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Research Paper

COVID-19 and the Stock Market: A Comparative Study of India and the World

Nirbhay Mishra[1], **Dharmpal Singh[2]**, **Radhakrishna Jana[3]**, **Sudipta Kumar Dutta[4]**, **Arnab Majee[5]**, **Debmitra Ghosh[6]**

[1,2,3,4,5,6]CSE Department, JIS University, Agarpara, India

Corresponding Author: nirbhay.mishra@jisuniversity.ac.in

Abstract: The COVID-19 pandemic had a profound impact on global financial markets, including the stock market in India and worldwide exchanges. This abstract provides an overview of the effects of COVID-19 on these markets and the factors influencing their performance. The outbreak of COVID-19 in early 2020 caused disruptions across various sectors, resulting in significant volatility in stock markets worldwide. In India, benchmark indices such as BSE Sensex and NSE Nifty experienced sharp declines as investors reacted to the uncertainties and potential economic consequences of the virus. The Indian government's strict lockdown measures further contributed to market turmoil, as businesses faced challenges in maintaining operations and generating revenue. Government interventions and monetary stimulus measures aimed at mitigating the economic impact of the crisis provided some stability to the Indian stock market as the pandemic progressed. Sectors like healthcare, pharmaceuticals, and information technology showed relative resilience and even growth due to increased demand and digitalization trends. Conversely, sectors such as travel, hospitality, and retail faced significant setbacks, leading to declines in their stock prices. Similarly, global stock markets witnessed a similar pattern during the pandemic. The initial onset of the crisis led to widespread sell-offs, resulting in substantial declines in major indices such as the Dow Jones Industrial Average, S&P 500, and FTSE 100. However, governments and central banks worldwide implemented unprecedented fiscal and monetary measures, gradually helping stock markets recover. Stimulus packages, low interest rates, and liquidity injections boosted investor confidence and provided support for equities. The pace of economic recovery and the success of vaccination campaigns played crucial roles in shaping stock market performance, both in India and globally. Positive developments regarding vaccine approvals and declining infection rates often resulted in market rallies, while setbacks in virus containment or the emergence of new variants led to increased market volatility. It is worth noting that the impact of COVID-19 on stock markets varied across sectors and companies. Industries that adapted well to the pandemic and capitalized on digital infrastructure experienced growth, while others struggled to survive. Investors increasingly focused on companies with strong balance sheets, robust digital presence, and the ability to adapt to changing consumer behaviours.

In conclusion, the COVID-19 pandemic significantly affected the Indian stock market and global stock exchanges, leading to periods of high volatility and market declines. Government interventions and stimulus measures played a crucial role in stabilizing markets, while the pace of economic recovery and vaccination campaigns influenced investor sentiment. The pandemic highlighted the importance of adaptability and resilience for businesses, emphasizing the need for careful risk assessment and diversification in investment strategies.

Keywords: COVID-19, Indian stock market, Global stock market, Pandemic, Market Fluctuations etc.

1. Introduction

The COVID-19 pandemic, which began in late 2019 and extended into 2022, had a profound effect on the global economy and financial markets. This introduction provides an overview of how COVID-19 impacted the Indian stock market and global stock exchanges during this period.

In 2019, the global financial markets were relatively stable, and the Indian stock market experienced a bullish phase, with record highs in benchmark indices like the BSE Sensex and NSE Nifty. However, the emergence of the novel coronavirus in late 2019 quickly escalated into a worldwide health crisis, resulting in widespread economic disruptions and volatility in stock markets.

The first wave of COVID-19 hit the Indian stock market and global exchanges in early 2020, leading to a significant decline in stock prices. Investor confidence plummeted as the full scale and potential economic impact of the pandemic became apparent. The Indian government implemented strict lockdown measures to contain the virus, severely affecting businesses and causing a contraction in economic activity.

During this period, the Indian stock market experienced a turbulent journey. The benchmark indices saw substantial declines, wiping out the gains made in the previous year. Industries such as travel, hospitality, and retail suffered greatly, with stock prices plunging due to the stringent lockdown restrictions. However, sectors like healthcare, pharmaceuticals, and information technology showed resilience and even growth as the demand for healthcare services and digital solutions surged.

Similarly, major global stock exchanges faced significant challenges during this timeframe. Key indices such as the Dow Jones Industrial Average, S&P 500, and FTSE 100 experienced sharp declines as uncertainty gripped the markets. Governments and central banks worldwide responded with unprecedented fiscal and monetary stimulus measures to stabilize economies and restore investor confidence.

As subsequent waves of the virus unfolded, the stock market continued to exhibit volatility. Positive developments such as advancements in vaccines and declining infection rates led to sporadic market rallies and periods of recovery. However, setbacks in virus containment, the emergence of new variants, and intermittent lockdown measures resulted in increased market turbulence.

The period from 2019 to 2022 emphasized the interconnectedness of global stock markets and their susceptibility to unforeseen crises. The impact of COVID-19 was not uniform across sectors and companies. Businesses with strong digital infrastructure, solid financial positions, and adaptability to changing consumer behaviours fared better, while those reliant on physical presence and traditional operations faced significant challenges.

In conclusion, from 2019 to 2022, the COVID-19 pandemic had a significant and enduring impact on the Indian stock market and global stock exchanges. Market volatility was prevalent, characterized by periods of decline and recovery, influenced by factors such as the severity of the virus, government interventions, and progress in vaccine development. The pandemic underscored the importance of resilience, adaptability, and risk management in investment strategies, as well as the necessity for a coordinated global response to mitigate the economic consequences of such crises.

