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Original Article

Impact of Pre, During and Post COVID-19 on Stock Returns: Empirical Evidence from Selected SAARC Countries

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Abstract

The COVID period was declared the worst phase for all the nations in the world, and it influenced human health as well as the entire financial system of the countries. Coronavirus has created uncertainty in the global market, education systems, businesses and financial market. For the first in history, the stock market of SAARC countries was drastically impacted for the most extended period due to the coronavirus. Among eight countries, the economy of India, Pakistan, Bangladesh, and Sri Lanka was incredibly hit because of the larger population and the inability to implement proper lockdown among these nations. This study analyses the pre-during-post effect of COVID-19 on selected SAARC countries of stock. The main objective of this research is to know how COVID-19 influences these stock indices in the three mentioned periods. For this study, secondary data was collected from the **www.investing.com** website for BSX, PSX, CSX and DSX indices. This research is mainly based on the daily closing price of indices. To find the returns of these four indices, the data were treated in Microsoft Excel. In addition, descriptive statistics and multiple mean comparison tests were done to analyse the different results. According to the result of descriptive statistics concerning the market and COVID-wise, returns of Bombay, Colombo, and the Pakistan stock exchange were positive over the period. According to the result of Multiple Mean comparisons in terms of COVID-wise, among the four stock indices, Bombay and Pakistan stock returns are positive, and market-wise, no statistical difference occurs in the average return value of pre-COVID, during-COVID, and post-COVID.

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Keywords: Covid-19, stock returns, SAARC countries

1. INTRODUCTION

The Background of the Study

The first coronavirus case was reported on 31 December 2019 in Wuhan City, according to the report of WHO. Chinese researchers linked this virus to a disease family called Coronavirus. In early January 2020, the coronavirus infected people worldwide in a very short period. On 11 March 2020, WTO described coronavirus as a worldwide pandemic and informed countries to take immediate action. From 2020 to 2023, the coronavirus has been recognised in 753,018,841 individuals, and 6,817,478 individuals from 224 regions have died from Coronavirus (World Health Organization, 2023).

According to the report of the (International Monetary Fund, 2022), the world financial progress is projected to shrink from 6.0% (2021) to 3.2% (2022) and 2.7% (2023). This is the lowest economic development progress estimated from 2001, except for the worldwide financial emergency (financial crises in 2008) and the intense period of the Coronavirus pandemic that started from 2019 to 2022. The coronavirus has affected human life with global economic instability and the capital market. Due to this outbreak, most countries followed strict quarantine strategies, which caused a considerable increase in mass un-

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employment and business failures (Zhang, Hu, & Ji, 2020); (Al-Awadhi, Alsaifi, Awadhi, & Alhammadi, 2020)

According to (Goodell, 2020) study, the coronavirus causes more uncommon harm to the country's economy other than natural and human-made emergencies like environmental change, atomic conflicts, and catastrophic events, and it affects monetary business sectors. In contrast with the worldwide financial crisis in 2008, the Coronavirus pandemic caused more serious and unexpected harm to the worldwide economy. Most countries were expected to lockdown their economies to battle against the pandemic, and governments were continuously struggling to control it.

Due to the lockdown, various mechanisms changed, including the labour market, changes in consumer behaviour, and a barrier in the global supply chain, but among all, the stock market was adversely affected because the investor's behaviour was changed as they received negative news of covid-19, which caused declined in economic growth. The stock market is a part of the Capital, which gives ownership to the investors. In the Stock market, financial investors put their reserves to earn profits, which is the only potential when the company's stock price increases. The stock market depends on changes in countries' microeconomic or macroeconomic variables, whether positive or negative (Madai, 2023). Due to the strict lockdown, highly demanded businesses like petroleum, chemicals and clothing brands were contracted. Significant hits were observed in the traveller industry, labour community and supply chain management, which increased unemployment rates. (Mishra, Mishra, & Asia, 2020)

Since WHO announced the worldwide pandemic in March 2020, the financial markets of many established and urban countries have been badly affected. Since the 2008 financial crisis, this was the biggest one-week downfall in the global stock market and increased stock volatility. This situation, the price development in the other stock market, came about because of price changes in the S&P 500, which prompted a market total implosion (Ganie, Wani, & Yadav, 2020). The world's emerging economy, the US financial market, saw a drastic change in March 2020 because of the fears generated by the sudden increase in coronavirus cases.

