Capital Market Response to COVID-19 Pandemic – A Systematic Review on Stock Volatility and Performance

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ABSTRACT

This paper aims to identify the impact of the COVID-19 pandemic on stock market volatility and market return as well as the impact of government response to the COVID-19 pandemic on stock market performance. To analyze the same, the paper has adopted Systematic Literature Review (SLR) approach and conducted a review of 40 journal articles published between between2020 to mid-2021. The paper identified that the short-term impact of the COVID-19 outbreak and government policy measures had a significant and adverse impact on stock market volatility, return and overall performance. In the longer term, the stock markets slowly started to stabilize and revive. This effect on the stock market was also attributed to investor sentiment and thus, in the later stages, targeted government response had a positive effect on boosting investor confidence towards the market.

Keywords: COVID-19, government policy, return, stock market, volatility.

INTRODUCTION

The outbreak of the COVID-19 pandemic in early 2020 posed a significant risk to the health as well as the economic spectrum of almost all countries around the globe. In an attempt to combat the pandemic and prevent its rapid spread, governments around the globe undertook various measures like lockdowns, social distancing, restrictions on cross border entry, restrictions on mobility, and the ban on gatherings, among others (Phan & Narayan, 2020). The numerous advents that occurred in the economy since the outbreak of the COVID-19 pandemic led to uncertainty and loss of investor confidence, which in turn adversely affected the financial markets of the majority of countries (Iyke & Ho, 2021). Fama (1970) proposed an efficient market hypothesis which posited that the prices of stocks quickly adjust to the new information available in the market and thus the prices reflect all information related to the stock, including risk. Aligning with the theory, numerous empirical researches have also identified that the market value increases with an increase in favorable news regarding the external environment and the market value decreases with adverse news about the environment (Burns, Peters & Slovic, 2012; Liu et al., 2020). The role of information in influencing stock prices is linked to investor sentiment (Cox, Greenwald & Ludvigson, 2020). When investors feel confident about the economy the demand for stock increases, thus increasing the market index, on the contrary when investors are uncertain and feel a potential threat in the economy, the supply of stocks increases with less demand, decreasing the overall market performance (Gusni, 2016). This is attributable to the risk-aversive behavior of investors.

In the past, the economies around the world have experienced market crashes and recessions that were caused by the skepticism of investors. Given the significant impact of COVID-19 on the world economy, it is likely to create shock, fear and panic among investors, resulting in panic selling (He et al., 2020). Moreover, the perceived risk of investors is likely to increase with higher market volatility. In such a situation, investors tend to wait for revival to jump back in the market (Peng et al., 2015). Such risks can reduce stock prices and decrease the entire stock market performance.To prevent such catastrophic situation from arising soon, it is important to analyze and understand the response of different stock markets around the globe to the COVID-19 pandemic. Equally important is the need to identify the response of stock markets to the various government policies to identify the most effective intervention measures that contributed to boosted investor confidence or managed to maintain stability in the stock markets. Thus, this study aims to analyze the impact of the COVID-19 pandemic on stock market volatility and performance as well as the impact of government policy response towards COVID-19 to the stock market.

METHODOLOGY

The study has been based on Systematic Literature Review (SLR) method (Xiao & Watson, 2017). To conduct SLR, this study has employed the systematic review portion of Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. PRISMA consists of well-described protocols that help in understanding and conducting reviews of existing studies with an assurance of validity, reliability, and repeatability of the studies (Moher et al., 2015). The guideline consists of a checklist and a four-phase flow chart that assists in selecting quality literatures and in reporting the review in a transparent manner (Liberati, 2009).

Data sources and search strategies

This study is based on literatures that were extracted from credible journal articles published in the different reliable as well as renowned journals. The major sources of the relevant journals were the official websites of Research Papers in Economics (REPEC), Research Gate, Elsevier (Science Direct), Sage Journals, and Springer Link. The study also relied on the Google search engine, especially Google Scholar, to identify and shortlist journal articles concerning the impact of the COVID-19 pandemic on stock market responses around the globe. The key-words used for the search were 'stock market responses to COVID-19', 'impact of COVID-19 on stock market', 'impact of COVID-19 on stock market volatilities', 'impact of COVID-19 on stock market returns', 'stock market response to government policies for containment of COVID-19' for searching the articles across the countries. The search process also relied on relevant references in the reviewed papers, whereby reference list of each study was studied and the most relevant ones were extracted. Since the paper aims to identify the impact of COVID-19 on stock market responses, all reviewed articles belong to the duration between 2020 to mid-2021.

Data extraction and quality assessment

The quality of journal articles reviewed for conducting SLR was assessed independently. To ensure credibility and reliability, the source of the journals and the number of citations were observed. The journals which were cited in at least one or more research articles were considered for further research.

Eligibility and selection criteria

There were four eligibility criteria for the selection of the journals. The first eligibility criterion was language, only those journals published in the English language were included in the study. The second criterion was the relevancy of the topic and its abstract towards answering main research questions. The third criterion was the availability of the entire study. The fourth criterion was the source of the journal and the number of citations of the journals. The final criterion was the applicability of the entire journal in answering the specific research questions. The journal articles that failed to meet the criteria were eliminated from the study.

Constitution of the corpus of analysis

The journal articles used in this study were organized according to the year of publication and alphabetical order of the author's last name. Each article was provided with its respective serial numbers.Initially, 48 articles were downloaded from different sources. Post reviewing the articles based on all five eligibility criteria and removing duplicates, 40 articles were included in the study and the remaining were eliminated. Out of the total 48 articles, 3 were duplicates, 2 were eliminated due to the language barrier, and 3 were eliminated either due to the unavailability of full-text articles or due to the articles being out of research scope. Appendix A presents all the papers included in the systematic review (n=40) and the codification used to identify each one of the papers. The codes have been used in the result section to discuss the analysis.