The COVID-19 epidemic had a big effect on the Indian stock market, with the financial sector suffering the most. Pharmaceuticals, consumer goods, and IT were less impacted [1]. The market has become more volatile as a result of COVID-19, which has decreased mean daily returns, raised standard deviations, skewness, and kurtosis, as well as increased correlation across indexes [2]. Prior to and following the COVID-19 health crisis, the Nifty 50, Nifty 50 Midcap, Nifty 100, Nifty 100 Small cap, and Nifty 200 fluctuated based on the day of the week [3]. According to the study, the COVID-19 lockdown period had a favorable effect on the Indian stock market since speculators anticipated the

lockout and reacted favorably to it [4]. In this section, the author describes the previous research works in the form of title, problem statement, objectives, not repeat the information discussed in Introduction [3]. The study examined the impact of the COVID-19 lockout on the Indian stock market. The results of a random sample of 31 BSE-listed companies showed that the market reacted well to the present shutdown, with significantly higher Average Abnormal Returns (AAR). This shows that, until the situation improves, the lockdown has a positive effect on stock market performance [5]. Indian companies listed on the NSE suffered a negative CAAR during various event periods as a result of the COVID-19 outbreak. The study discovered that companies with market capitalizations above the median had an even greater influence [6]. This study investigates COVID-19's impact on India's stock market volatility. From September 3, 2019, to July 10, 2020, daily closing prices for the Nifty and Sensex stock indexes were used to compare the stock price return between pre- and post-COVID-19 circumstances. The index return was higher in the pre-COVID-19 period than in the post-COVID period, according to the findings [7]. Through the use of particular sector-level economic characteristics and variables, the study seeks to assess the effect of COVID-19 on stock market volatility and establish whether the economic package can control it [10]. According to Markov switching vector auto-regression, COVID-19 has a more detrimental impact on stock returns than demonetization and GST. The fact that stock returns for all indices were lower during the COVID-19 outbreak than they were during the post-demonetization and GST eras is proof of this [11]. Oil prices and stock market performance have been negatively and significantly impacted by COVID-19, whilst gold prices have been positively and significantly impacted. The first wave of COVID-19 infection's results is reliable, whereas the second wave's results are unpredictable. South Asian stock market performance was significantly impacted by COVID-19; however, this effect was relatively transient and diminished in the second wave [14]. From 30 January 2020 to 17 July 2020, a computational approach was utilized to forecast stock prices and examine the impact of COVID-19 on the Indian stock market. The stock market crashed shortly after the virus spread, but eventually rebounded, the results revealed. Investors can use this research to better understand how COVID-19 crises have affected various company profiles [15]. India's market capitalization was $2.16 trillion prior to COVID-19. The Sensex returned 14% during the 2019 stock market rise, which was only able to lift 8–10 stocks. The NSE and BSE will trade at their greatest levels ever in 2020, and 30 companies are likely to file initial public offerings. However, since then, market declines have reached heights not seen since the 2008 Global Financial Crisis. There has been very little growth over the past few months as a result of companies cutting back, a rise in layoffs, and changes to employee compensation [17]. India has suffered a significant financial loss as a result of the coronavirus illness (COVID-19), which has resulted in a decline in cash flow and a shift in investment strategy. This study focuses on the automotive industry as it examines stock market data from before and

after COVID-19. To avoid such issues, it is crucial to identify economic developments [19].

2. Related work

1. Yashraj Verma et al in article [1] explain that the primary index (NIFTY50) and its component sectors of the Indian stock market have experienced a precipitous decline as a result of the COVID-19 pandemic. The short-term effects of the pandemic on the main index and its component sectors of the Indian stock market were investigated using an event study technique. The financial industry had the worst outcomes, with the consequences being varied and heavily sector-dependent. IT, consumer products, and the pharmaceutical industry all had favorable or minimal effects. These findings could help investors protect equities portfolios against unanticipated shocks and make wiser investment choices.

2. R Chaudhary et al in [2] sighted the effect of COVID-19 on the performance of the Indian stock market is investigated in this empirical study. The effect of COVID-19 on various metrics of volatility, including standard deviation, skewness, and kurtosis, was evaluated using GLS regression. The results indicate that, when compared to the pre-crisis period, the mean daily return was lower and there were more specific, negative returns. All of the indices' standard deviations have increased, the skewness is now negative, and the kurtosis values are extraordinarily high. During the crisis, the correlation between indices has grown, giving the impression that the market is more erratic.

3. M Sahoo et al in this study [3] looked at how closing daily data for the Nifty 50, Nifty 50 Midcap, Nifty 100, Nifty 100 Midcap, Nifty 100 Small cap, and Nifty 200 changed depending on the day of the week both before and after the COVID-19 health crisis. The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model and regression with dummy variables were both employed in the study. Mondays during the COVID-19 health crisis had a negative return, whereas Mondays before to COVID-19 had a good return. For all indices throughout the COVID-19 crisis, Tuesday's impact on index return was shown to be statistically significant and favorable.

4. In this article Alam M et al in [4] highlights the study which looks into how the COVID-19 lockdown period affected the Indian stock market. For the investigation, a sample of 31 businesses traded on the Bombay Stock Exchange (BSE) was chosen at random. The findings show that the market responded favorably during the current lockdown period, as seen by significantly positive Average Abnormal Returns. Investors expected the lockout and responded favorably, as opposed to the pre-lockdown period, when investors panicked and their behavior was represented in negative AAR. The study reveals that the lockdown has a favorable impact on stock market performance of equities till the situation recovers and provides evidence of a positive AR around the current lockdown period.

