVID-19 on the trading behavior of the investors. The present study is a first-of-its-kind attempt to study the impact of COVID-19 on the trading behavior of the investors in Indian stock markets.

Research questions

The current research article attempts to answer the following questions.

- i. Does the daily caseload of COVID-19 in India influence the trading behavior of the investors in Indian stock market? and
- ii. Do the daily COVID-19 deaths in India influence the trading behavior of the investors in Indian stock market?

Objectives

To answer the above questions, the following objectives are framed

- i. To study the impact of daily caseload of COVID-19 in India on trading behavior of the investors in Indian stock market.
- ii. To study the impact of daily COVID-19 deaths in India on trading behavior of the investors in Indian stock market.

Research hypotheses

Ho1: There is no impact of the daily caseload of COVID-19 on trading behavior of the investors in Indian stock market.

Ho2: There is no impact of the daily COVID-19 deaths on trading behavior of the investors in Indian stock market

Research methodology

Research is the quest for knowledge using impartial and methodical approaches to resolve the problems in which the study, observation, comparison, and experimentation are involved (Kothari, 2006).

Research Sample

The study attempts to analyze the trading behavior of the investors in Indian stock market during the COVID-19 pandemic. For this study, the daily trade volume data were retrieved from the BSE Sensex, a free-float and a market-weighted stock market index, composed of 30 reputable and

financially-stable companies. The BSE index was selected meticulously since this is the oldest stock exchange in the country and is also a floor-based stock exchange in India. The index contains 30 companies that represent different industrial sectors of the Indian economy and are among the biggest and the most popularly-traded equities. The trading volume of BSE Sensex from April 1, 2020, to October 31, 2021, that is, 19 months was considered in this study. During this period, India was under the grip of COVID-19 infection and the lockdown largely. During this study period, the spread of COVID-19 represented by the daily caseload and daily COVID-19 deaths were taken as indicators. The rationale behind the selection of the study period, that is, 19 months is due to the fact that the investors were insecure due to the increasing COVID-19 cases and deaths whereas the impact of the pandemic could not be avoided. However, once the vaccination was started, the markets showed green shoots and the mind-set of the investors changed.

Data Collection

The present study analyzed the secondary data of BSE-indexed companies from www.investing.com, a historical data archive. The daily trading volume data between April 1, 2020, and October 31, 2021, were collected. Further, the data about the daily caseload and COVID-19-related deaths were collected from <https://api.covid19india.org/>, the official government website.

Methods

At first, the descriptive statistical analysis was conducted for dependent and the independent variables to check the behavior of the data. In this study, univariate descriptive statistics such as mean, minimum, maximum, and the standard deviation were used. The maximum and minimum values helped the researchers to find the extent of variable distribution in the data and similar observations were made by analyzing the calculated standard deviation of the variables. Then, the linear regression analysis was conducted to analyze the impact of COVID-19 on trading behavior and validate the formulated hypotheses.

DATA ANALYSIS AND INTERPRETATION

Descriptive Statistics

Table 1 shows the descriptive statistics outcomes which reveal the mean of the dependent variable, that is, trading volume was very high and the difference between the

Table 1: Descriptive statistics of the variables

Description	Number of observations	Minimum	Maximum	Mean	Standard deviation
Trading volume	393	5060	75580000	15507593.94	7945011.324
Daily confirmed case load	393	424	414280	58688.88	79367.207
Daily COVID-19 deaths	393	0.6	6139	812.54	1015.698

*Source: Authors computation using IBM SPSS v. 25

Table 2: Regression analysis results

Model summary										
R	R-square	Adjusted R-square	Std. an error in the estimate	Change statistics					Durbin -Watson	
				R square change	F change	df1	df2	Sig. F change		
0.131 ^a	0.017	0.012	7896427.219	0.017	3.419	2	390	0.034	1.484	

*Source: Authors computation t using IBM SPSS v. 25. ^aPredictors: (Constant), Daily COVID-19 Deaths, Daily Confirmed Case Load.