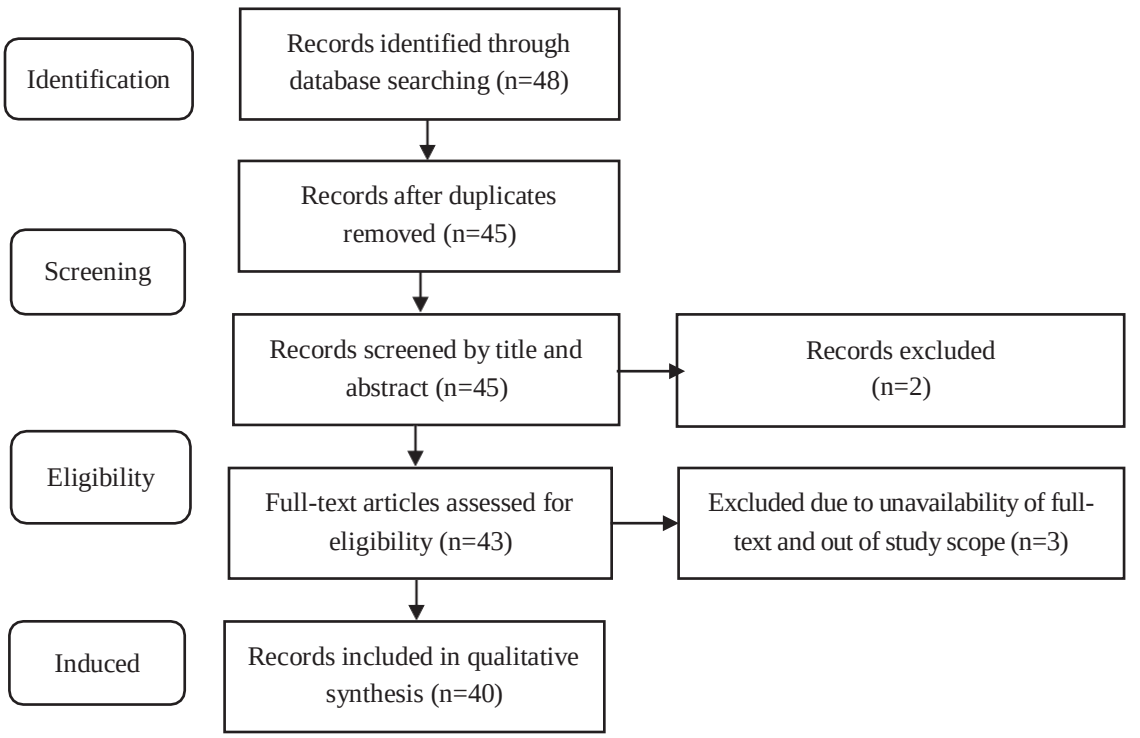

Figure 1. Reporting items for the systematic literature review as per the Preferred Reporting Items for Systematic Reviews (PRISMA).

Characteristics of included studies

The journal articles were reviewed to conduct SLR and out of the total 40 papers reviewed, 22 were published in 2020 and 18 were published in 2021 (Figure 2).

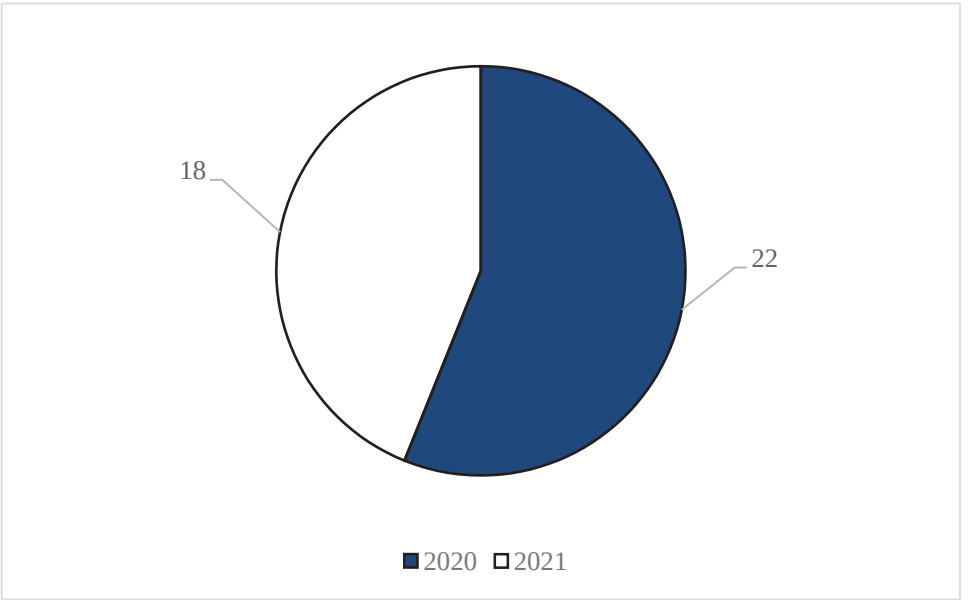

*Figure 2.*Number of journal articles considered for the study with years.

Strengths and weakness

To increase the validity and reliability of the paper, this paper has used PRISMA approach for conducting SLR. The study has incorporated research articles that were most relevant in answering the research questions. However, the study has recorded stock market response of limited countries due to which comparison between developed and smaller stock markets is not possible. Given the unavailability of relevant research in underdeveloped countries, the stock market response of inefficient markets is limited.