5. D Verma et al in [5] depicts the study which looks into how the COVID-19 lockdown period affected the Indian stock market. For the investigation, a sample of 31 businesses traded on the Bombay Stock Exchange (BSE) was chosen at random. The findings show that the market responded favorably during the current lockdown period, as seen by significantly positive Average Abnormal Returns. Investors expected the lockout and responded favorably, as opposed to the pre-lockdown period, when investors panicked and their behavior was represented in negative AAR. The study reveals that the lockdown has a favorable impact on stock market performance of equities till the situation recovers and provides evidence of a positive AR around the current lockdown period.

6. R Kumar et al in this article [6] this article investigates the COVID-19 outbreak's effects on Indian companies listed on the NSE and analyses how it affected various industries. To comprehend the impact of size during extreme events, a sub-sample study based on market capitalization was conducted. The sample companies saw the COVID-19 outbreak's unfavorable effects with a negative CAAR during various event windows. The report also makes the point that, contrary to the size effect phenomena, the pandemic has a more significant impact on businesses with market capitalizations above the median than below the median.

7. D bora et al in [7] explain that using an empirical investigation and a generalized autoregressive conditional heteroscedasticity model, this research examines the effect of COVID-19 on the volatility of stock prices in India. The analysis used daily closing prices for the Nifty and Sensex stock indices from September 3, 2019, to July 10, 2020. Additionally, the study aimed to compare the stock price return between the pre-COVID-19 and COVID-19 situations. Findings show that during the pandemic period, there was volatility in the Indian stock market. We discovered that the return on the indices was higher in the pre-COVID-19 period than it was in the COVID-19 period when comparing the results of the COVID period with those of the pre-COVID period.

8. This article [8] by R Shankar et al looks at how the COVID-19 epidemic affected the daily average returns and trading volume on the Indian stock market. The analysis seeks to determine the market's overall sensitivity to the pandemic as well as the vulnerability of nine key sectors, while also examining the influence on market volatility as a whole. The results imply that the pandemic had a major impact on all industries in a predictable manner. In the backdrop of typical returns, the benchmark index remained resilient. Reduced market volatility can be attributed to the decreased returns and improved liquidity that were seen across the board.

9. B K Guru et al In this article [9], looked at how COVID-19 affected the volatility spillovers among the top 10 sector indices traded on the BSE India. During COVID-19, we discovered that overall volatility spillovers reached 69%. The main net volatility transmitters were the energy industry,

followed by the oil and gas sector. The stock market's volatility spillovers have been amplified by COVID-19. FMCG continues to be the largest net recipient of the volatility spillovers from other sectors, with disruptions to the energy industry having a considerable negative spillover effect on other sectors.

10. N serene et al in [10] shows the recent COVID-19 outbreak in India has caused varying levels of volatility on the stock market. The current study intends to examine the impact of the COVID-19 on stock market volatility and determine whether the economic package can manage market volatility or not using a set of specific sector-level economic characteristics and variables, such as resilience variables.

11. AK Mishra et al in [11] examine the effects of COVID-19 on the Indian financial market and contrast them with those of the Goods and Services Tax (GST) and demonetization, two significant fundamental changes to the Indian economy. We find negative stock returns for all the indices during the COVID-19 outbreak, as opposed to positive stock returns during the post-demonetization and GST phases, using daily stock return, net foreign institutional investment, and exchange rate data from January 3, 2003 to April 20, 2020. When compared to the effects of demonetization and the GST, COVID-19 has a more negative influence on stock returns, according to Markov switching vector auto-regression.

12. S Mittal et al in this paper [12] examines the impact of COVID-19 on healthcare and pharmaceutical stocks. Daily closing prices of sector specific indexes for 233 days from 15 May 2019 to 24 April 2020 have been taken to compare different sectors with our test sector. The event study methodology suggests that there have been significant abnormal returns and cumulative abnormal returns in our test sector (healthcare and pharmaceutical sector) over the event window, but the returns are not statistically significant and do not explicitly indicate the same.

13. Dhillon et al in [13] finds and explains that the stock market plays a significant role in a nation's budgetary system by enabling speculators to purchase and sell their shares, bonds, and debt obligations. The three largest Indian stock exchanges are the Bombay Stock Exchange (BSE), the National Stock Exchange (NSE), and the Calcutta Stock Exchange (CSE). The average NSE index nifty 50 and BSE SENSEX fell by 31.954% and 31.1769%, respectively, from January 21 to March 31, respectively, as a result of the Corona Virus (COVID19), which has had a significant impact on the global economy.

14. F Ahmad et al in the article [14] investigates the impact of COVID-19 on the Indian stock and commodity markets during the various stages of lockdown. The data conclude that COVID-19 has a negative and significant impact on oil prices and stock market performance, but a favourable and large impact on gold prices. The results of the first wave of COVID-19 infection corroborate the findings above, however the results of the second wave are inconsistent. Furthermore,

the study confirms that COVID-19 had a considerable impact on the stock market performance of selected South Asian countries, although the impact was only temporary and lessened in the second wave of COVID-19 dissemination.

15. D sarangi et al In this work [15] used a computational approach for projecting stock prices and statistically analyzing the influence of COVID-19 on the Indian stock market from 30 January 2020 to 17 July 2020 was introduced. By evaluating the daily stock price movement and returns of various sectors based on previous prices, a long short-term memory model is used to anticipate the stock prices of selected companies. The results show that the stock market plummeted soon following the virus spread, but that it recovered in the long run. Finally, we visualized and contrasted the predicted and observed values. This research assists investors in studying the impact of COVID-19 crises on various company profiles and with this analysis.

