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Effects of Government Announcements of Covid -19 on Indian Stock Markets[1]

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Abstract

The study is based on the evaluation of the government announcements during Covid-19 on the Indian Stock Markets. The pandemic affected lives and livelihoods of people in the country and the world. The economy and all economic activities were affected by the pandemic. The stock markets being the only exception to receive an enthusiastic response of the investors during the period when there were several announcements to contain the pandemic by the different departments of the government. The study evaluated the effect of the announcements on the BSE for the period of 24th March 2020 to 31st December 2021 using the ANOVA model that provides for a dummy variable in the identifying the effects of the announcements on the stock markets from the day Janta Curfew was announced by the Prime Minister to first, second and third wave of Omnicron and roll out of the vaccination program. The study found that Government announcements did not affect the stock markets .

JEL Code : E6, I1, D8, G4, G1
Keywords : Stock Market; Covid-19; BSE; NSE; RBI; ANOVA; Government; Public Policy; Public Finance; Pandemic; Economy; India

I. Introduction

COVID AS A pandemic affected all spheres of the life. It halted life during lockdowns. The measures adopted to support life and economic activity needed active government support. The world stock markets observed a growth during this period. The Indian stock market also observed a jump from 47,751 in 2020 to 58,253 in 2021 and remained at 57,863 in 2022. The overall return of 2020 to 2021 was 8.63% and if held for 2 years was about 8.342%. The market received information about Covid in the month of March and first lockdown known as Janta Curfew was the first appeal of the Prime Minister to counter Covid-19. This followed public announcements translated into public sentiments and trader beliefs. The market remained volatile during the two-year period of Covid where the first case was reported

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in the month of January but precaution and public dissemination of information began in the month of March. The continuous vigil of the government and fiscal and monetary support enabled the economy to stay healthy and safeguarded against the pandemic. We registered a negative 24% GDP growth in the first quarter of the Covid announcement from March to June 2020 for the lockdowns announced subsequently. The lockdowns were questioned much for their relevance but were much needed to spread the message and seek possible support from the healthcare system.

The outbreak of the coronavirus, known as COVID-19, in late 2019 led to a global pandemic of respiratory disease, causing significant concern for public health and the world economy (Wang, Pan, Wan, Tan, Xu and Ho, 2020). The World Health Organization (WHO) officially designated COVID-19 on February 11, 2020, and declared it a pandemic on March 11, 2020, citing over 118,000 cases in 110 countries and territories (Time, 2020). India, the second most populous country, faced challenges due to its large population, poverty (176 million poor people), and inadequate medical facilities and cleanliness standards (Deccan Herald, 2020). In response to the pandemic, governments, including India, implemented lockdown measures to curb the virus's spread. India, under Prime Minister Narendra Modi, announced a nationwide lockdown on March 24, 2020, which was later extended until May 3, 2020 (Deccan Herald, 2020). These measures, while aimed at public safety, had severe economic repercussions globally. The pandemic disrupted supply chains, limited transportation, and caused a significant drop in economic activities worldwide.

The period of Covid observed the need for several fiscal and monetary interventions to deal with difficulty situations arising from Covid. Among various measures were also the continuous supply of food and medicines that maintained the economic stability. The overall supply chains were affected due to lockdowns and workers in many factories found themselves with no jobs specially the day to day workers and vendors that would find livelihood through daily works. There was continuous fear of the spread of Covid in the country which has high density of population and need constant restrain and public announcements to create awareness about the Covid, its precautions and its cure. Arrangements were made through public information dissemination to distribute information about the Covid, medical facilities were created in states to deal with emerging conditions of Covid. The markets were continuous facing challenges of the supplies and deliveries though there was continuous effort to keep inflation in control and supplies as per requirements. Agriculture was the only sector which observed a positive growth during this period. Among many companies in the industry observed cut in productions, layoffs and ever reduction in salaries to sustain themselves. Credits were extended to the MSME but due to loss of demand the companies suffered. Savings being one of the natural outcomes of cultural financial contribution protected many livelihoods together with the credit growth of the financial institution and fintech. The capital market unlike the entire economy observed growth. There were continuous growth in the number of retail players and domestic institutional investors in the capital markets. The markets observed several IPO issues.

Also the growth in the capital markets were observed as a positive outcome of the Indian economy coping with Covid with fiscal and monetary measures together with health measures. The development of the vaccine and distribution among the entire Indian population brought back livelihoods to normalcy. The economy did not just restart but there were phase out means of introducing life back to the economy through the various functionaries of the economy. The continuous monitoring, update and regular inputs of the medicines and healthcare services were essential to support the economic units of the country. Our study through the announcements of the government during the Covid period, tries to understand if they had any effect on the capital market premiums as it was the only market after healthcare and FMCG that continued to grow.

II. Literature Review

In the realm of financial research, the impact of the COVID-19 pandemic has spurred extensive investigations into its effects on stock returns, volatility, and market behavior. Studies by Ramelli and Wagner (2020) and Zaremba, Kizys, Aharon and Demir (2020) have delved into the adverse impact of the pandemic on stock returns and volatility, setting the stage for a plethora of subsequent research (Ramelli and Wagner, 2020; Zaremba, Kizys, Aharon and Demir, 2020).

Further research has unfolded nuanced insights into the differential effects across sectors and industries (Smith, 2021). The technology sector, characterized by its resilience to economic downturns, experienced a surge in stock prices as remote work and digital solutions gained prominence. Conversely, sectors heavily dependent on physical presence, such as hospitality and aviation, faced unprecedented challenges, with plummeting stock values and increased volatility (Jones, 2021). These sectoral variations illuminated the intricate ways in which the pandemic's impact reverberated through financial markets.

Moreover, studies have explored the role of government interventions and monetary policy in mitigating the economic fallout (Baker and Wurgler, 2020). Central banks worldwide implemented unprecedented measures, including interest rate cuts and massive stimulus packages, to stabilize financial markets and restore investor confidence. The effectiveness of these interventions and their implications for future economic policy have become focal points in understanding the dynamics of financial markets in the face of global crises (Smith and Johnson, 2020).

Behavioral finance also took center stage in post-pandemic research, with scholars investigating the psychological aspects influencing investor decision-making during times of uncertainty (Kahneman and Tversky, 2020). The heightened emotional responses observed during the pandemic, ranging from fear to euphoria, added a layer of complexity to market dynamics. Researchers explored how these emotional factors, coupled with social media influences, contributed to amplified market volatility and the emergence of new trading patterns (Barber and Odean, 2021).

The cryptocurrency market, often considered a barometer of investor sentiment, witnessed notable fluctuations during the pandemic (Narayan, Phan, and Liu, 2021). While some investors sought refuge in digital assets

as traditional markets faltered, others questioned the stability of cryptocurrencies in the face of economic uncertainty. This dichotomy sparked debates and further inquiries into the evolving role of digital currencies in times of crisis (Schröder, 2021).

Additionally, studies examined the long-term structural changes induced by the pandemic in financial markets (Gennaioli, 2021). The accelerated adoption of technology, changes in consumer behavior, and the reevaluation of risk management strategies became focal points of exploration. The pandemic acted as a catalyst for innovations such as remote trading platforms, decentralized finance (DeFi), and the integration of artificial intelligence in financial decision-making processes (Fernández-Villaverde, 2021).

As the research landscape continues to evolve, the multifaceted impacts of the COVID-19 pandemic on financial markets offer a rich tapestry for scholars and practitioners alike. The insights gained not only contribute to a deeper understanding of the pandemic's immediate effects but also provide a foundation for building more resilient and adaptive financial systems in the face of future global challenges. A notable area of exploration has been the financial contagion in global markets. Akhtaruzzaman, Boubaker and Sensoy, (2020) examined the financial contagion between China and G7 countries, revealing a significant increase in conditional correlations between stock returns. Just and Echaust (2020) demonstrated the close dependence between S&P 500 index returns and implied volatility and implied correlation during the COVID-19 period.