By the U.S. financial market, Europe and Asia stock markets likewise saw an unexpected drop. FTSE (The Financial Time Stock Exchange) is the United Kingdom's primary index, dropping by around 10 per cent on the 12th of March 2020. According to (Vishnoi & Mookerjee, 2020) study, Japan's financial market had more significant volatility in stock index prices caused by an outbreak of the Coronavirus and lockdown. Due to the coronavirus, like the stock market performance, the physical market also showed unexpected changes. For the first time, the oil charges recorded a negative cost in April due to low interest from world forums, and in the same way, gold costs also showed drastic variations, which pertained from lower prices as observed in March to higher prices till May 2020. (Broadstock & Zhang, 2019)

Due to the COVID-19 pandemic, various countries implemented strict quarantine strategies to battle it, and their economic events unexpectedly closed down. In a lockdown, transport usage was restricted within and outside the country, delaying worldwide economic activities. In particular, commodity markets and firms have limited their common consumption because of the creation of fear among them and made market irregularity. In this specific situation, the stock market has responded seriously and negatively affected by COVID-19. Due to the pandemic, there was a huge fall in oil prices and a huge expansion in gold prices. (Bora & Basistha, 2021). COVID-19 has delayed global economic activity. This delay is supposed to transform into a financial crisis, where firms must encounter economic distress, leading to business default. The International Monetary Fund anticipates that this downturn should be more a pity than the worldwide financial Emergency 2008 (Khan & Ullah, 2021).

The entire world feels the effects of the newfound COVID-19, whether it be health sickness or mental pressure. In South Asia, countries have also faced the influence of the Coronavirus on their country's economies (Suhail, Khan, & Neeharika, 2022). The SAARC (South Asian Association for Regional Corporation) was established in 1985. It comprises eight countries: India, Pakistan, Bangladesh, Sri Lanka, Nepal, Afghanistan, Bhutan and Maldives. The Headquarters of SAARC is located in Kathmandu. The main aim of SAARC was to improve the government's existence, improve their living standard, develop mutual trust between countries, remove trade barriers, and promote active coordinated efforts and economic growth in member countries (Migrant Forum in Asia). In recent times, the South Asia region has shown remarkable development. Significant development has been seen in the GDP (Gross Domestic Product) of SAARC nations after the beginning of financial progression since the 1990s (Mukit, Uddin, Islam, & Arif, 2014).

SAARC is one of the most populated parts of the world. Among members, Bangladesh, Pakistan and

India are the most prominent countries of SAARC concerning coronavirus cases. Since WHO announced the coronavirus as a worldwide pandemic, there has been an unexpected rise in coronavirus cases. Because of the huge population and low health care arrangements in these countries, researchers are more concerned about the influence of coronavirus on the stock market of SAARC countries. (Ahmed, Syed, Kamal, López-García, Ramos-Requena, & Gupta, 2021). The post-covid-19 badly affects the South Asian economy, which includes full lockdown, quarantine period, health issues, closedown of education sectors, restrictions on social gatherings, the shutdown of business activities and economic recession. Due to the lockdown in South Asia, many people lost their jobs. People started panicking because of the increase in the death ratio. Under such circumstances, the stock market was severely affected (Ishtiaq, Imtiaz, & Mushtaq, 2021).

India is the second-leading and largest populated country in the world. On March 24, 2020, the government announced a countrywide lockdown for 21 days. However, later, the dispersion of the coronavirus cases did not control them on 14th April. Again, the government prolonged the cross-country lockdown until 3rd May (Alam & Chavali, 2020). The beginning of the Coronavirus pandemic and the state's lockdown created difficulties for the business community worldwide. The health stock market has performed positively and powerfully for the first time. (Varma, Venkataramani, Kayal, & Maiti, 2021). According to the Google report, the number of confirmed cases of COVID-19 in India is 41.7 million, and the total number of deaths is 531,000. In April 2021, another dramatic wave of coronavirus began, affecting health and socioeconomic damage and causing severe economic winds. The death rate was more significant in the second wave than in the first. (Younus, 2021). India's stock market has shown the adverse effect of the new worldwide coronavirus pandemic. Due to the lockdown, the financial market of India was adversely impacted. (Jena & Mishra, 2022).