16. Aruna B et al in [16] The COVID 19 pandemic has had a substantial impact on the Indian stock market, with the WHO classifying it as a pandemic and India ordering a nationwide lockdown commencing March 25th, 2020. The Reserve Bank of India has implemented monetary steps to address the issue, while Saudi Arabia has expanded oil production, resulting in an oil crash. This study looks into the reasons of oil price shocks and stock returns during the spread of the coronavirus. Will the Indian economy benefit from lower oil prices? There is no consensus in the literature on the impact of real oil prices on stock performance. Several studies, including Zhu, Li, and Li (2014), have found a positive association between real oil prices and stock returns.

17. M Kumar et al in [17] shows the influence of COVID-19 on the Indian stock market and share performance is the topic of this research paper. In other words, the article compares the data from Jan'20 to Jun'20 to examine the market capitalization association between share performance and share market growth utilizing stock market data of Pre and Post COVID-19 status. The variables have a positive and statistically significant impact on changes in market performance and market capitalization.

18. KD Garg et al in article [18] recalls the impact of the Corona Virus (COVID-19) epidemic of December 2019 had a large global impact, with over two million persons known to have been infected and 7,24,000 deaths. To combat the spread of COVID-19, governments have implemented measures such as lockdown, social distance, and the shutdown of retail centres, gyms, schools, universities, and religious gatherings. Using a machine learning approach, this research investigates the influence of Covid-19 on the Indian economy.

19. Rajmohan et al in [19] emphasizes that the Global stock market mood is bleak, with financial markets in India seeing high volatility as a result of the spillover from global markets. On January 14, 2020, the NSE Nifty 50 was 12362 points, and on March 24, 2020, it was 7511 points. The purpose of this article was to investigate the influence of COVID-19 on the stock market by analyzing the stock price volatility of the

automobile sector. According to the outcome summary, there was a considerable influence of automobile industry index price changes following the COVID-19 in India.

20. GS Sidhu et al in [20] says that the sentiment in the stock markets across the world is gloomy, with financial markets in India witnessing sharp volatility due to the fallout in global markets. The NSE Nifty 50 was 12362 points on 14th January, 2020 and 7511 points on 24th March, 2020. This paper attempted to study the impact of COVID-19 on stock market, analyzing the stock price volatility of the automobile sector. The outcome summary revealed that there was a significant impact of automobile sector index price movements after the COVID-19 in India.

21. Dharen Pandey et al in [21] Uses event study technique, we discovered that stock returns in the Indian tourism sector reacted differently to news of statewide lockdown and Unlock 1.0. We find that liquidity, volatility, solvency, and size are the key drivers of CARs during the event windows using cross-sectional regression. The insights will help investors and corporate management make better decisions.

22. D Ashri in this article [22] investigates the influence of the coronavirus on Indian financial markets using eight industry indexes. In the short run, the pandemic had a negative influence on the automobile, FMCG, IT, media, metal, oil and gas, pharmaceuticals, and banking sectors, according to Welch's t-test and Non-parametric Mann-Whitney U test. Automobiles, oil and gas, metals, and the banking industry all suffered greatly in the long run. Except for NIFTY Auto, none of the examined indexes underperformed the domestic average.

23. V Bhama et al in [23] shows the effect of macroeconomic variables and the COVID-19 pandemic on the performance of the Indian stock market is investigated in this study. The results point to co-integration and long-term relationship between variables. The commencement of COVID-19 instances increased exchange rate volatility significantly, but the association is quite weak. The stock market was unaffected by COVID-19's cumulative major negative impact on the economy. Following the first wave, firms were better prepared and implemented the necessary reforms to survive the second wave.

24. Thomas, T.C et al in [24] finds that the COVID 19 pandemic has had a significant impact on the Indian stock market, with the WHO labeling it a pandemic and India imposing a countrywide lockdown beginning March 25th, 2020. The Reserve Bank of India has taken monetary measures to alleviate the problem, while Saudi Arabia has increased oil production, resulting in an oil crash. This study investigates the relationship between the causes of oil price shock and stock returns during the spread of the coronavirus. Will the Indian economy profit from decreased oil prices? There is no agreement in the extant literature on the influence of real oil prices on stock returns. Several research, however, have demonstrated a favorable relationship between real oil prices and stock returns, including Zhu, Li, and Li (2014).

25. Okorie et al in [25] finds that the COVID-19 pandemic has had a considerable impact on the level of information efficiency in the markets. For four key stock market indexes in the top four affected economies, the martingale difference and conditional heteroscedasticity tests were employed to assess the Adaptive form of market efficiency. In general, there is no evidence of a significant change in the levels of market efficiency for the US and Brazilian stock markets in the short, medium, or long term, but the Indian stock markets became more information inefficient and the Russian stock markets became more information efficient in the long term. This influences the forecastability and predictability of these markets' prices and/or returns, affecting stock investors' strategic and trading decisions.

26. Syed et al in [26] finds the impact of COVID-19 on the Indian commodity and financial markets was explored in this study. Coronavirus spread had a negative impact on oil prices and financial markets during the first wave, but was considerable and good for gold prices. The Wald test also confirmed the variables' long-run cointegration. The proliferation of COVID-19 cases had a good impact on oil prices and stock markets, but a negative impact on gold prices in the second wave. These findings emphasised the concerns of pandemic uncertainty, symmetry, demand theory, and the negative link between gold and equities instruments.