The outbreak of the 2019 coronavirus pandemic (COVID-19) has precipitated substantial upheaval in global economic activity (Baldwin and Di Mauro, 2020) and has reverberated across stock markets worldwide (Fama, 1981; Huang and Kracaw, 1984; Vassalou, 2003). Fluctuations in stock prices are contingent on the principles of supply and demand. Specifically, a stock's price tends to decline when the number of individuals seeking to sell surpasses those wishing to buy (resulting in an imbalance with greater supply than demand for that particular stock). While stock markets may react adversely to this disruption in the short run, in the long term, markets tend to autonomously correct and resume an upward trajectory (Gormsen and Koijen, 2020).

The continental crisis has the potential to predominantly impact stockholders' wealth, driven by the bank-run effect (eroding public confidence in solvent banks) and the informational effect (information about asset quality prompting investigators to reevaluate the valuation of other banks; Aharony and Swary, 1983). The fervent reactions of stock prices to COVID-19 have led to a substantial decline in the aggregate stock market, transforming the recent health crisis into a broader financial and economic crisis (Ramelli and Wagner, 2020). This recent health crisis has left an indelible mark on nearly all financial markets globally, particularly evident in a continuous and significant drop in stock and share prices. Both the Dow Jones and S&P share prices in the United States have experienced declines exceeding 20%, exerting a considerable impact on financial markets

in China and the USA, as evidenced by the Shanghai stock exchange and New York Dow Jones share markets (Sansa, 2020). The behavior of the stock market serves as an early and conspicuous indicator of the recent COVID-19 pandemic's repercussions, exerting an adverse impact on stock markets (Baker, Bloom, Davis, Kost, Sammon and Viratyosin, 2020; Ichino, 2020).

Commodity markets have also been under scrutiny, with studies like Gharib, Wali and Jabeur, (2021) and Sharif, Aloui and Yarovaya (2020) uncovering the intricate relationships between COVID-19, oil prices, stock markets, and economic policy uncertainty. The impact of COVID-19 on specific assets like Bitcoin (Conlon and McGee, 2020) and the role of governmental policies in mitigating its effects (Narayan, 2020; Ma, Rogers, and Zhou, 2020) have further enriched the understanding of these dynamics.

Moreover, empirical studies spanning different continents have provided nuanced insights. Ozili and Arun (2020) explored the effect of social distancing policies on stock prices across North America, Africa, Asia, and Europe. Azimili (2020) analysed the impact of coronavirus on risk-return dependence in the United States, revealing a lowered benefit of diversification. Cepoi (2020) investigated the relationship between COVID-19 related news and stock market returns across severely affected countries, highlighting asymmetry dependence on pandemic-related information.

In emerging economies, the situation has been even more complex. Studies focusing on countries like Nigeria (Osagie, 2020) and India (Ravi, 2020; Bhat, 2020) shed light on the multifaceted challenges these economies faced, including sharp declines in stock markets and disruptions in various sectors. Latin America, heavily reliant on external financing, suffered due to decreased business activities and tourism revenue (Herrero, 2020). Topcu and Gulal (2020) classified the impact of COVID-19 on emerging economy stock markets, revealing the highest impact in Asian markets.

The studies also underscore the phenomenon of herding behaviour during crises. Literature has demonstrated that market stress amplifies herd behaviour, especially in emerging markets (Babalos, 2015; Chauhan, 2019). Investors tend to follow the crowd during turbulent periods, leading to homogeneity in trading (Schmitt and Westerhoff, 2017). Previous research has linked heightened uncertainty and speculative activities to increased herding (Chiang, 2019; Nath and Brooks, 2020), especially during extreme market movements induced by crises (Christie and Huang, 1995).

Moreover, the pandemic-induced stress has exacerbated market volatility, causing panic and irrational behaviour among market participants (Baker, Bloom, Davis and Terry, 2020; Avery and Zemsky, 1998). This has led to increased herding behaviour, especially in emerging equity markets like Turkey, Spain, and China (Balcilar and Demirer, 2015; Chiang, 2019). The negative sentiment surrounding COVID-19 has contributed to higher volatility, leading to herding in stock markets across various countries (Aslam and Kang, 2013; Dhall and Singh, 2020; Chang, 2020; Rouatbi, Demir, Kizys and Zaremba, 2021).

Recent research efforts have delved into the specific impact of government responses on stock markets, shedding light on the intricate relationship between policy measures and financial market dynamics. Government interventions, though aimed at mitigating the pandemic, have triggered complex reactions in the financial markets, creating a nuanced landscape for investors to navigate. Studies in this realm have revealed that the effectiveness of containment measures can significantly influence investor confidence in economic recovery. Policies such as lockdowns, social distancing, and targeted fiscal stimulus have been shown to positively correlate with market stability and optimism for future economic prospects (Ashraf, 2020a; Narayan, Phan, and Liu, 2020b). These measures, when perceived as effective and aligned with broader economic goals, tend to reassure investors and contribute to a positive market environment. Chaudhary, Sharma and Agarwal (2023) also found that there is no causality (short term) from exchange rate to India's Stock market but there is causality (short term) from India's Stock Market to Exchange rate during the study period.

Basuony, Bouaddi, Ali, and Eldeen (2021) found that over a sample a sample consisting of international stock market indices in Brazil, China, Italy, India, Germany, Russia, Spain, United Kingdom, and United States, over the period from January 1st, 2013 to December 31st, 2020, it was found that unprecedented increases in conditional volatilities and bad state probabilities across all the markets. They further found that that the negative affect of deaths is more pronounced, compared to the positive impact of recovered cases. Ramelli and Wagner (2020); Zaremba, Kizys, Aharon and Demir (2020); Akhtaruzzaman, Boubaker and Sensoy (2020); Just and Echaust (2020); Gharib, Wali, and Jabeur (2021); Sharif, Aloui and Yarovaya (2020); Conlon and McGee (2020); Narayan (2020), Ma, Sun, Zhai and Jin (2020) are some of the studies quoted work in the the paper that refer to the effect of Covid on the stock markets in different markets. They explore the affect of the contagion on the financial markets, commodity markets, specific commodities G7 countries, geopolitical risk due to Covid 19 and also how fiscal stimulus affected the stock markets.

Jan, Li, Xiyu, Basheer and Tongkachok (2022) investigated the impact of of Covid -19 Pandemic and stock market psychology on investor investment decision in different business units on Shandong stock markets. The study considered 5000 individuals in six different business units. The study used Wilcoxon test to determine that the stock prices before and after the pandemic were different. The study further found a positive relationship between the pandemic and the stock market. They further found that COVID-19 and stock market psychology had a significant positive impact on investor investment decisions in cosmetic and beauty, consumer household, textiles and apparel, and consumer electronics industries. The study quoted the papers of Wang, Pan, Wan, Tan, Xu, and Ho, 2020, Liu, Sun, and Zhang, 2020, Li , Wang, Xue, Zhao and Zhu, 2020 on the psychological negative impacts of Covid on social well being. The study while quoting the Dow and Jones and Standard and Poor study indicates that the stock markets in US dropped by 20% in mid March 2020 and similar impacts were observed in Japan in Nikkie and Srilanka