RESULTS

1.1 Aggregate results of the systematic review

Table 1 showed the major cause of stock market volatility with the COVID-19 pandemic. The paper E3 evidenced that market reaction was strong during the early days of confirmed cases and then between 40 to 60 days after the initial confirmed cases. The stock market return was negatively impacted by the COVID-19 pandemic which was shown by 81% of the studies. The government of different countries had announced the stimulus fund as well as taken considerable policy intervention through fiscal and monetary policies. Even though the monetary policy had a positive impact on the stock market, 44% of the studies showed that the impact of government response to the COVID-19 pandemic on the stock market was negative.

Table 1
COVID-19 Pandemic Impact on Stock Market Volatility and Performance

1 COVID-19 pandemic impact on stock market volatility.	Positive	94.1%
	Negative	0.0%
	No impact	5.9%
2. COVID-19 pandemic impact on stock market return.	Positive	12.5%
	Negative	81.3%
	No impact	6.3%
3. Government responseto COVID-19 pandemic impact on stock market.	Positive	37.5%
	Negative	44.4%
	No impact	12.5%

1.2 What was the impact of the COVID-19 pandemic on stock market volatility?

Higher stock price volatility occurs in times of higher risk. It acts as anindicator of financial risk, stress, and uncertainty in the investment environment. Thus, crisis, government interventions, and uncertainty are associated with higher stock market volatility. It is assumed that COVID-19 also triggered the stock market volatility and thus numerous researches surrounding the subject have been conducted.Paper RP3 studied the stock markets of 35 countries and identified that the global stock prices in the first month of the COVID-19 outbreak dropped by 30 percent, which was followed by an additional 10 percent increase as a result of decline in mobility. In the latter days of the outbreak, the stocks started to recover and increase modestly.

Paper E6 by analyzing stock markets of 67 counties identified that during the early stages of the onset of the COVID-19 pandemic, from January to April 2020, the stock market experienced higher volatility. The increase in volatility was particularly attributed to different government interventions that shaped opinions of people towards future economic conditions. Similar findings were portrayed in paper M4 which aimed to analyze the stock price and volume of trade three months prior and after the start of the COVID-19 pandemic. After observing a total of 5340 data, the study concluded that the pandemic significantly affected the stock price and volume of trade. The market volatility was the most prominent in the incubation period – January to March 2020. The study elucidates the fact that investors reacted to the shock of the pandemic which resulted in negative stock market incidence in the short term. The influence of COVID -19 related information was also evinced in paper R1 which identified a positive effect of COVID -19 related news and stock market volatility in European countries. The study also observed an increase in stock market volatility in the first two months of the pandemic outbreak.

Paper R6 studied the impact on the stock market index as per the week-of-the-day and identified that Mondays experienced the most negative response from investors when compared to pre-COVID times while the effect on all other days was insignificant. Paper R5 confirmed that

the US and Chinese stock market experienced negative effects of COVID-19. Paper RP2 also attempted to explain these fluctuations in the stock market. Their study identified that the US stock market experienced a V-shaped growth, with prices declining in the early days of the COVID-19 pandemic – up until March – after which the stock market experienced a rebound. The study concluded that the volatility in the stock market after the advent of COVID-19 was a result of risk aversion behavior and sentiment of investors. The study revealed that economic fundamentals like drop in output, and decline in corporate earning did not influence the decline in market prices in starting days of COVID -19, rather it was a result of pricing of equity market risk which was driven by the orthogonal risk-price factor. The study also identified that the rebound of the stock market was related to a series of announcements of economic stimulus by the Federal Reserve. Despite the stimulus promises not being fully reinforced, it helped stabilize the stock market. The study thus suggested that the volatility in stock market was not a result of substance but sentiment. The effect of the pessimistic and panic sentiment of investors on the stock market was experienced by the Asian stock markets. Paper S1 identified that immediately after the COVID-19 outbreak; the Asian stock market experienced an unprecedented level of volatility which was a result of rising uncertainty and fear of the pandemic. Consequently, abnormal returns in the market experienced negative growth as soon as the possibility of the global spread of COVID-19 was perceived by the investors. Paper R4 validated the claim and stated that the market volatility during the COVID-19 pandemic was primarily triggered by investor sentiment that was influenced by different reporting of the pandemic that was concerned with confirmed cases, death cases, oil prices, inflation rate and interest rates. Paper SL1 also confirmed that the long-lasting volatility patterns were a result of agent behavior that increased the market dynamics. The study concluded that speculative behavior of the agents led to a higher degree of reaction towards different news regarding COVID-19 causing higher volatility.

Paper A2 showed that the stock market had been extremely volatile due to the pandemic. The study found that the global or regional level stock market volatility during COVID-19 had a spillover or contagion effect that further exacerbated the country-level market volatility. Similarly, paper SL2 revealed that stock market of different countries was highly connected during the outbreak of COVID-19. As a result, in the first quarter of 2020, there was a dynamic spillover of volatility in the different countries. European stock market had a higher degree of spillover which resulted in more volatility and negative return.Studies have also confirmed that after a prolonged period of the COVID-19 outbreak, stock market reactions had been stable and the level of volatility was maintained. Paper M2 identified that after December 2020, almost a year after the onset of COVID-19, government support measures helped the stock markets around the globe gain control over previous adversities. However, a significant adverse impact of stringent policies adopted during the early stages of the COVID -19 outbreak was recorded in East Asia, Europe, Africa, Latin America, Middle East, and South Asia.The conclusion generated by paper M3 also aligned with the study. Their research confirmed that the negative effect of COVID-19 on stock markets of the United States, United Kingdom, Italy, Spain, and Turkey with higher volatility and structural shift was experienced in February 2021 and the Chinese

stock market experienced similar volatility in January 2020. This implies that the stock market volatility amongst all countries was highest during the earlier period of crisis when the environment was uncertain.Paper RP3 however, pointed that the stock market volatility was higher in the U.S than in China. Likewise, paper RP4 also identified an increase in stock price index volatility after the spike in the infection rate of COVID-19. However, paper M2 revealed that the intervention of the Bank of Korea had no significant impact on balancing the volatility.