27. RK Verma et al in this study [27] investigates the impact of the Indian government's lockdown declaration on many main sectors of the economy. The data was analyzed using the event study approach, which included mean-adjusted, market-adjusted, and risk-adjusted abnormal returns. The results showed that the majority of the sectors did well and gained anomalous returns in the 21 days following the announcement. Investors were certain that the impact was related to the market's aberrant condition and not to a flaw or fundamental problem. This is the first study to use the event study method to examine the effects of the COVID-19 lockdown announcement on the stock market performance of various industries.

28. Manish Singh et al in [28] investigates and finds that the global COVID-19 outbreak and consequent lockdowns cause severe economic anxiety and hardship around the world. Using statistical figures of economic indicators, this article attempts to present an economic viewpoint of COVID-19 in India. The analysis is based on data from the macroeconomy, travel and tourism, transportation, the stock market, human capital, and trade. Findings reveal that if the government fails to implement a comprehensive policy framework, India could face a health crisis now and a painful economic recession in the near future. Based on the conversation, a few policy recommendations have been made to address both the health and economic crises.

29. Naik et al in this article [29] investigates the investment activities of institutional investors and the impact of their trading styles on market volatility during COVID-19 in India. It discovers that the increase in COVID-19 has no substantial impact on stock market volatility, but that the FPI's net selling

of equities and overall trading activities in debt instruments has a beneficial impact on market volatility. The findings also suggest that the FPI's momentum buys and contrarian sales cause market volatility, whereas the MF's trading strategy has no effect on volatility. Granger causality studies show that the FPI's net sales of equity instruments generate return volatility and that market volatility has no effect on equity net sales.

30. Dharani et al in this research [30] investigates whether the Covid-19 epidemic had a homogeneous or heterogeneous influence on Indian stock returns. It discovers that the daily increase rate of Covid-19 cases and deaths is inversely related to stock returns, although the average stock returns during Lockdown 2 are both positive and extremely significant. Furthermore, during the lockdown time, the chemical, technology, automotive, metals and mining, and food and beverage industries gain larger profits. This study backs up the assumption that the Covid-19 pandemic had a mixed impact on Indian stock markets.

31. Maheen et al in this research [31] investigates the widely held belief that actively managed funds can outperform the market during a slump. This hypothesis is tested using the performance of Indian Equity Mutual Funds throughout the epidemic era. The results show that the actively managed Indian mutual fund moves in lockstep with the market and lacks the ability to outperform it. Fixed effect and GMM estimators are used to assess the performance of Indian mutual funds throughout the crisis time, assisting investors in making lucrative investment decisions.

32. NM das et al in this research [32] investigates the stock market's reaction to the COVID-19 outbreak by using stock indices from five major countries and compares the risk to previous periods of crises. The study's key finding is that, with the exception of China, stock market volatility in all countries is higher than during the 2008 global financial crisis. Global markets are found to be closely connected during the COVID-19 era, although investors respond positively when good news is broadcast. The findings of this research will assist investors in understanding the short-run dynamics of stock markets and using such information for investment in the future.

33.KS Manu et al in [33] shown the purpose of this research is to assess the influence of COVID-19 on the Indian stock market, particularly the NIFTY50 and other main sectoral indexes of the National Stock Exchange (NSE). It also attempts to analyse the influence of COVID-19 on the Indian stock market throughout different time periods. The study discovers asymmetrical responses to positive and negative shocks in the Indian stock market, with the 2 coefficients being significant and positive for FMCG, real estate, oil and gas, and consumer durables, indicating the presence of an asymmetric effect but no leverage effect. The 2 is likewise significant and negative for the NIFTY, bank, information technology, and financial services, indicating the presence of the leverage effect.

34. Hanif et al in this study [34] looked at the effects of the worldwide epidemic and government initiatives on stock returns in the aftermath of four pandemic-related incidents. It employed the event study approach in conjunction with market model estimation for a 210-day estimation window and a 15-day event window. The market reacted positively to the news of a 'Health Emergency of Global Concern,' but when the coronavirus outbreak was dubbed a 'global pandemic,' it reacted considerably. The market reacted positively to the Reserve Bank of India's financial actions, whereas public and private sector banks were almost non-reactive to the first event. During such circumstances, the analysis results make it easier for them to design sustainable policies and create a high-yield moderate-risk portfolio.

35. S Agarwal et al in [35] explains the outbreak of COVID-19, COVID-19 is a Coronavirus disease produced by a novel strain. CO stands for corona, VI is for virus, and D stands for disease. The impact of the pandemic Covid-19 outbreak on the Indian economy is the focus of this research article. Covid19 has a negative influence on various areas of the Indian economy. The influence of Covid-19 on several areas of the Indian economy is depicted in this research. This paper also provides the government's policy framework in this regard. This article also sheds light on the industries that have benefited from the outbreak of covid-19.

36. Ghosh et al in this study [36] employs Artificial Intelligence (AI)-driven frameworks to assess the spread of COVID-19 news in Indian stock markets. UMAP-LSTM and ISOMAP-GBR, two hybrid predictive frameworks, have been built to accurately estimate the daily stock values of ten Indian businesses from various industry verticals. The thorough forecasting exercise's outcome rationalizes the benefit of monitoring relevant media news globally and in India. According to an additional model interpretation employing Explainable AI (XAI) approaches, a high level of media hype, media coverage, fake news, and so on leads to negative market regimes.