To concentrate on the influence of the coronavirus pandemic on the Indian stock market. The trading system plays a vital role in every economy, as it allows the foreign capital in the state to help and control the BOP (The Balance of Payment), exchange rate and so on. After the declaration of a global pandemic by the WHO, the Pakistani government stopped their import and export system, which caused to shrink the economic growth. Earlier, financial markets imitated the changes when the coronavirus hit the economy. Similarly, as Pakistan's economy, the stock market of Pakistan started its downfall on the 19th of March, which caused a further decline in economic growth. During this pandemic, the FDI (Foreign Direct Investment) pulled out all their investments from financial institutions because they lost confidence in Pakistan's financial market. Moreover, various industries were impacted during the lockdown period, increasing pressure on the Pakistan stock market. (Waheed, Sarwar, Sarwar, & Khan, 2020)

As Pakistan is a developing country and its economy depends on foreign and resident investments, due to this COVID-19 lockdown, Pakistan's economy faced several issues in the balance of payments. Pakistan has been declared the worst-hit country for COVID-19 cases (Salamzadeh, Kawamorita, Rethi, & Khan, 2021). When Coronavirus hit, Pakistan was in its first year of a credit agreement with the (IMF). The exceptionally severe grim steps and strategies bid by the IMF as a condition for the credit were, at that point, liable for carrying development to a near halt. As things view today, development is supposed to stay low soon. Any monetary upswing demands the restoration of exports. This is troublesome because of the low creation and how Pakistan's main trade markets are confronting the monetary slump set off by the pandemic. In that capacity, in the short run, the estimate for any financial restoration shows up rather dreary. (Inam, 2020)

In the same way, the COVID-19 pandemic has seriously affected the Sri Lankan economy. The traveller industry is the leading industry in Sri Lanka, and it is their primary source of income. However, when WHO announced the global pandemic in March 2020, the Sri Lankan government announced a total lockdown within the state and imposed restrictions on the tourism industry to control the coronavirus. Because of this tourism limitation, their primary source of income was seriously impacted (Ranasinghe, et al., 2022). Moreover, (Deyshappriya, 2020) also worked on this topic. This study shows that education and agricultural items-related markets have been seriously impacted apart from the traveller industry. Likewise, the export income of Sri Lanka decreased during and after COVID-19, and because of that, the value of the Sri Lankan currency has pointedly devalued.

Bangladesh is also a developing country in South Asia with a more significant population (Parvez, et al., 2023) . The stock market of Bangladesh plays a significant role in the development of SAARC. Nevertheless, after the deceleration of the COVID-19 pandemic, Bangladesh's economy was also adversely affected in many ways. In February 2020, the first three cases of Coronavirus were identified, and in a very

short period, the coronavirus cases have increased all around the country. Right after, the Bangladeshi government took immediate action and imposed a total lockdown throughout the country from 23rd March 2020 to 30th May 2020 to control the range of COVID-19. The Bangladeshi government also took a few initiatives like social awareness among people about the coronavirus, closing social gatherings, warranting the appropriate use of masks and hand sanitiser, and shutting businesses by imposing lockdowns and restrictions on the trading system.

Due to the spread of COVID-19, most of the sectors of Bangladesh have been drastically affected. The government has taken some forced actions which seriously affected the traveller industry and the hospital area. All the places the tourists stayed closed due to COVID-19 (Hossain, Nesa, Ud Dowla, & Akter, 2021). Since the Bangladeshi government announced the lockdown in March 2020, the country's major system was stopped, adversely affecting the financial market of many countries (Nusrat, 2022). The Dhaka Stock Exchange has dropped by 6.5%, whereas overall market capitalisation dropped by 5.5%. (Hossain, Nesa, Dowla, & Akter, 2021)

Scope of the study

This thesis covers the Pre-COVID, During-COVID and Post-COVID period stock return related to selected countries of SAARC, including Pakistan, India, Bangladesh and Sri Lanka. The following indices were selected to analyse the relationship of COVID with Stock returns. BSE (Bombay Stock Exchange) signify the indices of India, PSE (Pakistan Stock Exchange) signify the indices of Pakistan, CSE (Colombo Stock Exchange) signify the indices of Srilanka and DSE (Dhaka Stock Exchange) signify the indices of Bangladesh.

Objective of the Study

The research objective is to understand how the stock market of India, Pakistan, Srilanka and Bangladesh was performed in the pre-during-post COVID-19 period. This research followed a theoretical framework of stock returns in the pre-during-post COVID-19 period and connected with the selected SAARC countries using Descriptive statistics and the ANOVA test.

Research Statement

This research estimates the impact of the Pre-During-Post COVID period on the stock market performance of selected SAARC countries, for example, India, Pakistan, Bangladesh and Sri Lanka. This study also presents the stock returns of BSX, PSX, DSX and CSX's indices.

Research Gap:

Several types of research have been conducted on the stock market of SAARC countries related to COVID-19. However, existing studies do not accurately mention the duration and methodological terms used for Pre-COVID, During-COVID-19, and Post-COVID-19 applied in these four countries of SAARC in a particular way.