Contrary to the aforementioned findings, the findings ofpaper V1 identified a positive effect of the COVID-19 pandemic on trading volume and investor confidence in India. The study revealed that the volatility in the Indian stock market declined after COVID-19 depicting investor sentiment that aimed to enter the stock market when stock prices are low. The study thus compared the Indian investor behavior with investor risk aversion theory. Paper P1 identified the impact of COVID-19 on different economic sectors. It identified that the effect on media, food, telecom, and pharmaceutical experienced the most unstable markets in the short run. In the medium term, the banking and clothes sectors were most unstable.

In conclusion, the aforementioned studies pointed towards the fact that COVID-19 significantly impacted the stock market volatility in almost all countries around the globe. The studies show that the increase in market volatility was high during the early stages of the COVID-19 outbreak, whereby the uncertain environment, investor sentiment, and risk aversive behavior played an important role in creating a highly volatile stock market. While at that, with the continuation of the pandemic for a prolonged period, the stock markets experienced a rebound after the first few months. In a few countries, government intervention to curb the pandemic also played a role in increasing investor confidence.

1.3 What was the impact of the COVID-19 pandemic on stock market return?

It is evident that the outburst of the COVID-19 pandemic and its rapid spread had a significant impact on the world economy and hence the financial markets of the majority of the country around the globe. This is attributable to the investor response to different aspects of the pandemic – its spread, death as well as containment policies – which have affected stock markets returns of different countries. Paper V1 witnessed that the global stock markets witnessed decreased returns after the onset of the COVID-19 pandemic. A similar finding was reported by paper G1 where it identified a 43 percent drop in investment post the spread of COVID-19. Likewise, paper R7 highlighted that investor sentiment and panic trade were the major reasons behind depressed stock returns. The study also showed that during the early phases the main reason contributing to the downfall of stock returns of government interventions like lockdown policies which resulted in a decline of stock market by 5.3 percent to 7.9 percent when averaged out in 51 stock markets around the globe.

Paper E2 indicated that the daily growth of total confirmed cases and the total cases of death as a result of COVID-19 negatively impacted the stock returns of Chinese stock markets. The impact was identical in all sectors of the economy, that is, all sectors experienced decreased

returns. Likewise, paper N2 also identified similar results by studying stock market returns of China, India, Israel, Japan, South Korea, Malaysia, Saudi Arabia, and the United Arab Emirates. The study confirmed that new confirmed cases and death severely affected stock prices, whereby all companies of the economy experienced negative returns. The reaction was similar in all countries despite the difference in the size of the economy, geographical area, and regulation. Paper R2 revealed that countries belonging to the Gulf Cooperation Council (GCC) also witnessed a negative response of market returns to COVID-19 confirmed deaths, whereby daily returns of stock market indices declined with an increase in COVID-related death.According to paper S2, the COVID-19 outbreak resulted in negative stock returns of G-20 countries within 58 days of the outbreak. The study revealed that the cumulative average abnormal return (CAAR) was negative in both developed as well as developing countries with it ranging between -0.7 percent to -42.69 percent in the first 43 days. However, the panic behavior in the market subdued with the loss declining to -29.77 percent from the 43rd day to the 57th day. Likewise, paper E5 evaluated the impact of COVID-19 on stock market performance in thirteen African countries identified reduced stock market return between -2.7 percent to -21 percent. The study also found that while the impact of the pandemic was severe on ten African countries, the remaining three countries experienced only minimal impact on the stock markets.

Paper E3 also identified that stock markets responded negatively to the growth in COVID-19 confirmed cases, further suggesting that the negative market reaction was strong during the early days of confirmed cases. Paper T1 also reported that the COVID-19 pandemic harmed stock market returns of different countries in the short run. It also confirmed that the responses in different countries had a bidirectional spillover between Asian, European, and American countries. Paper E4 also confirmed that the stock market returns of Europe and the US were negatively impacted with the announcement of the first death in the respective countries. Paper M5 studied countries including Japan, Korea, Singapore, the USA, Germany, Italy, and the UK, and identified that the outbreak of COVID-19 resulted in an immediate decline in stock market indices. The impact was enormous in Asian countries with higher negative and abnormal returns. The study concluded that the reasons for such dramatic decline were investor sentiment and fear of uncertainty. Paper R4 also identified that Asian countries experienced a surge in market return volatility which was primarily caused by investor sentiment influenced by an increasing number of confirmed COVID-19 cases and death cases. Paper M1revealed that, while South Asian countries experienced a drop in market returns, it was only for a short period.

Paper R3 revealed that higher numbers of COVID-19 cases in Malaysia harmed the performance of the Malaysian stock exchange. While the effect was negative for all sectors, Real Estate Investment Fund (REIT) did not experience a similar adverse impact. Similarly, paper I1 also found that the daily increase in COVID-19 cases harms stock returns of Vietnam. However, after the imposition of lockdown measures, the Vietnamese stock performance improved with increased investor confidence.While the aforementioned studies depict the adverse impact of COVID-19 positive cases and fatalities on stock market return, paper E1 identifies that the

Pakistani stock market experienced the insignificant impact of the rise in daily positive cases and fatalities, while the impact of recovery rate was positive to stock market performance. Paper I2 demonstrated through a study that during the COVID-19 pandemic, some sectors have experienced an increased return. The sectors largely reflect activities that would highly benefit during the pandemic and necessary consumer spendings like health care, information technology, and consumer staples, confirming that investors highly root for information during such times to enable greater returns.Paper MJ1 found that stock market indexes of countries belonging to the Association of Southeast Asian Nations (ASEAN) reported a highly significant negative impact of the COVID-19 pandemic on stock price and stock returns in the sectoral index, especially consumer products and property.