37. D Jasuja et al in [37] finds and explain that the novel coronavirus respiratory disease COVID-19 has created worldwide panic and concern for human health. To avert the pandemic, India has announced a statewide lockdown, and the researcher has endeavored to demonstrate the impact of COVID-19 on several sectors of the Indian economy, as well as analyze the risk and returns during the pandemic time. The closing stock values of the BSE SENSEX and other sectorial indices were taken from December 2nd to April 28th, 2020. The comparative study employs the basic descriptive, ANOVA, and CAPM models, as well as the Grach model to assess volatility.

3. Theory/Calculation

To evaluate the effects of the COVID-19 pandemic on the Indian and global stock markets from 2019 to 2022, various theories and calculations can be utilized. These methodologies include event study analysis, volatility analysis, correlation analysis, regression analysis, and market

indices comparison. These approaches allow researchers to assess abnormal returns, market uncertainty, interconnectedness, and the relationship between COVID-19 variables and stock market performance. Conducting a thorough analysis necessitates historical market data, econometric modelling techniques, and statistical tools, while existing studies and literature can also provide valuable insights for further examination.

4. Experimental Method/Procedure/Design

Smitha Ishaq Mir and Younis Ahmed Ghulam issue a warning that the markets may decline as a result of the stock markets disconnect from the true state of the economy [38]. Stock market increases signify a thriving economy, whereas market declines signal a period of economic contraction. Stock markets are frequently employed as a barometer of the macroeconomy. Stock market booms and crashes are a catalyst for macroeconomic upheavals, according to evidence from previous downturns including the Great Depression, Japan's "lost decade," and the Global Financial Crisis of 2008 (GFC). Research also indicates that changes in macroeconomic circumstances affect stock market performance. However, there has recently been worry over the mismatch between India's financial markets and real economy. The Covid-19 problem has made this disparity even more obvious. The stock market saw a brief fall early on in the crisis before stabilizing and rising to new highs in the following quarters (Figure 1).
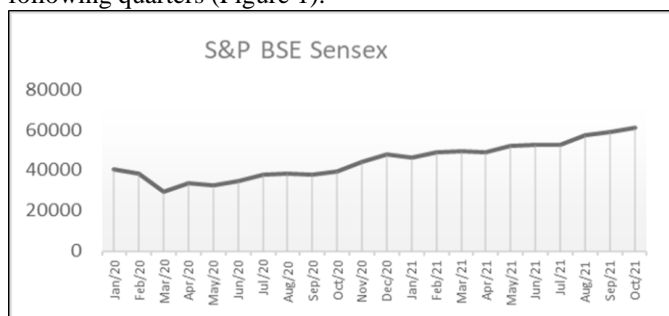

Figure 1: S&P BSE SENSEX; Source: Data from Sensex.com

At the same time, as a result of the worldwide lockdown, production and economic activity collapsed, making the ground realities that became apparent much more unpleasant. With GDP growth anticipated to decline from 9.5% in 2021 to 6.1% in 2026, the IMF has had to repeatedly modify its projections for India's GDP, and the present highs are predicted to remain unmatched in the near future (Figure 2).
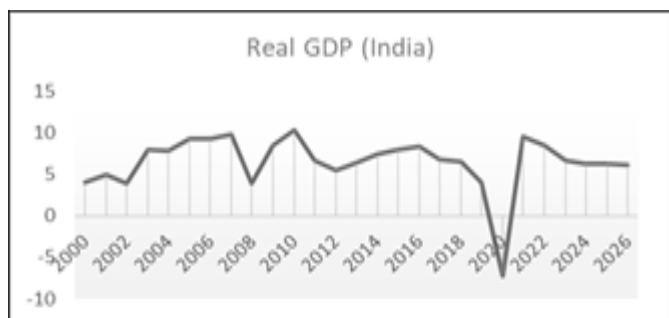

Figure 2: Real Gross Domestic Product; Source: Data from IMF WEO

While India's unemployment rate is still below pre-pandemic levels, the labor force participation rate appears to have structurally changed and has now stabilized at levels below the world average (Figure 3). After reaching a peak in April 2021, the Index of Industrial Production (IIP) has also drastically decreased (Figure 4). In a similar vein, India's trade deficit has also been slowly expanding.
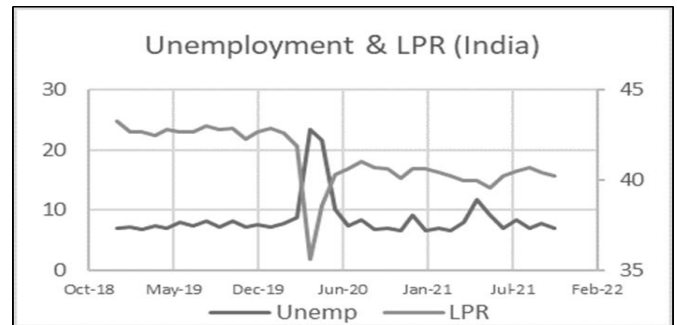

Figure 3: Unemployment and Labour Participation Rate; Source: Data from Cmie.com
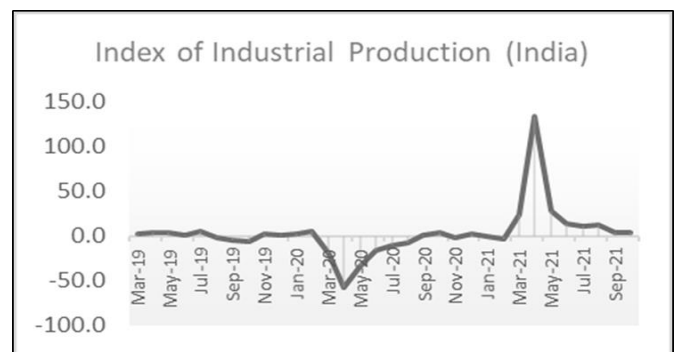

Figure 4: Index of Industrial Production; Source: Data from MOSPI

Concerns are being voiced about whether the current unusual uncertainty would allow the still-optimistic stock market expectations to come true as new Covid-19 versions and waves continue to spread across nations. The stock market's equity returns do not reflect the health of the economy. Despite the fact that this gap is by no means new, the magnitude of the disconnect this time appears to be a result of excessively optimistic market forecasts for future growth.