and also a low economic activity in China. The works quoted in the study of Durante and Laran (2016); Kardes , Cline, and Cronley (2011); Rajagopal (2020); Leach (1994); Lins and Aquino (2020); Steven, (2014), Yuen, Wang, Ma and Li (2020); Durante and Laran (2016); Larson and Shin (2018); Kemp, Kennett-Hensel and Williams (2014); Durante and Laran (2016); Jezewska-Zychowicz, Plichta and Królak (2020). Rehmani, Arshad, Khokhar, Anwer, Adnan and Naveed (2021) refer to the consumer psychology and the purchase behaviour with and without traumatic events. It also refers to the affect of pandemics on the environment through emissions. The works of Hoehl, Rabenau, Berger, Kortenbusch, Cinatl and Bojkova (2020); Liew and Puah (2020); Analytica (2020); Han, Lin, Ni and You (2020) are quoted for the effects observed in China and its stock market which were not positive. The works of Ramelli and Wagner (2020); Donthu and Gustafsson (2020); Fallon and Sarmiento (2021); Machmuddah, Utomo, Suhartono, Ali, and Ghulam (2020); Ahundjanov , Akhundjanov and Okhunjanov (2020); Alfaro, Chari, Greenland and Schott (2020); Hanke, Kosolapova and Weissensteiner (2020); Ramelli and Wagner (2020); Hasan, Mahi, Sarker and Amin (2021); Cookson and Niessner (2020); Jiang, Gu, Sadiq, Khan and Chang (2021); Sansa (2020); and Wang and Li (2020) refer to the investor behaviour on the stock markets and its movement during the pandemic and effect of stock markets on the economic activities. The works of Chu (2018); Hori and Iwamoto (2014); Zanna and Rempel (2008); Sheu and Kuo (2020); Kirk and Rifkin (2020); Nowak, Brzóska, Piotrowski, Sedikides, Zemojtel-Piotrowska and Jonason (2020); Henrich, Heine and Norenzayan (2010); Long and Khoi (2020); Nakayachi, Ozaki, Shibata andYokoi (2020); De Mooij and Hofstede (2011); Watanabe, Hanajima, Shirota, Ohminami, Tsutsumi and Terao (2014) indicate how hoarding is prevalent in times of pandemic and natural disasters, further the influence of cultural and economic aspect that affect the investor behaviour toward the accumulation of commodities during diseases, pandemics and natural disaster. The works of Wang, Pan, Wan, Tan, Xu and Ho (2020); Lyócsa, Molnár, Plíhal, and Širanová (2020); Liu and Pan (2020), Andersen, Fusari and Todorov (2020); Bonsall IV, Green and Muller III (2020); Galdi (2021) indicate that information through macroeconomic activity or event has impact on the stock markets and any announcements also impact the stock market. The works of Khan, Latif, Sohail and Zahid (2019); Srivastava, Kaur, Chakraborty, Mishra, Kujur and Dhoundiyal (2021); Cuong, Nguyen, Ngo, and Nguyen (2020); Mohan, Sivakumaran, and Sharma (2013); Kesari, Atulkar and Pandey (2021); Guan, Ni, Hu, Liang, Ou, He (2020); Molinillo, Aguilar-Illescas, Anaya-Sánchez and Liébana-Cabanillas (2021); Axfors, Schmitt, Janiaud, Hooft, Abd-Elsalam and Abdo (2021); Acciarini, Borelli, Capo, Cappa and Sarrocco (2021); Chu, (2018) refer to the role investor psychology plays in the stock market purchases and decision making.

Ganie, Wani, and Yadav (2022) in their study indicate that Brazilian stock indices show the highest decline among the selected countries, with a fall of more than 50% during the pandemic, while Mexican indices show the lowest fall of around 30% during the same period. The works refers to the study by Bloom, Cox and Frank (2020); Shieber and Crichton (2020); Dasgupta (2020) which refer to how stock markets halted with the Covid

pandemic. The work also refer to studies of Kowalewski and Spiewanowski, (2020); Buhagiar, Cortis and Newall (2018); Bash and Alsaifi (2019); Chen, Jang and Kim (2007); Ichev and Marine (2017); Bash and Alsaifi (2019); Chen, Jang and Kim (2007); Loh (2006); Chen, Chen, Tang and Huang (2009); Siu and Wong (2004); Hai, Zhao, Wang and Hou (2004); Ang and Timmermann (2011); Murtaza, Haq and Ali (2015); Aslam and Kang (2013); Al-Awadhi, Alsaifi, Al-Awadhi and Alhammadi (2020); Baker, Bloom, Davis, Kost, Sammon and Viratyosin (2020); Ramelli and Wagner (2020); Bhuyan, Lin, and Ricci (2010); Narayan (2020); Liu, Sun and Zhang (2020) indicative of the social, economic and pandemic related events affecting the stock market. They specifically refer to the fact that loss of human life had a negative impact on stock markets and recoveries a positive impact on stock markets. The studies also referred that announcements of any nature that have widespread impact were studied in detail and their impacts acknowledged through the vast body of scholarly works.

Tiwari, Abakah , Karikari and Gil-Alana (2022) in their study examine the effects of Coronavirus on global markets. They found that there exists causal relationship between Covid 19 cases and aggregate stock market liquidity. The paper examines the adverse financial effects of outbreak of stock market liquidity and economic policies. The paper concentrated on the aggregate stock market liquidity measured through the proxies of Amihud, Spread and Traded Value on the G7 countries namely Canada, France, Italy, Japan, Germany, UK and USA for period December 2019 to January 2020 where it is observed that there is heterogenous lead and lag relationship for the entire period. The work refers to authors namely Zhang, Hu and Ji (2020); Tiwari, Abakah, Dwumfour and Gil-Alana (2020); Abakah, Caporale and Gil-Alana (2021); Caporale, Kang, Spagnolo and Spagnolo (2021) that study the impact of financial and economic effect of Covid-19. It also studies the work of Salisu, Ogbonna, and Adediran (2021); Okorie and Lin (2020); Sharif, Aloui and Yarovaya (2020); Mirza, Naqvi, Rahat, and Rizvi (2020); Bai, Zhang, Liu, Chen, Xu and Wang, 2021; Corbet, Larkin, and Lucey (2020); Haroon and Rizvi (2020a, 2020b); Zhang, Hu and Ji, (2020). For example, Al-Awadhi, Alsaifi, Al-Awadhi and Alhammadi (2020); Mishra, Rath and Dash (2020) that study how Covid 19 has affected the macroeconomic indicators, firm specific financial indicators, investment funds, commodity markets, minerals, stock markets and crypto-currencies and also the performance of the Chinese stock market. They specifically refer to Zaremba, Aharon, Demir, Kizys, and Zawadka (2021) to understand the impact of effective government responses which were stringent measures to reduce the financial volatility. An essential study quoted is that of Ashraf (2020a) also studies the reaction of stock markets to Covid19 where the results indicate the reduction in the returns of stocks to a one percent increase in the growth of confirmed cases. The work of Butler, Grullon, and Weston (2005) indicates liquidity crunch that leads to a decline in the cost of equity capital. The quoted works of Ashraf (2020a); Goodell (2020); Insaidoo, Arthur, Amoako and Andoh (2021); Takyi and Bentum-Ennin (2021); Tiwari, Séraphin and Chowdhary(2021); Topcu and Gulal (2020) indicate the Covid 19 pandemic on the financial markets. The works of Ashraf (2020a), Baker, Bloom, Davis, Kost, Sammon and Viratyosin(2020); Corbet, Larkin and

Lucey (2020); Le, Abakah and Tiwari (2020); McKibbin and Fernando (2020); Okorie and Lin (2020); Topcu and Gulal(2020); Haroon and Rizvi (2020a, 2020b), Salisu, Sikiru and Vo (2020); Bloom (2009); Lam, Zhang and Zhang (2020); Okorie and Lin (2020); Brunnermeier (2009); Kaplanski and Haim Levy (2010); Amihud and Mendelson (1986); Butler (2005); Fang, Noe and Tice (2009); Chordia, Roll and Subrahmanyam (2008); Tran, Hoang and Tran (2018); Dang and Nguyen (2020); Agarwa, Agarwal and Agarwal (2006); Adrian and Natalucci (2020) refer to the effects of macroeconomic events and news, extreme global conditions, investor behaviour during global crisis, liquidity crisis in stock markets, pandemics affecting stock market returns. The works of Chordia, Roll and Subrahmanyam (2008); Tran, Hoang and Tran (2018); Dang and Nguyen (2020); Adrian and Natalucci (2020) refer to effects of stock market liquidity and Covid 19 on the stock markets.