Studies that have focused on the longer-term impact of COVID-19 on stock market return show that the stock market return initially dropped and with time gradually recovered. For instance, paper A1 identified that the increase in the number of confirmed and death cases negatively affected the stock return. However, with the onset of government interventions to combat the COVID-19 pandemic, the response of investors towards the market has been largely positive, contributing to stock prices rebound. Likewise, paper O1 also discovered that the increase in monetary measures by the government had a positive effect on the recovery of stock markets. Additionally, support from donors like World Bank and International Monetary Fund (IMF) to less developed countries played a role in negating the negatives. Paper E4 also confirmed the effect of monetary policy measures in calming down the stock market. Paper R7 also highlighted the effect of targeted government responses like regional lockdown were effective in controlling the stock market returns. However, the study shows a negative effect of monetary and fiscal policy on stock market performance.

The aforementioned studies showed that the COVID-19 pandemic harmed stock returns of the majority of countries around the globe. The decline was especially attributable to investor sentiment. Sectors that benefitted from the pandemic like heath and consumer staples did not experience the negative impact. However, the studies also highlighted that the adverse impact was observed in the short run only. In the long run, the market gained stability and hence resulting in a rebound of the stock prices. One of the major reasons behind the rebound of stock returns was government support policies that boosted investor confidence.

1.4 What was the impact of government response to the COVID-19 pandemic on stock market?

With the advent of the COVID-19 pandemic, governments around the globe introduced series of policies aimed at combating its negative impact on health. Some of the most adopted intervention was lockdowns that restricted economic activities including workplace closure, mobility, and public gatherings. Apart from these, governments were heavily engaged in awareness campaigns and other health-related actions. While the aforementioned interventions helped curb the rapid spread of COVID-19, they also resulted in a significant impact on economic sectors of the countries. The severe economic downturn undeniably affected the smooth functioning of stock markets, firstly due to the signaling effect of government responses

about the future economic condition and expected cash flows which were bound to create volatility in stock prices, secondly it also triggered behaviors of risk mitigation amongst investors which impacted both trade and price of stocks.

Paper E6 aimed to investigate the non-pharmaceutical policy responses of the government towards COVID-19 and its impact on the volatility of the international stock markets of 67 countries. The study evinced that government response, especially in the form of information campaigns and cancellation of public events, increased market volatility to a great extent. The increase in volatility was separate from the one created by the fear of pandemic itself. The information disseminated by the government helped investors decides portfolio restructuring and thus facilitated higher trading in the markets. However, restrictive policies were perceived negatively by investors and resulted in further financial instability. The anticipation of more stringency in the economic sphere contributed to higher volatility.

Similar findings were derived by paper R7 by studying the effect of government policy of 57 countries on their respective stock market responses. Confirming to paper E6 the study identified that policy intervention to combat COVID-19 was the major driving force of the global stock market downturn. Policy interventions were indeed more damaging than the fundamental and irrational panic effect of the investors. While at that, the research also confirmed that regional and targeted lockdowns do not have a material impact on stock market volatility and can be an effective pandemic containment measure without having a significant impact on the overall economic sector. Paper RP6 showed that the combination of the travel ban, lockdown, and stimulus packages had a major role in influencing stock market performances. The paper further posited that the breakout of news regarding the government intervention measures resulted in the overreaction of markets. Paper E4 also demonstrated the negative impact of announcements of fiscal policy measures during the COVID-19 pandemic on stock return. The study however highlighted the potential of monetary policy of countries to calm the stock market. Paper O1 also revealed that monetary policy proved to be more effective in countering the negative effect of COVID-19 on stock market. The effects were more prominent in developed countries with the high gross domestic product (GDP) per capita. Paper RP5 also showed that monetary policy has a greater effect on easing pressure on financial markets and the effect of fiscal policy is only positive to stock returns if it is announced on the same day as monetary policy.

Paper R8 showed the effect of government announcements regarding lockdown on the Indian stock market. The study identified that lockdown announcements had a different impact on different economic sectors. For instance, the lockdown did not impact share prices of sectors like cement, construction, information technology, fertilizers, metals, oil & gas, power, services and telecommunication. However, its negative impact was felt in the automobile, media, consumer goods and financial service sectors. The role of government and political information in stock market volatility was also portrayed by paper I2. The study demonstrated that investors' attention towards government decisions heightened during COVID-19 and the subsequent responses of the government during the pandemic negatively impacted the stock market returns

of the United States. In favor of the aforementioned findings, paper RP1 also identified that government policies concerning restrictions on mobility, commercial activities and social distancing had a significant effect on stock market volatility of the United States. The findings showed that attributable to such stringent policies, the US stock market reacted much more fiercely when compared to other previous pandemics despite the mortality rate of the previous pandemic like the Spanish Flu being higher. The negative impact was extended due to the downfall of service-oriented industries such as the ban on international travel, public gatherings and schools, stay-at-home orders, closure of nonessential businesses, and mandates to social distancing and wearing masks.