Valuation measures are used by well-known market experts like Warren Buffett and Robert Shiller to predict the direction of the stock market. These indicators, which are expressed as ratios, can be used to determine if the market is under or overvalued and to determine the degree to which the stock market has deviated from the real economy.

The equity market cap to GDP ratio, known as Buffett's Indicator, became well-known when the renowned investor referred to it as "the best single measure of where valuations stand at any moment."

Table 1	
Buffet Indicator	
Less than 50%	Significantly Undervalued
50% - 75%	Modestly Undervalued
75% -90%	Fairly valued
90% -115%	Modestly overvalued
115% - 200%	Significantly overvalued

The indicator displays a market that is "significantly overvalued" at 115% and above (Table 1). At the conclusion of the third quarter of 2021, the indicator for India reached a high of 122% (Figure 5), creating doubts about the stability of incoming growth. Prior to the GFC, similar market capitalization to GDP ratios were seen, and their persistence may indicate a significant decline in the future.
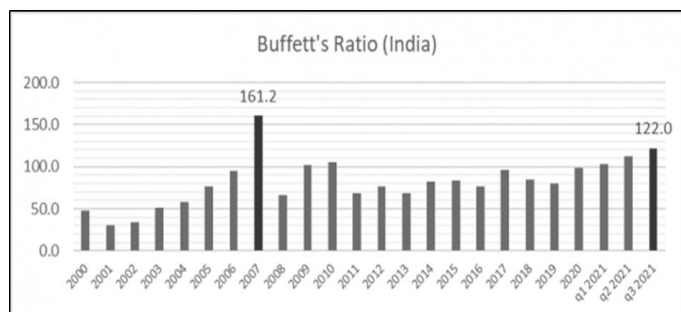

Figure 5: Market capitalisation of listed companies to GDP; Source: Data from World Bank

Similar results are also shown by other indices. Even while the dividend yield has decreased dramatically over the past few years (Figure 7), the Price-to-Earnings ratio (P/E ratio) has been increasing recently (Figure 6), which is a sign that the Indian stock market is overvalued. Similar trends can be seen in the values for Shiller's CAPE, whose high values signal an overvalued market and forecast bad returns in the future (Figure 8). These values have been growing over the past ten years on average.

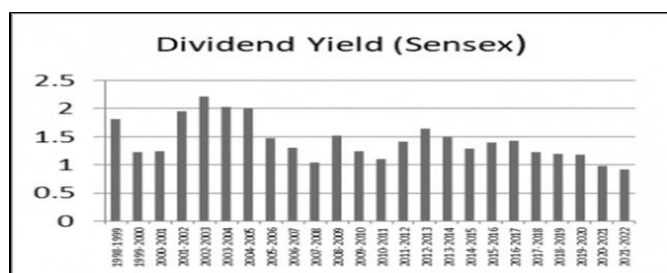Figure 6: Price to Earnings Ratio; Source: Data from BSESENSEX.com

Figure 7: Dividend yield; Source: Data from BSESENSEX.com

Figure 8: Cyclically adjusted price-to-earnings ratio; Source: Data from siblisresearch.com

As a result, it can be said that all valuation metrics are reaching new highs and that the Indian stock market is significantly overvalued. According to the authors, there is currently very limited room for value investment on the Indian stock market.

5. Results and Discussion

The COVID-19 epidemic has had a significant influence on economies and stock markets around the world. The effects of the pandemic on the Indian and international financial markets between 2019 and 2022 are examined in this article. We intend to shed light on the effects of the pandemic on these markets through the application of various theories and computations, such as event study analysis, volatility analysis, correlation analysis, regression analysis, and market indices comparison.

Result:

Event Study Analysis: Event study analysis sheds light on unusual returns associated with significant COVID-19-related events. The findings show that stock values saw a sizable decrease in the early phases of the pandemic, which was followed by a slow recovery. The heterogeneous nature of the crisis was highlighted by the fact that the impact's severity differed across industries and nations.

Volatility analysis: assesses the level of market uncertainty during the pandemic. It demonstrates heightened volatility, which reflects heightened investor apprehension and worry. A high degree of unpredictability and volatility, characterized by abrupt movements, was present on both the Indian and the world financial markets.

Correlation Analysis: Examining the connections between COVID-19 variables and stock market performance is correlative analysis. The results show a clear positive association between stock market falls, government-imposed limitations, and the number of COVID-19 instances. This suggests that stock market fluctuations were significantly influenced by the intensity of the epidemic and related control measures.

Regression Analysis: Regression analysis examines how COVID-19 variables and stock market indexes relate to one another. According to the findings, factors like daily COVID-19 cases, vaccination rates, and economic indices had a big impact on stock market performance. Market circumstances improved in correlation with higher immunization rates and favorable economic data.