Cevik, Altinkeski, Cevik and Dibooglu (2022) found that increase in positive investor sentiment leads to an increase in stock returns while negative investor sentiment decreases stock returns at lower quantiles. The quoted works of Azimli (2020); Hashmi, Chang and Rong (2021) indicate a loss of 20% in global financial markets and found that emerging markets are more affected than the developed markets. Hossain 2021; Sharif, Aloui and Yarovaya (2020); Albulescu (2021); Wei and Han (2021); Kou, Akdeniz, Dinçer and Yüksel (2021); Agarwal, Agarwal and Agarwal (2006); Chundakkadan and Nedumparambil (2021); Dergiades (2012); Brown and Cliff (2004) examined financial markets and economic activity in various perspectives. The quoted works of Andrei and Hasler (2015); Aouadi, Arouri and Teulon (2013); Hirshleifer, Lim and Teoh (2011); Padungsaksawasdi, Treepongkaruna and Brooks (2019); Chen, Liu and Zhao (2020a); Chemmanur and Yan (2019); Chen (2017); Wen, Xu, Ouyang and Kou (2019); Han, Lin and Yin (2018); Smales (2021) have extensive work on the investor sentiment and stock market returns. As per the works of Mazur, Dang and Vega (2021); Zhang, Hu and Ji (2020); Cheng (2020). Smales (2021) it has been found that volatility in financial markets has increased considerably owing to longer than expected Covid 19. The studies of Al-Awadhi, Alsaifi, Al-Awadhi and Alhammadi (2020); Baker, Bloom, Davis, Kost, Sammon and Viratyosin (2020); Cao, Li, Liu and Woo (2021); Gil-Alana and Claudio-Quiroga (2020); Gormsen and Koijen (2020); Harjoto, Rossi and Paglia (2021); Liu, Manzoor, Wang , Zhang and Manzoor (2020b); Phan and Narayan (2020); Ambros, Frenkel, Huynh and Kilinc (2021); Mishra, Rath and Dash (2020); Topcu and Gulal (2020); Corbet, Larkin and Lucey (2020); Haroon and Rizvi (2020a, 2020b); Sharma (2020); Zaremba, Kizys, Aharon and Demir (2020) indicate that pandemic has increased volatility, adversely affected financial markets by increasing global financial risk and the uncertainty caused by the global pandemic has decreased the stock returns. The works cited of Phan and Narayan (2020); Narayan, Iyke and Sharma (2021a); Bannigidadmath, Narayan, Phan and Gong (2021); Padhan and Prabheesh (2021); Zaremba, Kizys, Aharon, and Demir (2020); Liu, Sun and Zhang (2020a) indicate the affect of government policies, intervention and macroeconomic effect during Covid on the stock market. The works of Donadelli, Kizys and Riedel (2017); Ichev and Marine (2018); Haroon and Rizvi (2020a); Ambros, Frenkel, Huynh and Kilinc (2021); Iyke and Ho (2021); Narayan, Phan and Liu (2021b); Piñeiro-Chousa, López-Cabarcos, Quiñoá-Piñeiro, and Pérez-Pico (2022); Li, Kou,

Peng and Yu (2021) indicate the affect of international agencies announcements, media announcements and google search words on Covid 19 affecting the stock markets. The works mentioned of Haroon and Rizvi (2020b); Topcu and Gulal (2020); Cao, Li, Liu and Woo (2021); Gil-Alana and Claudio-Quiroga (2020); Harjoto, Rossi and Paglia (2021) indicate that increase in Covid cases and deaths had significant negative impact on stock markets while a decrease in the deaths positively affects financial markets, also the initial impact of pandemic in emerging markets was negative was found to be more pronounced than in developed markets. The works of Sattar and Arifuzzaman (2021); Yousefinaghani, Dara, Mubareka, Papadopoulos and Sharif (2021); Kwok, Vadde and Wang (2021); Hussain, Tahir, Hussain, Sheikh, Gogate, Dashtipour and Sheik (2021) indicates that social media responses to the Covid vaccine was positive and it has been empirically determined by Cevik, Altinkeski, Cevik and Dibooglu (2022) that it positively affected the stock markets.

In conclusion, the body of research surrounding COVID-19's impact on financial markets is vast and multifaceted. Scholars have explored various aspects, from the behaviour of specific assets to the intricate dynamics of global financial contagion. The pandemic-induced stress has not only revealed the vulnerabilities in financial markets but also highlighted the complexities of investor behavior, especially during times of crisis. As governments continue to navigate the challenges posed by the pandemic, ongoing research in this area remains crucial for understanding the evolving landscape of global finance.

III. Research Methodology

The study meticulous examined the impact of strategic mitigations and announcements made by the different ministries under the Central government for Covid during 2020 and 2021 on Indian stock market. The choose the sample period from take for the study is 1 January 2020 to 2nd January 2024. The period of Covid announcements started from 24th March 2020 and have been taken upto 31st December 2021. During the two years period there were several announcements made by different government department which have been obtained from Press Information Bureau site. The capital markets India and their movements are determined using Nifty and Sensex price data on which returns are calculated using the formula (P_t-P_{t-1}/P_{t-1}). The log returns could be taken but then they would not capture the negative returns on the stock. An ANOVA model was used by developing a dummy variable that indicated the period of Covid announcement with the numeric value 1 and the period or day without Covid announcement as 0. The model used the stock returns as the dependent variable and dummy variable of Covid announcement as the dependent variable. Another independent variable is used to determine the number of announcements made during the Covid period. A linear regression model is then developed to determine the relationship of the stock market returns with the Covid announcements. The severity of the announcement could not be dealt with in the present study as it would need a perception evaluation of the announcement and weightages associated with them to develop the model which is out of scope of this study. The two regression models developed are then interpreted. The study initially had chosen the event study

methodology approach to understand the impact of the Covid announcements on the stock market returns. However, on the study of the data and the number of announcements it was not possible to isolate the event and study separately its impact on the stock market return. The study had to use the ANOVA and linear regression models to understand the impact of the Covid announcements on the stock market returns. Appendix I provides the details of the announcements made by the government during the Covid period and Appendix II provides the details of the Nifty 50 Index , returns calculated through the rate of change in closing Index of on daily basis for period 2020 to 2024. The further calculations are made for returns between the highest and lowest value returns and opening and closing price returns. These returns have not been used in the study.

IV. Data Analysis and Interpretation

The first case of Covid-19 was detected on 30th January 2020. The first wave of Covid observed strict national lockdown followed by gradual re-opening with restrictions implemented on select containment zones. The second wave observed state-wide lockdown. GDP contracted sharply in 2020Q1 by -24% due to unprecedented lockdown. The contraction in GDP moderated to -7.4% in 2020Q3. The growth returned to positive territory of 0.5% and 1.6% in 2020Q4 and 2021Q1. As per IMF the Government fiscal measures can be divided into two categories, the above the line measure used at the early stages of the pandemic and the below the line measures used later during pandemic. The government spending was about 3.5% of GDP of which 2.2 % GDP was spend the previous year. The below the line measures included support designed to help businesses and credit provision to several sectors. The measures aimed at providing social protection and healthcare. As per IMF, these measures include in-kind (food; cooking gas) and cash transfers to lower-income households (1.2 percent of GDP); wage support and employment provision to low-wage workers (0.5 percent of GDP); insurance coverage for workers in the healthcare sector; and healthcare infrastructure (0.1 percent of GDP). The measures that were announced later in October and November 2020 include additional public investment (higher capital expenditure by the central government and interest-free loans to states, of about 0.2 percent of GDP) and support schemes targeting certain sectors. The latter includes a Production Linked Incentive scheme targeting 13 priority sectors and is expected to cost about 0.8 percent of GDP over 5 years, a higher fertilizer subsidy allocation benefiting the agriculture sector (0.3 percent of GDP) and support for urban housing construction (0.1 percent of GDP). Measures were also adopted to make Taxation simplified and convenient to people to provide for the filing and assessment of returns. As per IMF, government's deficit position aim to provide credit support to businesses (1.9 percent of GDP), poor households, especially migrants and farmers (1.6 percent of GDP), distressed electricity distribution companies (0.4 percent of GDP), and targeted support for the agricultural sector (0.7 percent of GDP), as well as some miscellaneous support measures (about 0.3 percent of GDP). The support provided to businesses aimed at reaching the MSME, NBFCs, farmers and street vendors through concessional credit. The support to agriculture was in the form of infrastructure development. The government provisioned for COVID-19

vaccination program of Rs. 350 billion. Free food grains was provided to 800 million individuals in May and June with a cost of about 260 billion rupees. The government provided interest-free loans to states for capital expenditure to FY2021/22 (150 billion rupees).