Paper M2 shed light on the fact that the negative effect on stock market as a result of lockdowns and stringent government policies to combat COVID-19 was observed only in the early crisis periods. The study recorded market responses of 80 countries and identified that government support policies of 2020 helped cushion the adverse impact on stock market in the latter half of 2020. However, the paper highlighted different effects on different countries. The adverse impact of restrictive policies was more visible in Africa, Europe, South Asia, Latin America and the Middle East. Likewise, paper A1 through empirical evidence illustrated that in the longer run, government interventions like mandatory social distancing, and contract tracing had a positive effect on stock market returns of OECD countries. However, the study identified the insignificant impact of economic support policies like stimulus packages on stock market returns. Paper I1 revealed that stock market of Vietnam also experienced positive growth after the implementation of lockdown measures. This response was attributable to increased investor confidence and trust of the citizens in the government response. The study thus suggested early containment measures and proactive government response to prevent stock market volatility.

The studies concluded that the restrictive government measures and news regarding the COVID-19 cases harmed the stock markets of different countries. Lockdowns, social distancing, travel bans, among others were major reasons behind the skepticism of investors towards the future economic conditions. However, in the long run, the policies to combat COVID-19 were proved to be effective in regaining investor confidence. The majority study showed a favorable impact of monetary policy on stock market performance. However, fiscal policies did not have a similar impact.

DISCUSSION

This paper aims to identify the different stock market responses to the outbreak of the COVID-19 pandemic. To analyze the same, the paper looks into three imperative aspects – the impact of COVID-19 outbreak on stock market volatility of different countries, the impact of COVID-19 outbreak on stock market returns experienced by different countries and the impact of different government interventions aimed at combating COVID-19 on stock market response of different countries. The paper presents the impact of COVID-19 on stock market volatility first, which is followed by its impact on stock returns, and finally, the paper presents the different forms of government interventions and their impact on stock market performances.

In the first section, the study confirmed that the outbreak of COVID-19 and its effect on reducing investor confidence had a severe impact on market volatility. The stock markets around the globe experienced a significant increase in volatility after the onset of the pandemicespecially in the first few months of the COVID-19 outbreak (Ashraf, 2020). The major factors that triggered the volatility were investor sentiment, government intervention, and news and announcements related to COVID-19. Studies have confirmed that the uncertainty brought forth by the COVID-19 pandemic resulted in a decline in investor confidence towards the market. However, in India a contrary picture was identified as the speculative behavior of the investors led to reduced volatility as investors aimed to enter the market when it was at its low (Gurubaxani & Gupte, 2021).Additionally, with the imposition of lockdown measures and the restrictions of majority economic activities including mobility of people, the negative sentiments of the investors in light of the deteriorating economic situation led to an increase in the stock market volatility in the earlier days.Burdekin and Harisson (2021) pointed out that the adverse impact of stringent and restrictive policies of the government was especially felt in markets of East Asia, Europe, Africa, Latin America, the Middle East and South Asia. Likewise, an equally important factor that led to disruption of confidence among investors was various news and announcements related to COVID-19, especially confirmed and death cases. Consequently, the skepticism amongst investors increased resulting in greater stock market volatilities. The impact of the COVID-19 in the short run aligns with the efficient market hypothesis developed by Fama (1970) which states that the asset prices consist of all available information in the market and with each new information in the market, the prices react accordingly. This reflects that information has a key role in determining both the increase and stabilization of stock market volatilities.

However, the negative effect of the COVID-19 on stock market volatility is subdued with time. Over a prolonged period, markets experienced balanced and relatively stable volatility. The major contributor towards such stabilization was again the response of governments towards the COVID-19 cases. Countries experienced that with an increase in government response and introduction of stimulus packages and fiscal and monetary policies, the stock markets experienced calmness. Cox, Greenwald, and Ludvigson (2020) attributed the stock market response during the COVID-19 pandemic to the risk aversion behavior and sentiment of investors and further clarified that during the COVID-19 outbreak, economic fundamentals did not play a role in increased volatility. It was a result of panic behavior and pessimistic sentiment about future economic conditions that aggravated the negative response, which subsided with the announcements of government support measures in the economy. Likewise, Mishra and Mishra (2021) and Spelta et al., (2021) also reported that the high degree of reaction of stock market was related to different news related to the pandemic. Thus, delivery of information should be conducted with the utmost care during crisis periods to prevent further damage to the stock markets; also the government should be on a constant lookout to implement measures to boost investor sentiment during such times.

Similar to the aforementioned findings, the second section that dealt with the impact of COVID-19 on stock returns also signaled that investor sentiment and panic trade resulted in a significant decline in stock return (Shanaev, Shuraeva & Ghimire, 2020). Numerous studies

concluded that with a rise in confirmed cases and death cases in countries, their respective stock market returns experienced a decline (Al-Aldwani et al., 2020; Sapkota, 2020; Bahrini & Fildilan, 2020; Heyden & Heyden 2020). Likewise, the stock returns also experienced a bidirectional spillover effect between markets of different countries (He et al., 2020). The studies further showed that stock returns of sectors that highly benefitted during COVID-19 experienced a positive return. These sectors largely include health care, information technology, and consumer staples (Smales, 2020; Sutrisno, Panuntun & Adristi, 2021). This demonstrated the fact that investors are in constant search of information that could help them avert risk and increase their gains. The behavior indicated the role of investor sentiment in affecting market prices.In the longer-run, the stock market returns also experienced recovery. The interventions of the government have helped boost investor confidence and thus had a positive effect on stock market performance (Yang & Deng, 2021; Shaffiullah, Khalid & Chaudhry, 2021). While the majority of countries depicted similar results, some countries like Pakistan did not experience a negative effect of the increase in confirmed cases and death cases but instead realized a positive effect of recovery rate on stock market (Ahmed, 2020). Such discrepancies in stock performance improvement despite the crisis period were explained by Karki (2020) by denoting the market as inefficient as such markets cannot explain investor sentiment or do not account for information in the environment.