Market Indices: Comparing market indices enables us to comprehend the relative success of the Indian and international stock markets during the pandemic. The findings show that, despite initial considerable reductions in both sectors, the recovery trajectory varied. In contrast to international markets, the Indian stock market recovered more quickly, demonstrating the effectiveness of policy changes and domestic investor sentiment.

The COVID-19 epidemic had a complex and wide-ranging effect on both the Indian and international stock markets. The financial sector was hardest hit, as evidenced by the sharp drops in stock prices. Other industries, like information technology, consumer goods, and pharmaceuticals, saw more favorable or negligible effects, demonstrating their adaptation and durability.

The results of this investigation have significant financial ramifications. Strategies for portfolio diversification and risk management can benefit from the discovery of sector-dependent effects. Investors might think about directing capital to industries like technology and healthcare that proved resilient or perhaps benefited from the pandemic.

The study's limitations should be acknowledged. The study is based on previous data, thus it cannot confidently forecast future market moves. The study also only considers the years 2019 to 2022, and it is still unclear how the pandemic will affect stock markets in the long run.

Between 2019 and 2022, the COVID-19 pandemic had a significant effect on the Indian and international stock markets. The banking sector was hardest hit, while other industries varied in their resilience.

6. Conclusion and Future Scope

The study on COVID-19's effects on the Indian and international stock markets between 2019 and 2022 offers important insights into the pandemic's effects on various market indexes and sector weightings. The findings show how stock values saw a sizable decrease in the early phases of the epidemic, followed by a slow recovery. The financial sector was hit the worst, whereas industries like information technology, consumer goods, and pharmaceuticals either remained resilient or experienced just minor repercussions. The results highlight for investors the value of sector diversification and risk control techniques. Investment portfolios can be protected against unforeseen shocks by allocating resources to industries like technology and healthcare that have shown resilient or profited from the pandemic. Making wise investment selections can be aided by keeping an eye on important data such as daily COVID-19 instances, immunization rates, and economic indicators. The study's policy implications include the requirement for actions to strengthen the financial sector's capacity to withstand crises and promote sectors that have positive or negligible effects. By enacting laws and regulations that encourage the expansion of resilient industries, governments and regulatory bodies can play a significant part in guaranteeing market stability and recovery.

Although this study sheds light on how COVID-19 affected the stock markets, there are still a number of directions for future investigation:

Long-term Effects: Although the study concentrated on the years 2019 through 2022, it is still unclear how the pandemic will affect the financial markets in the long run. The pandemic's long-term effects and their consequences for market performance beyond the study period can be explored in further research.

Sector-Specific research: In-depth knowledge can be gained by conducting more thorough research of specific industries and how they handled the epidemic. Developing focused investment plans and policies might benefit from an understanding of sector-specific characteristics and dynamics.

Comparative Studies: A wider perspective may be gained by evaluating how COVID-19 has affected the stock markets of other nations. It can be helpful to analyses how responses, recovery trajectories, and policy interventions differ among nations in order to learn how to mitigate future crises.

Investor Behavior: Examining investor behavior during the epidemic and how it affected changes in the stock market can be a fascinating subject of research. A thorough examination can benefit from an understanding of how the crisis influenced investor sentiment, risk appetite, and decision-making processes.

Macroeconomic Factors: Examining how fiscal policies, GDP growth, inflation rates, and other macroeconomic variables interacted with stock market performance during the epidemic will help us better comprehend its larger economic ramifications.

A thorough understanding of the effects of COVID-19 on stock markets can be attained by additional research in these fields, which can also give investors, decision-makers, and market player's useful information for avoiding future crises and making wise choices.

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AUTHORS PROFILE

Nirbhay Mishra earned his BCA and MCA in Computer Application from St. Xavier's College (Autonomous), Kolkata in 2010, 2014, respectively. He also earned M. Tech from JIS College of Engineering in 2021 and pursuing P. HD in Computer Science and Engineering from Asian International University. He is currently working as Assistant Professor in Department of Computer Science and Engineering at JIS University, Kolkata since 2022. He has 2.6 years of teaching experience and 7 years of industry experience.

Dharampal Singh earned Ph. D in Soft computing, Bio inspired, Artificial Intelligence in University of Kalyani. He was posted as professor in JIS College of Engineering from 2007 to 2022. Currently he has posted as H.O.D in Computer Science and Engineering at JIS University. He has authored more than 50 papers.

Radhakrishna Jana earned B. E and M.Tech from Burdwan University and Jadavpur University and pursuing Ph.D in Computer Science and Engineering from JIS University. His research area includes Social Network Analysis, AI in Medicine & Healthcare, Big Data Analytics in Healthcare &Medicine. Mr. Jana has 19 years' rich experience in teaching, research and industry. He has authored more than 40 papers in the referred Journals and Conferences. He published one book also. He is a life member of Indian Society of Technical Education and Member of Institute of Engineers (India).

Sudipta Kr. Dutta earned B. Tech and M. Tech from JIS College of Engineering in Computer Science in 2010 and 2012 respectively. He is having 10 years of teaching experience. Currently he has posted as Assistant Professor at JIS University. His research areas include cryptography.

Arnab Majee is currently pursuing BCA from JIS University. He is a 2nd year student of Computer Science and Engineering. His main research works focuses on Data science.

Debmitra Ghosh earned B. Tech from West Bengal University of Technology and M. Tech from JIS Institute of Advanced Study and Research in Computer Science and Engineering in 2008 and 2021 respectively. She was a Business Analyst and ISTQB Certified Tester with 8+ years of experience in companies like TCS and PwC. She has worked in the research labs of the Indian Statistical Institute and TCS Innovation lab.