The Macroeconomic and financial environment during Covid-19 can be estimated through the RBI publications and other government documents like the economic survey and budgets. The macroeconomic indicators during the Covid-19 period were observed (see Table I)

Table I
Macroeconomic Indicators 2019-23

Macroeconomic Indicator	2019-20	2020-21	2021-22	2022-23
Total Consumption Expenditure	5.0	-4.6	10.5	6.4
Gross Capital Formation	-6.0	-11.6	22.2	9.6
Net Exports	-3.4	-9.1	29.3	11.5
GDP	3.9	-5.8	9.1	7.0
Net Financial Savings	7.8	7.6	11.3	7.6

Source: Reserve Bank of India (RBI)

The total consumption expenditure (see Table I) observed contraction of about 4.6% in 2020-21 and increased by 10.5% in 2021-22, it further moderated to 6.4% during that time The gross capital formation for the period 2019-20 and 2020-21 were on a decline by 6% and 11.6%. It increase in 2021-22 and 2022-23 by 22.2% and 9.6%. The net exports declined by 3.4% and 9.1% in 2019-20 and 2020-21. The exports increased to 29.3% and 11.5% in the subsequent years. The GDP had declined to 3.9% in 2019-20 and further contracted to 5.8% in 2020-21. The GDP increased to 9.1% and 7% in 2021-22 and 2022-23. The net financial saving have declined to 7.8% and 7.6% but saw an increase in 2021-22 in 11.3% and stabilised at 7.6% in 2022-23.

The economic survey constantly approached the economic progress with high frequency indicators which identified where the markets are indicating progress. The Table II indicate the contraction observed during April-May 2020 and some expansion beginning August 2020 and then most indicators were on expansion phase after April 20221 except the Urban demand on automobiles and passenger vehicles and agriculture/rural demand.

Another important element during Covid-19 was the sectoral credit growth in scheduled commercial banks with indicated in the percentage (year-on-year) a negative growth during 2020-21 but signs of expansion in all four sectors which is agriculture and allied activities, Industry (Micro, Small, Medium and Large), Services and Personal Loans can be observed in Table II and Table III.

To support the macroeconomic stability and development in March 2020, RBI reduced repo and reverse repo rates by 115 and 155 basis points to 4 and 3.35%. Among the liquidity measures, it adopted the Long Term Repo Operations (LTROs), a cash reserve ratio (CRR) cut of 100 bps, and an increase in marginal standing facility (MSF) to 3 percent of the Statutory Liquidity Ratio (SLR) (now further extended to September 30, 2021) and open market operations (including simultaneous purchases and sales of government securities), resulting in cumulative liquidity injections of 5.9 percent of GDP

Table II
High Frequency Indicators: Growth Rates

Indicator	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
1	2	3	4	5	6	7	8	9	10	11	12	13
Urban demand												
Automobiles sales	-	-84.8	-43.0	-18.6	-1.3	7.2	10.5	6.0	0.7	0.4	6.3	74.5
Passenger Vehicles	-	-85.2	-49.6	-3.9	14.2	26.5	14.2	4.6	13.6	11.1	17.9	115.2
Agriculture/Rural Demand												
Domestic Sales of Tractors	-79.4	4.0	22.4	38.5	74.7	28.3	7.7	51.3	43.1	46.7	31.1	172.4
Two Wheelers Sales	-	-83.8	-38.6	-15.2	3.0	11.6	16.9	13.4	7.4	6.6	10.2	72.7
Three wheelers Sales	-	-95.3	-80.1	-77.2	-75.3	-71.9	-60.9	-57.6	-58.9	-58.8	-33.8	15.7
Transport												
Vahan Total Registration	-78.3	-88.6	-41.4	-35.2	-25.4	-8.4	-22.3	-17.5	11.7	-8.6	-12.6	-28.1
Domestic Air Passenger Traffic	-99.9	-97.4	-83.5	-82.6	-75.8	-65.1	-56.8	-50.2	-42.9	-38.7	-35.9	2.5
International Air Passenger Traffic	-99.1	-98.0	-93.0	-90.4	-89.7	-87.8	-85.2	-82.8	-79.5	-76.9	-73.6	-37.6
Domestic Air Cargo	-92.9	-82.9	-48.0	-41.4	-36.0	-20.0	-15.7	-9.8	-3.0	-9.3	-6.6	42.5
International Air Cargo	-77.0	-58.2	-35.7	-30.1	-24.9	-13.6	-12.4	-15.0	-12.7	-12.2	-9.9	-29.4
Freight Traffic Net Tonne Kilometer	-40.1	-28.1	-11.6	-7.7	1.4	17.9	11.0	8.4	13.5	11.1	7.8	33.0
Freight Traffic Freight Originating	-35.3	-21.3	-7.7	-4.6	3.9	15.5	15.4	9.0	8.7	8.7	5.5	26.6
Port Cargo	-21.1	-23.3	-14.5	-13.2	-10.4	-1.9	-1.2	2.8	4.4	4.0	1.9	16.4
Domestic Trade												
GST E-Way Bill	-83.6	-53.0	-12.7	-7.3	-3.5	9.6	21.4	8.1	15.9	10.5	11.6	75.2
GST E-Way Bill Intra-state	-79.8	-46.1	-7.9	-3.9	1.4	15.9	23.3	9.6	17.3	13.0	14.5	76.3
GST E-Way Bill Inter-state	-88.9	-62.8	-19.9	-12.3	-10.4	2.2	18.8	6.0	13.8	6.8	7.6	73.5
GST Revenue	-71.7	-38.0	-9.0	-14.4	-12.0	3.9	10.2	1.4	11.4	8.1	7.4	27.0
Construction												
Steel Consumption	-85.8	-45.9	-26.0	-10.3	-11.3	0.1	6.2	18.0	17.5	9.3	11.3	45.7
Cement Production	-85.2	-21.4	-6.8	-13.5	-14.5	-3.4	3.2	-7.3	-7.2	-5.8	-5.6	32.5

Note : - Not Available Positive Data shows Expansion Negative Data shows Contraction

Source : Reserve Bank of India (RBI)