The study also looked into the effect of government response to COVID-19 on stock market performance. The findings revealed that policy response of the government to the COVID-19 pandemic was one of the main reasons for increased market volatility (Zaremba et al., 2020).The restrictive policies like lockdowns, cancellation of large gatherings, social distancing, were amongst the most harmful policies that negatively affected the stock market performance (Baker et al., 2020).The findings confirmed that the investors were constantly on the lookout for COVID-19 related and political news and the type of information disseminated regarding the same acted as signals to the investor regarding portfolio restructuring (Smales, 2020). A study conducted by Burdekin and Harison (2021) however shed light on the fact that the negative effect on stock market as a result of lockdowns and stringent government policies to combat COVID-19 was observed only in the early crisis periods. In the longer run, policies like mandatory social distancing, and contract tracing had a positive effect on stock market returns (Yang& Deng, 2021; Anh & Gan, 2020).This response was attributable to increased investor confidence and trust of the citizens in the government response. The aforementioned studies thus suggested that the concern of government towards combating COVID-19 and proactive and early government response helps prevent stock market volatility to some extent as it provides assurance and predictability to the investors regarding the future of the economy.

The study also found that fiscal policy measures adopted by the government harmed stock market performance (Shanaev, Shuraeva & Ghimire, 2020; Zaremba et al., 2020; Heyden & Heyden, 2020). However, the studies confirmed monetary measures to have a positive effect on calming the stock market (Heyden & Heyden, 2020; Shaffiullah, Khalid, & Chaudhry, 2021; Klose, & Tillman, 2021). Thus, during such crisis periods, the governments need to announce a strong monetary policy that promises growth of economic sectors.The aforementioned studies

derive a conclusion that COVID-19 pandemic, confirmed and death cases, and subsequent government measures to curtail the spread, lockdowns, social distancing, and other restrictions, had a significant and negative impact on both stock market volatility and returns, except in countries with inefficient markets. However, these observations were noticed only in the short term. In the longer run, the stock markets rebounded. The major reason behind the negative stock market performance was investor sentiment. The uncertain environment and increased fear regarding economic meltdown led to risk aversive behaviors of investors which had a greater impact on stock market depreciation than the economic performance of listed countries. In the long run, increased investor confidence also resulted in the improvement of stock market performance. The study also concluded that the role of information in shaping investor confidence is high. Equally important is the role of the government in assuring the investors. The swift government response of the government towards the pandemic thus is important to maintain balance in the stock market.

CONCLUSION

The study identified that the COVID-19 pandemic had a significant and adverse impact on both stock market volatility and stock market returns. The adverse impact increased with the increase in daily confirmed cases and death cases related to COVID-19. The various news of COVID-19 was one of the factors affecting the negative performance. The availability of information regarding uncertain economic conditions triggered investor sentiment which increased their risk aversive behavior and the panic it created resulted in the meltdown of stock markets around the globe. However, these effects were only noticed in the short term, right after the onset of the pandemic. With time, the stock markets became relatively stable and stock prices started to rebound. This study thus concluded that the negative stock market impact was a result of investor behavior amidst risk, uncertainty, and panic situation and not because of the economic performance of individual companies. Likewise, government intervention like lockdowns and social distancing measures also harmed stock market performance in the short run. In the later stages, government interventions were viewed positively by investors which helped boost their confidence that resulted in a rebound of markets. The revival of stock prices was particularly influenced by the monetary policies introduced by the government. On the contrary, fiscal policies had negative or no effect in calming the stock market. Therefore, the government can act early towards combating the pandemic. The government can play role in providing information and assuring the investors about the economic condition and enhancing their confidence towards the market.

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Appendix A

Table A1

Codification of Papers Included in Systematic Review

Code	Year	Author	Journal Name	Title	Source
A1	2021	Yang, H. & Deng, P.	Asian Economics Letters	The Impact of COVID-19 and Government Intervention on Stock Markets of OECD Countries	Asian Economic Letters
A2	2020	Sharma, S. S.	Asian Economics Letters	A Note on the Asian Market Volatility During the COVID-19 Pandemic	Asian Economic Letters
E1	2020	Ahmed, S. Y.	MPRA	Impact of COVID-19 on Performance of Pakistan Stock Exchange	Elsevier
E2	2020	Al-Awadhi, A. M., et. al	Journal of Behavioral and Experimental Finance	Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns	Elsevier
E3	2020	Ashraf, B. N.	Research in International Business and Finance	Stock markets' reaction to COVID-19: cases or fatalities?	Elsevier
E4	2020	Heyden, K. J. &Heyden, T.	Financial Research Letters	Market Reactions to the Arrival and Containment of COVID-19: An Event Study	Elsevier
E5	2021	Takyi, P. &Bentum-Ennin, I.	Journal of Economics and Business	The impact of COVID-19 on stock market performance in Africa: A Bayesian structural time series approach	Elsevier
E6	2020	Zaremba, A., et. Al	Finance Research Letters	Infected Markets: Novel Coronavirus, Government Interventions, and Stock Return Volatility around the	Elsevier