^bDependent Variable: Trading volume

Table 3: Coefficients of the independent variables

	Unstandardized coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	16350888.668	513375.985		31.850	0.000
Daily Confirmed Case Load	-6.120	8.916	-0.061	-0.686	0.493
Daily COVID-19 Deaths	-595.790	696.717	-0.076	-0.855	0.393

*Source: Authors Computation using IBM SPSS v. 25

minimum and maximum value was also high. This inference provides an overview of the market volatility. Similarly, the variable had a huge variability in terms of standard deviation, that is, 7945011.324. The results show that the independent variables, that is, daily confirmed caseload and daily COVID-19 deaths showed some sort of variability for the study period between April 1, 2020, and October 31, 2021. Here, N denotes the number of observations in the study.

Multiple Linear Regression

To achieve the main objectives of the study, multiple linear regression analysis was conducted. The aim of this analysis was to analyze the impact of two independent variables (i.e., Daily Caseload and Daily COVID-19 deaths) on the dependent variable (i.e., Trading volume in the Indian stock market). The regression results are presented in Table 2 and the explanatory variables infer that if one unit changes in these variables, it brings a minimal change in the percentage (i.e., 1.7%) of dependent variable, that is, trading volume. Although the regression coefficient was statistically significant, the daily confirmed caseload and daily COVID-19 deaths had no measurable impact on the

trading behavior of Indian investors. Since the p-value was lesser than 5% (i.e., 0.034), the model is inferred to be fit. Thus, the overall regression coefficients are accepted and presented in Table 3 whereas all the alternate hypotheses are rejected. Furthermore, the statistical value of the Durbin-Watson test lies in the range of 1 and 3, indicating the non-existence of autocorrelation in datasets.

CONCLUSION

The present study results confirm that a minimal percentage of the trading behavior of Indian stock market investors can be explained by the COVID-19 indicators. The study results infer that the trading behavior of Indian investors is less sensitive toward the COVID-19 pandemic spread during the study period. The reason behind the result would be the measures taken by the government of India to improve the investment climate and revive the economy of the country (Sawaliya et al, 2020). This would have revived the hope and avoided the negativity among the investors. Since every research has a certain set of limitations, the present study also follows the same pattern. One of the limitations of this study is the assessment of a single variable, that is, “Trading Volume” to track the trading behavior of the

investors. Further, the present study did not consider the demographic variables such as age, gender, experience in the stock market, and the type of investors due to the unavailability of the data.

RECOMMENDATIONS

Based on the study findings, all the stock market stakeholders are suggested not to develop a negative sentiment and do not go by rumors blindly. The investors must evaluate the impact of a situation in a professional manner, because such periods are generally good for entering the stock markets that are normally out of reach for the commoners. Moreover, the investors should also understand that all types of crises do not create a negative impact on the stock markets' performance.

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AUTHOR'S CONTRIBUTION

All the authors contributed equally to this study and write the manuscript. All authors read and approved the final manuscript.

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COMPETING INTERESTS

No conflicts of interest among the authors.

REFERENCES

- Ahmad, W., Kutan, A. M., & Gupta, S. (2021). Black swan events and COVID-19 outbreak: Sector level evidence from the US, UK, and European stock markets. *International Review of Economics and Finance*, 75, 546-557.
- Akhtaruzzaman, M., Boubaker, S., & Sensoy, A. (2020). Financial contagion during COVID-19 crisis. *Finance Research Letters*, 38, 101604.
- Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammedi, S. (2020a). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27, 100326.
- Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammedi, S. (2020b). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27, 100326.
- Ali, M., Alam, N., & Rizvi, S. A. R. (2020). Coronavirus (COVID-19)-an epidemic or pandemic for financial markets. *Journal of Behavioral and Experimental Finance*, 27, 100341.
- Allam, S., Abdelrhim, M., & Mohamed, M. (2020). *The Effect of the COVID-19 Spread on Investor Trading Behavior on the Egyptian Stock Exchange*. SSRN, Research Paper.
- Andrews, M. A., Areekal, B., Rajesh, K.R., Krishnan, J., Suryakala, R., Krishnan, B., Muraly, C.P, & Santhosh, P.V. (2020). First confirmed case of COVID-19 infection in India: A case report. *The Indian Journal of Medical Research*, 151(5), 490-492.
- Apergis, N., & Apergis, E. (2020). The role of Covid-19 for Chinese stock returns: evidence from a GARCHX model, *Asia-Pacific Journal of Accounting & Economics*, 29:5, 1175-1183, DOI: 10.1080/16081625.2020.1816185
- Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*, 54, 101249.
- Baig, A. S., Butt, H. A., Haroon, O., & Rizvi, S. A. R. (2020). Deaths, panic, lockdowns and US equity markets: The case of COVID-19 pandemic. *Finance Research Letters*, 38, 1011701.
- Bora, Debakshi & Basistha, Daisy. (2020). The Outbreak of COVID-19 Pandemic and Its Impact on Stock Market Volatility: Evidence from a Worst-affected Economy. 10.21203/rs.3.rs-57471/v1.
- Chen, C., Liu, L., & Zhao, N. (2020). Fear sentiment, uncertainty, and bitcoin price dynamics: The case of COVID-19. *Emerging Markets Finance and Trade*, 56(10), 2298-309.
- Chen, M. H., Jang, S. C., & Kim, W. G. (2007a). The impact of the SARS outbreak on Taiwanese hotel stock performance: An event-study approach. *International Journal of Hospitality Management*, 26(1), 200-212.
- Chen, M. P., Lee, C. C., Lin, Y. H., & Chen, W. Y. (2018a). Did the S.A.R.S. epidemic weaken the integration of Asian stock markets? Evidence from smooth time-varying cointegration analysis. *Economic Research Ekonomiska Istrazivanja*, 31(1), 908-926.