Table III
High Frequency Indicators : Growth Rates

Indicator	Apr-21	May-21	Jun-20	Jul-21	Aug-21	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-22	Mar-21
1	2	3	4	5	6	7	8	9	10	11	12	13
Urban demand												
Automobiles Sales	-	40.0	14.7	4.0	-11.4	-19.7	-24.7	-31.8	-10.7	-18.8	-23.5	-17.8
Passenger Vehicles	-	162.5	119.3	44.7	7.6	-41.2	-27.1	-18.6	-13.3	-8.1	-6.5	-3.9
Agriculture/Rural Demand												
Domestic Sales of Tractors	436.2	-8.0	18.9	3.3	-17.0	-14.8	0.4	-22.5	-27.5	-32.6	-31.3	-14.3
Two Wheelers Sales	-	26.1	4.0	-2.1	-14.6	-17.4	-24.9	-34.4	-10.8	-21.1	-27.3	-20.9
Three wheelers Sales	59,587.0	-48.7	-8.8	40.5	59.7	53.8	19.1	-6.6	27.0	-8.5	-1.1	0.5
Transport												
Vahan Total Registration	215.5	158.6	22.5	34.0	14.6	-5.3	-5.3	-2.7	-16.0	-10.7	-9.0	-2.9
Domestic Air Passenger Traffic	1,05,896.5	608.7	53.8	136.4	132.6	76.5	68.7	65.5	53.3	-16.2	-1.0	37.7
International Air Passenger Traffic	2,575.0	343.3	31.2	45.9	119.2	155.9	162.9	140.2	121.7	67.5	66.6	105.7
Domestic Air Cargo	1,117.7	285.7	43.0	41.3	35.7	10.1	6.7	-1.7	2.0	-6.1	-6.3	-1.0
International Air Cargo	312.5	116.8	46.9	31.7	25.8	18.1	23.8	11.7	10.5	5.2	-0.4	1.1
Freight Traffic Net Tonne Kilometer	86.9	55.7	27.1	21.4	20.0	9.0	20.6	14.3	8.4	11.5	11.0	11.2
Freight Traffic Freight Originating	70.7	39.1	20.5	18.4	16.9	3.6	8.4	6.1	7.2	7.7	6.6	6.7
Port Cargo	29.5	31.5	19.5	6.7	11.4	0.1	6.5	-0.2	-0.4	-2.9	0.0	0.7
Domestic Trade												
GST E-Way Bill	582.5	56.8	25.9	32.7	33.3	18.3	14.5	5.9	11.6	9.5	8.3	9.7
GST E-Way Bill Intra-state	480.3	47.1	24.3	31.6	30.8	15.6	14.1	7.3	13.4	11.4	10.3	11.8
GST E-Way Bill Inter-state	840.6	76.5	28.8	34.4	37.2	22.3	15.1	3.9	8.9	6.6	5.3	6.6
GST Revenue	339.5	65.3	2.1	33.1	29.6	22.5	23.7	25.3	12.7	15.5	17.6	14.7
Construction												
Steel Consumption	721.5	64.3	28.3	4.2	-2.2	-3.2	-3.8	-7.1	-8.3	0.5	-5.3	-0.5
Cement Production	582.7	8.3	7.5	21.7	36.3	11.3	14.5	-3.6	14.2	14.3	5.0	8.8

Note : - Not Available Positive Data shows Expansion Negative Data shows Contraction

Source: Reserve Bank of India (RBI)

Table IV
Sectoral Credit Growth -SCBs

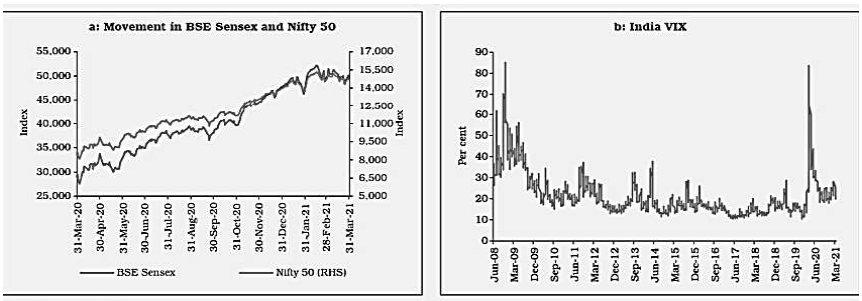
Indicator	2020-21*	2021-22#	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Non-food Credit	**5.5**	**9.7**	**11.4**	**12.7**	**13.7**	**15.1**	**16.0**	**16.9**	**18.3**	**17.6**	**15.3**	**16.7**	**15.9**	**15.4**
I. Agriculture and Allied Activities	**10.5**	**9.9**	**10.6**	**11.7**	**13.0**	**13.2**	**13.4**	**13.4**	**13.6**	**13.8**	**11.5**	**14.4**	**14.9**	**15.4**
II. Industry (Micro, Small, Medium & Large)	**-0.4**	**7.5**	**8.0**	**8.8**	**9.5**	**10.5**	**11.4**	**12.6**	**13.6**	**13.1**	**8.6**	**8.7**	**7.0**	**5.7**
2.1 Micro and Small	7.5	23.0	30.0	33.0	29.6	28.3	28.2	27.1	20.4	19.6	13.7	15.2	13.2	12.3
2.2 Medium	31.4	54.4	53.7	49.3	47.4	36.8	35.6	36.2	31.0	29.7	15.4	18.1	13.5	19.6
2.3 Large	-3.1	2.0	1.3	2.0	3.3	5.2	6.4	7.9	10.9	10.5	6.9	6.5	5.0	3.0
2.3.1 Infrastructure	1.1	9.1	9.7	9.8	9.5	11.1	11.0	10.9	10.9	10.5	5.3	2.3	0.6	-0.7
2.3.1.1 Power	-1.1	7.1	8.1	9.3	8.7	9.7	9.4	8.1	7.5	7.7	2.4	2.8	0.6	-1.1
2.3.1.2 Telecommunications	-21.9	13.4	13.8	12.8	13.1	11.4	17.2	16.3	18.4	22.9	5.3	-12.8	-11.8	-14.6
2.3.1.3 Roads	24.7	19.5	17.3	17.6	17.8	16.4	15.3	13.4	13.8	13.4	12.5	8.7	6.8	5.3
2.3.2 Basic Metals & Metal Product	-8.8	-5.5	-4.4	-2.3	0.6	5.6	5.7	10.6	14.1	15.3	19.1	22.0	19.7	19.1
2.3.3 Chemicals & Chemical Product	-7.0	6.2	10.4	15.6	15.1	20.2	23.6	22.5	25.1	19.1	15.8	17.6	15.2	10.2
2.3.4 Textile	6.0	9.3	7.1	5.1	5.3	3.8	4.0	4.8	4.4	3.0	0.4	0.8	0.3	1.7
2.3.5 All Engineering	-5.7	9.4	9.7	9.1	11.1	11.3	11.3	13.8	13.8	11.1	8.4	6.2	6.7	4.3
2.3.6 Food Processing	8.5	10.7	10.7	11.5	14.0	9.8	9.5	8.0	6.9	7.4	4.1	4.7	5.8	5.6
III. Service	**3.7**	**8.7**	**11.2**	**12.7**	**12.8**	**16.7**	**17.4**	**20.2**	**22.6**	**21.5**	**19.5**	**21.5**	**20.7**	**19.8**
3.1 Trade	12.8	10.8	13.2	13.2	16.7	14.2	16.9	21.3	17.0	16.0	13.9	16.8	16.7	17.8
3.2 NBFCs	-0.2	7.8	14.7	17.8	18.1	24.6	25.5	29.3	34.9	33.0	34.5	31.0	32.4	30.2
IV. Personal Loans	**10.3**	**12.6**	**14.4**	**16.3**	**18.1**	**18.7**	**19.4**	**19.4**	**20.1**	**19.6**	**20.0**	**20.4**	**20.4**	**20.6**
4.1 Housing	9.6	12.9	13.7	13.6	15.1	16.2	16.4	16.0	16.2	16.2	16.1	15.4	15.0	15.0
4.2 Vehicle Loans	8.5	9.3	11.4	14.1	17.7	19.2	19.5	19.9	22.1	22.5	24.7	25.5	23.4	24.9

Notes: Data are provisional
Bank credit growth since December 3, 2021 to November 18, 2022 are adjusted for past reporting errors by select SCBs.
* March 2021 over March 2020
\# March 2022 over March 2021

Source: Reserve Bank of India (RBI)

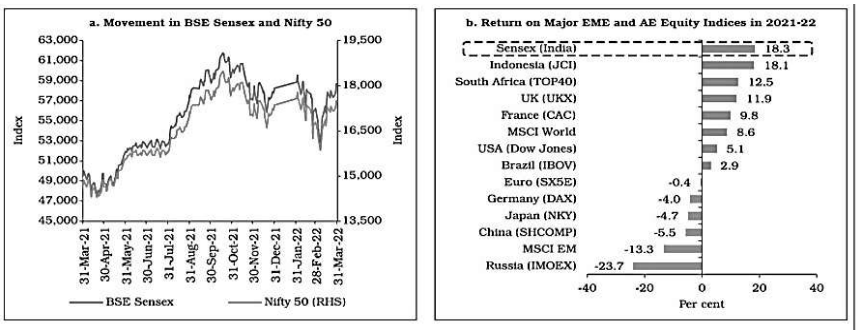
through September (as per IMF report). Securities and Exchange Board of India (SEBI) temporarily relaxed the norms related to debt default on rated instruments and reduced the required average market capitalization of public shareholding and minimum period of listing. During April 17-20, the RBI, along with additional monetary easing, announced: (a) a TLTRO-2.0 (funds to be invested in investment grade bonds, commercial paper, and non-convertible debentures of NBFCs); (b) special refinance facilities for rural banks, housing finance companies, and small and medium-sized enterprises; (c) a temporary reduction of the Liquidity Coverage Ratio (LCR) and restriction on banks from making dividend payouts; (d) a standstill on asset classifications during the loan moratorium period with 10 percent provisioning requirement, and an extension of the time period for resolution timeline of large accounts under default by 90 days (as per IMF report). RBI also asked financial institutions to assess the asset quality during pandemic. RBI also took the following measures in the foreign exchange market which included to increase the limit for FPI investment in corporate bonds to 15 percent of outstanding stock for FY 2020-21. Restriction on non-resident investment in specified securities issued by the Central Government was removed. Foreign direct investment policy for bordering nations needed government approval.