				Globe	
I1	2020	Anh, D. L., Gan, C.	Journal of Economic Studies	The impact of the COVID-19 lockdown on stock market performance: evidence from Vietnam	Emerald Insights
I2	2020	Smales, L. A.	Review of Behavioural Finance	Investor attention and the response of US stock market sectors to the COVID-19 crisis	Emerald Insights
G1	2021	Gurubaxani, A. & Gupte, R.	Australasian Accounting, Business and Finance Journal	A Study on the Impact of COVID- 19 on Investor Behaviour of Individuals in a Small Town in the State of Madhya Pradesh, India	Google Scholar
M1	2021	Ahmed, F., et al	Sustainability	Assessing the Impact of COVID-19 Pandemic on the Stock and Commodity Markets Performance and Sustainability: A Comparative Analysis of South Asian Countries	MDPI
M2	2021	Burdekin, R. C. &Harisson, S.	Journal of Risk and Financial Management	Relative Stock Market Performance during the Coronavirus Pandemic: Virus vs. Policy Effects in 80 Countries	MDPI
M3	2021	Gunay, S., Bakry, W. & Al-Mohamad, S.	Journal of Risk and Financial Management	The Australian Stock Market‘s Reaction to the FirstWave of the COVID-19 Pandemic and Black Summer Bushfires: A Sectoral Analysis	MDPI
M4	2020	Machmuddah, Z., et al.	Journal of Open Innovation	Stock Market Reaction to COVID-19: Evidence in Customer Goods Sector with the	MDPI

				Implication for Open Innovation	
M5	2020	Liu, H., et al	International Journal of Environmental Research and Public Health	The COVID-19 Outbreak and Affected Countries Stock Markets Response	MDPI
MJ1	2021	Sutrisno, S., Panuntun, B. &Adristi, F. I.	MODUS Journals	Pandemic Impact of COVID-19 on the Stock Market Index and Return of Stock Market Index	MODUS Journals
N2	2020	Sapkota, S. P	Contemporary Research: An Interdisciplinary Academic Journal	Impact of epidemic infectious disease and death on stock returns: Evidences from Asian stock markets with COVID-19	Nepal Journals Online
O1	2021	Shaffiullah, M., Khalid, U. & Chaudhry, S. M.	The World Economy	Do stock markets play a role in determining COVID-19 economic stimulus? A cross-country analysis	Online Wiley Library
P1	2021	Buszko M, Orzeszko W, Stawarz M	Plos One	COVID-19 pandemic and stability of stock market—A sectoral approach	Plos One Journals
R1	2020	Ambrose, M., et al.	Applied Economics Letters	COVID-19 pandemic news and stock market reaction during the onset of the crisis: evidence from high-frequency data	Research Gate
R2	2020	Bahrini, R. &Fildilan, A.	Quantitative Finance and Economics	Impact of the novel coronavirus on stock market returns: evidence from GCC countries	Research Gate
R3	2021	Lee, K. Y., Jais, M. & Chan, C.	International Journal of Business and Society	Impact of COVID-19: Evidence from Malaysian Stock Market	Research Gate
R4	2021	Mishra, P. K & Mishra S.K	Transnational Corporations Review	COVID-19 pandemic and stock market	Research Gate

				reaction: empirical insights from 15 Asian countries	
R5	2020	Onali, E.	SSRN Electronic Journal	COVID-19 and Stock Market Volatility	Research Gate
R6	2021	Sahoo, M.	Journal of Public Affairs	COVID-19 impact on stock market: Evidence from the Indian stock market	Research Gate
R7	2020	Shanaev, S., Shuraeva, A. &Ghimire, B.	SSRN Electronic Journal	The Financial Pandemic: COVID-19 and Policy Interventions on Rational and Irrational Markets	Research Gate
R8	2020	Thomas, T. C., Sankararaman. G. & Suresh, S.	Journal of Critical Reviews	Impact of COVID-19 Announcements on Nifty Stocks	Research Gate
RP 1	2020	Baker, S. R., et al.	The Review of Assets Pricing Studies	The Unprecedented Stock Market Reaction to COVID-19	Research Papers in Economics (REPEC)
RP2	2020	Cox, J., Greenwald, D. L., Ludvigson, S.C.	National Bureau of Economic Research	What Explains the COVID-19 Stock Market?	Research Papers in Economics (REPEC)
RP3	2021	David, S. J., Liu, D. & Sheng, X. S.	National Bureau of Economic Research	Stock Prices and Economic Activity in the Time of Coronavirus	Research Papers in Economics (REPEC)
RP4	2021	Hoshikawa, T. & Yoshimi, T.	The Developing Economies	The Effect of the COVID-19 Pandemic on South Korea's Stock Market and Exchange Rate	Research Papers in Economics (REPEC)
RP5	2021	Klose, J. & Tillman, P.	Journal of Economics and Statistics	COVID-19 and Financial Markets: A Panel Analysis for European Countries	Research Papers in Economics (REPEC)
RP6	2020	Phan, D. H & Narayan, P. K	Emerging Markets Finance and Trade	Country Responses and the Reaction of the Stock Market to COVID-19—a Preliminary Exposition	Research Papers in Economics (REPEC)

S1	2020	Mishra, P. K. & Mishra, S. K.	Millenial Asia Association of Asia Scholars	Corona Pandemic and Stock Market Behaviour: Empirical Insights from Selected Asian Countries	SAGE Journals
S2	2020	Singh, B., et al.	Global Business Review	The Outbreak of COVID-19 and Stock Market Responses: An Event Study and Panel Data Analysis for G-20 Countries	SAGE Journals
SL1	2021	Spelta, A., et al.	Annals of Operations Research	The impact of the SARS-CoV-2 pandemic on financial markets: a seismologic approach	Springer Link
SL2	2021	Youssef, M., Mokni, K. &Ajmi, A. N	Financial Innovation	Dynamic connectedness between stock markets in the presence of the COVID-19 pandemic: does economic policy uncertainty matter?	Springer Link
T1	2020	He, Q., et al	Economic and Political Studies	The Impact of COVID-19 on Stock Markets	Tandfonline
V1	2021	Shankar, R. &Dubey, P.	Organizations and Markets in Emerging Economies	Indian Stock Market during the COVID-19 Pandemic: Vulnerable or Resilient?: Sectoral analysis	Vilnus University Press