- Cucinotta, D., & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. *Acta Biomedica*, 91(1), 157-160.
- Del Giudice, A., & Paltrinieri, A. (2017). The impact of the Arab Spring and the Ebola outbreak on African equity mutual fund investor decisions. *Research in International Business and Finance*, 41, 600-612.
- Dima, B., Dima, S. M., & Ioan, R. (2022). The impact of COVID-19 crisis on stock markets' statistical complexity. *Complexity*, 2022, 1-5.
- Dong, G. N., & Heo, Y. (2013). *Flu Epidemic, Limited Attention and Analyst Forecast Behavior*. SSRN, Reserch Paper.
- Eleftheriou, K., & Patsoulis, P. (2020). *COVID-19 Lockdown Intensity and Stock Market Returns: A Spatial Econometrics Approach*. MPRA Paper 100662. Germany: University Library of Munich. Available from: https://mpra.ub.uni-muenchen.de/100662/1/MPRA_paper_100662.pdf
- Fu, M., & Shen, H. (2020). COVID-19 and Corporate Performance in the Energy Industry. *Energy RESEARCH LETTERS*, 1(1). <https://doi.org/10.46557/001c.12967>.
- Gil-Alana, L. A., & Monge, M. (2020). Crude Oil Prices and COVID-19: Persistence of the Shock. *Energy RESEARCH LETTERS*, 1(1). <https://doi.org/10.46557/001c.13200>
- Haroon, O., & Rizvi, S. A. R. (2020). COVID-19: Media coverage and financial markets behavior-a sectoral inquiry. *Journal of Behavioral and Experimental Finance*, 27, 100343.
- He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on stock markets. *Economic and Political Studies*, 8(3), 275-88.
- Huremović, D. (2019). Brief history of pandemics (Pandemics throughout history). *Psychiatry of Pandemics*, 2019 May 16: 7-35.
- Ichev, R., & Marinč, M. (2018). Stock prices and geographic proximity of information: Evidence from the Ebola outbreak. *International Review of Financial Analysis*, 56, 153-166.
- Jabeen, S., Farhan, M., Zaka, M. A., Fiaz, M., & Farasat, M. (2022). COVID and world stock markets: A comprehensive discussion. *Frontiers in Psychology*, 12, 4837.
- Jiang, Y., Zhang, Y., Ma, C., Wang, Q., Xu, C., Donovan, C., Ali, G., Xu, T., & Sun, W. (2017). H7N9 not only endanger human health but also hit stock marketing. *Advances in Disease Control and Prevention*, 2(1), 1-7.
- Le, D., Anh, T., & Gan, C. (2020). The impact of the COVID-19 lockdown on stock market performance: Evidence from Vietnam. *Journal of Economic Studies*, 48(4), pp. 836-851. <https://doi.org/10.1108/JES-06-2020-0312>.
- Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. *International Journal of Environmental Research and Public Health*, 17(8), 2800.
- Mamaysky, Harry, News and Markets in the Time of COVID-19 (April 16, 2022). Available at SSRN: <https://ssrn.com/abstract=3565597> or <http://dx.doi.org/10.2139/ssrn.3565597>
- Mishra, A. K., Rath, B. N., & Dash, A. K. (2020a). 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.
- Mishra, A. K., Rath, B. N., & Dash, A. K. (2020b). 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.
- Moore, Sarah. (2021, September 28). History of COVID-19. News-Medical. Retrieved on October 15, 2022 from <https://www.news-medical.net/health/History-of-COVID-19.aspx>.
- Narayan, P. K., Phan, D. H. B., & Liu, G. (2021). COVID-19 lockdowns, stimulus packages, travel bans, and stock returns. *Finance Research Letters*, 38, 101732.
- Ngwakwe, C. C. (2020). Effect of COVID-19 pandemic on global stock market values: A differential analysis. *Acta Universitatis Danubius. (Economica)*, 16(2), pp. 255-269.
- Nippani, S., & Washer, K. M. (2004b). SARS: A non-event for affected countries' stock markets? *Applied Financial Economics*, 14(15), 1105-1110.
- Ortmann, R., Pelster, M., & Wengerek, S. T. (2020). COVID-19 and investor behavior. *Finance Research Letters*, 37, 101717.
- Ozili, P., & Arun, T. (2020). *Spillover of COVID-19: Impact on the Global Economy*. MPRA Paper 99317. Germany: University Library of Munich. Available from: <https://www.ideas.repec.org/p/pramprapa/99317.html>
- Ozkan, O. (2021). Impact of COVID-19 on stock market efficiency: Evidence from developed countries. *Research in International Business and Finance*, 58, 101445.
- Phan, D. H. B., & Narayan, P. K. (2020). Country responses and the reaction of the stock market to COVID-19-a preliminary exposition. *Emerging Markets Finance and Trade*, 56(10), 2138-2150.
- Salisu, A. A., Sikiru, A. A., & Vo, X. V. (2020). Pandemics and the emerging stock markets. *Borsa Istanbul Review*, 20(Suppl 1), S40-S48.
- Shehzad, K., Xiaoxing, L., & Kazouz, H. (2020). COVID-19's disasters are perilous than global