The impact on financial markets was profound. The pandemic led to a sharp decline in stock prices, with major indices like the S&P 500 falling by 30% since the outbreak (Ozili and Arun, 2020). The global financial market risk increased substantially, leading to large falls in oil prices and surges in gold prices (Zhang, Hu and Ji, 2020). This crisis, described as "the greater financial crisis" by Firzli (2020), affected both advanced and emerging economies, causing a simultaneous fall in the shares of oil, equity, and bonds worldwide (Baret, 2020). In emerging economies like India, the pandemic resulted in significant volatility in the financial market, with the Bombay Stock Exchange (BSE) Sensex dropping by 13.2% on March 23, 2020, and Nifty declining by almost 29% during the same period (Mandal, 2020). The sudden stop in economic activities disrupted both demand and supply chains, leading to a dual shock on the economy. The Figure 1, Figure 2 and Figure 3 below indicate the position of Equity Markets from April 2020 to March 2023.



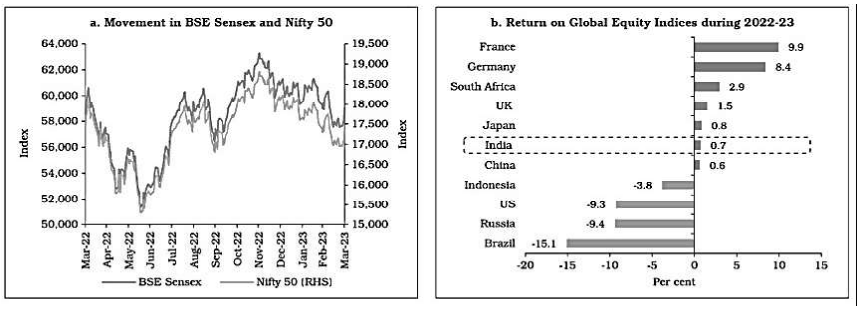
Source: Bombay Stock Exchange (BSE); National Stock Exchange (NSE)

Figure 1
Equity Market April 2020 - March 2021



Source: Bombay Stock Exchange (BSE); National Stock Exchange (NSE); Bloomberg

Figure 2
Equity Market April 2021-March 2022



Source: Bombay Stock Exchange (BSE); National Stock Exchange (NSE); Bloomberg

Figure 3
Equity Market April 2022 - March 2023

The Public and rights issues during the Covid period and after that indicated an increase during this period as can be observed from Table V. The capital markets were buoyant with new subscription and the increase in the investments through the Domestic financial institutions and the domestic investors. The Table V indicates the numbers of IPO issued in each sector and the crores of rupees invested in these IPOs.

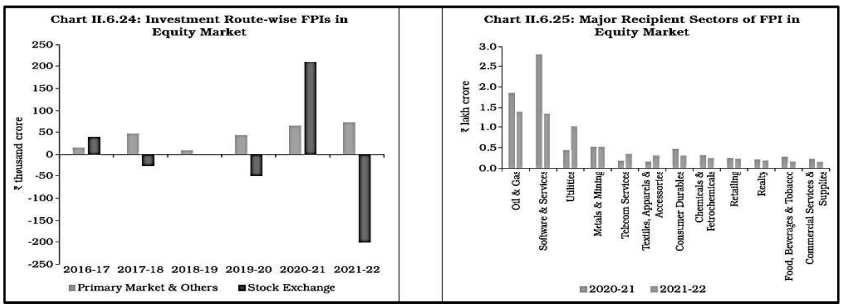
Table V
IPO issued in the Market

	2020-21	2020-21	2021-22	2021-22	2022-23	2022-23
Public and Rights Issue						
Private Sector	90	₹1,07,867.9	192	₹1,50,483.6	271	₹54,487.7
Financial	26	₹31,395.9	36	₹24,477.4	45	₹13,631.5
Non Financial	64	₹76,472.0	156	₹1,26,006.3	226	₹40,855.2

Source: Reserve Bank of India (RBI)

The investment of the foreign institutional investors in the Figure 4 in the equity market from 2016 to 2022 is indicative of how it declined in 2021-22 which was at a higher level of ₹ 200 thousand crore. It declined during 2019-20 also. The major investments came into the softwares and services sector in 2020-21 and 2021-22 after the oil and gas sector. The other important sectors

that backed FPI investment were Utilities, Metals and Mining, Telecom Services, Textiles, Apparel and Accessories, Consumer Durables, Chemical and Petrochemicals, Reality, Food, Beverages and Tobacco, Commercial Services and Supplies. The year 2020-21 observed more FPI investment over the years 2021-22.



Source: NSDL

Figure 4
Investment of Foreign Portfolio Investments in Equity Market

Moreover, the pandemic had a domino effect on global financial structures. Retrenched investors in various countries caused a contagion effect, disrupting economies in ways comparable to the Great Depression of 1920 (Corbet, Larkin and Lucey 2020). The outbreak also led to unprecedented disruptions in the flow of goods and services, commodity prices, and financial conditions worldwide, creating an economic disaster across many nations (IMF, 2020).

The government responses, including lockdowns, social distancing, and closure of schools and workplaces, were effective in curbing the virus's spread (Alfano and Ercolano, 2020). However, these measures had significant impacts on financial markets. Government responses, such as information campaigns and public event cancellations, led to higher market return volatility (Zaremba, Kizys, Aharon and Demir, 2020). The co-movement of foreign portfolio investment (FPI) and stock market returns during the pandemic demonstrated the strong influence of global risk conditions on emerging economies like India (IMF, 2020). The pandemic's unprecedented nature, its impact on global economies and societies, and the resultant fear and anxiety among investors led to a heightened level of market volatility (Baker, Bloom, Davis, Kost, Sammon and Viratyosin, 2012). This increased volatility amplified investor irrationality and herd behavior, causing panic trading and further exacerbating market fluctuations. In the Gulf Cooperation Council (GCC) countries, including the United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait, and Bahrain, the COVID-19 outbreak led to instability. Governments' preventive actions negatively affected sectors such as services, tourism, and finance, causing panic among the public and raising concerns about the crisis management (Ben Amar, 2020).

The period from March 2020 for two years observed many challenges. It is during that period that many relief measures were announced to contain the effect of Covid-19. Among the measures there were several government announcements that took place to safeguard the health and well being of the country. Since the pandemic was to be contained measures lockdown and fiscal relief measures under Atmanirbhar Bharat I, Atmanirbhar Bharat II and Atmanirbhar Bharat III were announced. The relief was to be provided to large density of population that could be affected both by the pandemic and lockdown. Health measures for the pandemic included country's research and development department to work on vaccines for the COVID-19, the focus was placed on improving healthcare systems and improve the core of laboratory, hospital infrastructure, R and D on diagnostics, indigenous capacities that included essential logistics including personal protective equipment, diagnostics, ventilators and oxygen generation plants. Announcements were also made and precautions undertaken to ensure awareness of COVID Appropriate behaviour. The central government extended support to the states for requisite preparation of the COVID-19 pandemic. COVID-19 management in the country to take informed decisions on issues such as (a) medical emergency planning; (b) availability of hospitals, isolation and quarantine facility, disease surveillance and testing; (c) ensuring availability of essential medical equipment; (d) augmenting human resource and capacity building; (e) supply chain and logistics management; (f) coordination with private sector; (g) economic and welfare measures; (h) information, communications and public awareness; (h) technology and data management; (i) public grievance and (j) strategic issues related to lockdown.