2. LITERATURE REVIEW

Pre covid-19

Several studies point out the negative behaviour of the stock market during some crises, natural disasters and diseases. (Buhagiar, Cortis, & Newall, 2018) explained the significant impact of the sports event on stock market performance. Sporting games negatively impacted investors' sentiments and created fear among investors for some days after the aviation disaster. Likewise, (Shanaev & Ghimire, 2019) highlight adverse outcomes created by political actions. Furthermore, (Yuen & Lee, 2003) studied people's several mood states in a risky situation. The finding of this study is that people in a bad mood have low courage to take a risk under challenging situations compared to good and positive mind state people. Among the South Asian countries, Srilanka has developed excellently in decreasing disease spreading and finding quick ways to recover from this insane disease. (Zaidi, Awasthi, & deSilva, 2004).

(Nippani & M.Washer, 2004) conducted a study to examine the impact of SARS on the stock market of eight Asian countries, including Canada, Hong Kong, Singapore, the Philippines, Vietnam, Thailand, Indonesia and China. For the study, the leading indices of these Asian countries with the S&P 1200 global indices in the period of SARS and the period of non-SARS were used. The Mann-Whitney and t-test were used to analyse the result. The result shows that, except for China, SARS had no adverse effects on seven Asian countries' stock markets. Another study was conducted by (Chen, Jang, & Kim, 2007) to analyse the

effect of SARS on the hotel industry of Taiwan. The study revealed that the Taiwan industry fell by around 29% during the period of SARS. An event study approach was used to analyse the study.

The financial investor's feelings impact the stock exchange fundamentally. At the stage when the stock market improves, and the chance of risk is less, financial investors act positively. When the stock market is declining, financial investors' opinions act negatively, and financial investors will quite often stand by to come again to the financial market until the market performs better (Burns, Peters, & Slovic, 2012). Such a condition leads to short-run investor overreaction. (Shu, 2010) concentrated on how an investor's mood impacts the stock market performance. The study explains how investors' attitude directly impacts prices for balance resources and expected returns. Other researchers recommend that social media reporting also influences the activities of financial investors (Barber & Odean, 2008) (Joseph & Christopher, 2011).

During Covid-19

The COVID-19 pandemic increased the stock volatility and risk on return in the world, whether in developed or undeveloped countries such as the US, Italy, Spain, Brazil, and India. Existing investigations recorded differentiated results. (Baig, Butt, Haroon, & Rizvi, 2021) They investigated the connection between the quantity of causality, confirmed death cases and lockdown during COVID-19. The author used the GARCH model to estimate the result. The finding of this study shows that the number of death cases, the period of lockdown and confirmed reported cases conversely affected the risk and return of the US stock market. Similarly, (Akhtaruzzaman, Boubaker, & Sensoy, 2021) have also declared the connection between the reported death cases, the quantity of causality and stock return in G7 nations.

This study also revealed that the impact of the coronavirus pandemic on economic firms is much more advanced than the non-economic firms, which influence the hedged prices for controlling risk. According to research by (Baek, Mohanty, & Glambosky, 2020), the stock market's volatility was also fundamentally affected because of the positive and negative news of the COVID-19 pandemic. In addition, the negative news of Covid-19 has induced advanced unpredictability variation in the US stock market. Furthermore, according to (Sharif, Aloui, & Yarovaya, 2020) study, the coronavirus pandemic has increased the risk to the stock market of the US, government, geographical, and oil prices during the later time of 2020.

Another study was conducted by (Sharma, 2020). For this study, the author took five established Asian countries: Hong Kong, Russia, Singapore, Japan and South Korea. The Unit root test, the GARCH model and the Mean comparison were used to test the indices of each country. The result shows that the coronavirus also adversely affects the Asian stock markets. The stock markets of Asian countries have seen greater volatility risk and more extended size of instability constancy after the pandemic. The stock market of India has been significantly affected by the pandemic period. Using the GARCH model, a simple study of the Indian stock market revealed that volatility shows a higher market ratio during COVID-19. While comparing the results, the return on Asian stock's indices was greater before the COVID-19 pandemic period than during the coronavirus pandemic. Similarly, to measure the volatility during the COVID-19 period, (Uddin, Chowdhury, Anderson, & Chaudhuri, 2021) conducted the study. They select a sample of 34 stock markets, which includes developed and emerging markets from all around the world, where it was set that the level of volatility expanded after the event of the Coronavirus pandemic.