- financial crisis: A rumor or fact? *Finance Research Letters*, 36, 101669.
- Sinha, P., Sawaliya, P., & Sinha, P. (2020). Surviving coronavirus scare. A journey of stock market amid a slowdown in Indian economy. *Journal of Applied Economic Sciences*, 4(70), 828-842.
- Sylla, R., Traflet, J., & Wright, R. E. (2020). *Pandemics and Epidemics Financial and Economic Effects*. United States: Museum of American Finance. Available from: https://www.moaf.org/publications-collections/financial-history-magazine/133/_res/id=Attachments/index=0/Pandemics%20and%20Epidemics.pdf
- Takyi, P. O., & Bentum-Ennin, I. (2020). The impact of COVID-19 on stock market performance in Africa: A Bayesian structural time series approach. *Journal of Economics and Business*, 115, 105968.
- Tan X, Ma S, Wang X, Zhao Y, Wang Z and Xiang L (2022) The Dynamic Impact of COVID-19 Pandemic on Stock Returns: A TVP-VAR-SV Estimation for G7 Countries. *Front. Public Health* 10:859647. doi: 10.3389/fpubh.2022.859647. Vol.10, pp. 1-14.
- Taylor, B. (2020). *The Spanish Flu and the Stock Market: The Pandemic of 1919*. Investment Office. Available from: https://www.investmentoffice.com/observations/markets_in_history/the_spanish_flu_and_the_stock_market_the_pandemic_of_1919.html
- Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *Journal of Finance*, 62(3), 1139-1168.
- Topcu, M., & Gulal, O. S. (2020). The impact of COVID-19 on emerging stock markets. *Finance Research Letters*, 36, 101691.
- World Health Organization. (2020). *Novel Coronavirus (2019-nCoV) Situation Report-1*. Geneva: World Health Organization. Available from: <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf>
- World Health Organization. (2022). *WHO EMRO Outbreak Epidemic and Pandemic Diseases*. Geneva: World Health Organization. Available from: <https://www.who.int/emro/outbreak-epidemic-and-pandemic-diseases/>