Containment plans and guidelines on a wide range of subjects related to travel, behavioural and psycho-social health, surveillance, laboratory support, hospital infrastructure, clinical management, rational use of Personal Protective Equipment (PPE) etc., including inspirational guidance for healthcare personnel. The measures also included universal screening mandatory for all international passengers arriving in India (till suspension of flights). The 14 days of quarantine was made mandatory for people arriving from initially Covid-affected countries.

The containment plans envisaged a strategy of breaking the chain of transmission by (a) defining containment and buffer zones; (b) applying strict perimeter control; (c) intensive active house to house search for cases and contacts; (d) isolation and testing of suspect cases and high risk contacts; (e) quarantine of high risk contacts; (f) intensive risk communication to raise community awareness on simple preventive measures and need for prompt treatment seeking and (g) strengthening of passive Influenza Like Illness (ILI)/ Severe Acute Respiratory Illness (SARI) surveillance in containment and buffer zones. The measures adopted also included (a) COVID Care Centre with isolation beds for mild or pre-symptomatic cases; (b) Dedicated COVID Health Centre (DCHC) with oxygen supported isolation beds for moderate cases and (c) Dedicated COVID Hospital (DCH) with ICU beds for severe cases. As part of Clinical management provisions for investigational therapies were also made for using Remdesivir, Convalescent plasma and Tocilizumab for managing severe cases under

close medical supervision. Location enabled application Aarogya Setu was also launched. Center of Excellence and AIIMS together provided guidance for clinical management protocol.

Among the infrastructure management, ventillators were provided across the length and breath of the country with 19,000 doctors trained to provide COVID care. The government sanctioned 1563 plants Pressure Swing Adsorption (PSA) oxygen generation plants whereas a total of 3236 plants were installed on 15th December 2021 and over 1,14,000 oxygen concentrators were provided to the States. Public Health Laboratories were set up in at the district and block level. Covid-19 vaccine is available free of cost for all citizens above 18 years of age.

The announcement of the vaccination in the month of Jan 2021 was a big relief to the whole economy and had a positive effect on the overall functioning of the economy. The loss of life, problems of the migrant workers and vulnerable groups, reduced economic activity, falling profits and uncertainty about the situation had an impact on public sentiments and traders beliefs. The situation needed constant review, information to be given to public and requisite infrastructure to support the need at the time of pandemic. The government announcements and actions played a crucial role to maintain public confidence and hope for early economic recoveries. India is projected to grow at 8.5% in 2022 (FITCH rating agency estimates). In this study we try to evaluate whether the government announcements positively affected the stock returns by maintaining public confidence or failed to do so. We use an event study approach to determine the same and ANOVA model to determine the effect of Covid-19 related government announcements on stock returns.

Press Information Bureau (PIB) provides the dates and the announcements made by the government from 24th March 2020 to 31st December 2021. There can be observed several announcements made by the government during this period including the continuous updation on the number of cases reported during the Covid period. It may also be noted that the announcement since traced through the PIB website includes announcements made by the various ministries in respect to Covid. The author calculated the returns for the period of Nifty 50 also the average return observed during the study period was 0.06%. To the data the dummy variable input for the different announcements and the number of announcements made during the concerned period were added. The ANOVA model on the returns and the dummy variable indicate the following Table VI indicates that there is no significant effect of the government announcement on the stock market return measured through the proxy of Nifty 50. The t-statistics of the beta coefficient indicates there is no significant effect of the dummy variable indicative of the government announcements on the Nifty 50. The ANOVA may be represented as

Y	=	0.000239762	+ 0.000737182 Xi +ui
Se		(0.000452441)	(0.529929)
t		(0.00068742)	(1.072388)
p		(0.596261)	(0.283766)

There are a total of 1174 observation taken for the model where the R-square is 0.000979446 which clearly indicate no relationship between the government announcements and stock market returns.

Table VI

ANOVA Model of Effects of Government Announcement on Stock Market Return during COVID-19

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.031296107							
R Square	0.000979446							
Adjusted R Square	0.000127766							
Standard Error	0.011676143							
Observations	1175							
ANOVA								
	Df	SS	MS	F	Significance F			
Regression	1	0.000156784	0.000157	1.150017	0.28376619			
Residual	1173	0.159917797	0.000136					
Total	1174	0.160074581						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.000239762	0.000452441	0.529929	0.596261	-0.0006479	0.00112745	-0.000647923	0.001127447
Dummy Variable	0.000737182	0.00068742	1.072388	0.283766	-0.0006115	0.00208589	-0.000611529	0.002085892

Source: Self Computed

Table VII

Linear Regression on the Effects of Number of Government Announcements on Nifty 50

SUMMARY OUTPUT								
Regression								
	Statistics							
Multiple R	0.030613045							
R Square	0.000937159							
Adjusted R Square	8.54426E-05							
Standard Error	0.01167639							
Observations	1175							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	0.000150015	0.00015	1.100318	0.294412367			
Residual	1173	0.159924566	0.000136					
Total	1174	0.160074581						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.000343751	0.000397719	0.864306	0.387596	-0.000436569	0.001124071	-0.000436569	0.001124071
Number of Announcements	0.00011507	0.000109699	1.048961	0.294412	-0.000100158	0.000330297	-0.000100158	0.000330297

Source: Self Computed

Table VII indicates that there is no significant effect of the government announcements on the stock market return measured through the proxy of Nifty 50. The The t-statistics of the beta coefficient indicates there is no significant effect of the dummy variable indicative of the government announcements on the Nifty 50. The ANOVA may be represented as:

Y	=	0.000343751 +	0.00011507Xi +ui
SE		(0.000397719)	(0.000109699)
t		(0.864306)	(1.048961)
p		(0.387596)	(0.294412)

V. Conclusion

Covid affected economies world over as the pandemic costed many lives and livelihoods. The difficulties faced during the period needed awareness, prevention and cure at the same time. The distribution of information, food, medicines and capacities to deal with the pandemic needed timely interventions from the government and various other institutions. The public distribution system of information, food, medicines, communities and families supported each other during the difficulty period. The continuous government interventions to support the economy through different means kept the situation under control. The economic support of the markets were also supported by e-commerce and e-distribution of information. The role played by the different pillars of the economy were able to support lives and livelihoods. The two year period maintained continuous appeals by the Prime Minister and agencies to maintain the requisite SOPs for the Covid care. Despite the difficult situations the markets remained in the positive territory for the developments in the country. International agencies maintained confidence in the growth of India. The study tried to understand the types of interventions offered by the government through its announcements over the period and its effect on the capital markets. As the capital markets were often used as a parameter for the positive outlook of the economy it became essential to understand if the actions of the government added any equity premiums to the said the market. It was observed through the data available through economic survey and RBI reports that the economic indicators observed a plunge in the GDP and also were constantly challenged with the difficult situation and maintained credit culture in supporting different groups. The food supplies to the needy were offered through PM Garib Kalyan Yojana. The hospital and doctors worked day and night to support the medical situation together with law and order agencies. E-commerce, E-supplies and Digital transactions enhanced during this period and supported economic activity overall.

During the Covid period, the observed data and its analysis using a dummy variables as 1 for the government announcement and 0 for no announcement was found not to significantly affect the Indian Stock markets proxied by the Nifty 50. The observed beta coefficients were not significant and hence it was concluded that government announcements were not able to add any premiums to the market. The high frequency data and credit increase found in the RBI data observed indicated a positive trend. Also the study tried to understand if the announcements in terms of the numbers from the different ministries affected the stock markets. While taking the number of the announcements as one of the variables and the returns on the stock markets as the dependent variable, the study did not find significant effect of the government announcements on the stock markets.

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