The latest report of UNCTAD (The United Nations Conference of Trade and Development) shows that Pakistan will be more seriously affected during the worldwide pandemic period of COVID-19. (A, 2020) explored the effect of Coronavirus on the stock market of six countries: the USA, China, France, Spain, Italy and India. The study found evidence of the long-run negative connection between the return on the stock market and the pandemic with all the selected six countries' indices. Furthermore, (He, Liu, Wang, & Yu, 2020) discussed the direct and indirect results of the covid-19 pandemic on the stock market using a sample of the Asian and European economies. For this study, authors select daily return data from the stock market of eight selected countries, including China, Japan, Spain, South Korea, France, Italy, Germany and the US. The authors used conventional t-tests and non-parametric Mann-Whitney tests to check the result, showing that the coronavirus affects negatively. However, the effect was short-term on the financial markets of selected eight countries. In addition, the study also revealed that the effect of Coronavirus on the stock market has mutual spill-out impacts between Asian, European and American countries.

Several studies explore the whole market performance of multiple sectors in the US. (Mazur , Dang , & Vega , 2021) I noticed that the food market, programming, natural gas and medical service stock per-

formed positively during COVID-19 because of high demand from the US public. In the same way, (Anh & Gan, 2021) analysed the impact of the coronavirus pandemic on the daily returns of the Vietnam stock market. This research finds that COVID-19 adversely affects the Vietnam stock market. Vietnam's economy performed oppositely pre- and during lockdown. (Ashraf, 2021) has studied the influence of the coronavirus on the stock market performance of 77 countries. The Author used daily stock return data from 22nd January to 17th of April 2020 and discovered an inverse connection between the rising quantity of confirmed coronavirus cases and the stock return.

(Adnan, Nawaz, & Khan, 2021) They Studied how the Pakistani stock market reacted by sharing fake news on social media during the coronavirus period. They used an exploratory research design, and the data was collected from various social media websites and used Google's documented form to collect public responses. Further, they use the regression model, and the result shows that human motivation is the main predictor of sharing fake news of the coronavirus pandemic. (Ahmed S. Y., 2020) also studied the Pakistan stock exchange concerning COVID. This research used the data of regular COVID-19 positive cases, recoveries and stock indices of the Pakistan stock exchange. The outcomes uncovered that fatalities and daily positive cases of COVID negatively influence the performance of the Pakistan stock market, while recoveries positively influence PSX.

Regarding the COVID-19 pandemic (Alfaro et al., 2020), research shows that the sudden increase in coronavirus cases affects the United States stock market. (Ramelli & Wagner, 2020) studied the performance of individual stocks at the start of 2020. At first, international firms, mainly those that usually trade with China, suffered the most from COVID-19, but soon after, the high debt and low liquidity stock firms were adversely affected. A study examined the expected impact of the viral disease on the performance of the Chinese stock market. The researcher used panel data to examine the study, and the result shows that the everyday expansion in the number of total coronavirus cases and the quantity of coronavirus-related losses overall brought down stock returns. (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020)

In terms of stock returns, another study was conducted (Mugiarni & Wulandari, 2021) to examine the impact of the COVID-19 pandemic on the performance of stock returns in the Indonesia stock exchange. The authors used everyday data of COVID-19 confirmed cases, confirmed death cases, and stock returns data in the Indonesia stock exchange from 2 January 2020 to 31 December 2020. To estimate the results, the panel-data regression model was used. The result shows that stock returns react negatively when daily COVID-19 and death cases increase. Another study was conducted by (Karim & Saba, 2021) to analyse the impact of COVID-19 on stock returns of various regions recorded on the Bangladesh stock market. To analyse the result, regular confirmed and death cases of COVID have been selected by using different models for checking validity. The outcome uncovered that the vast majority of selected sectors of Bangladesh have been adversely affected by the increase in Coronavirus confirmed cases. In addition, the study also observed that chosen regions responded more intensively to the increase in the number of deaths cases when contrasted with the increase in confirmed cases of COVID. (Mori & Takeda, 2022)

Much research has been conducted to investigate the effect of the COVID-19 outbreak on SAARC countries' stock markets. (Saleem, 2022) conducted a study on the stock market of SAARC countries. His study concludes that during the COVID-19 pandemic, Pakistan and India faced a significant downfall in stock returns and an expansion in COVID-19 cases. Similarly, other countries like Bangladesh and Sri Lanka experienced intense time due to COVID-19, and their economy fell for a shorter period. This study also shows that the economy of Nepal reacted less during the COVID-19 pandemic than other countries in SAARC.

(Takyi & Bentum-Ennin, 2021) They conducted a study looking over a similar subject in the African stock exchange market. This study has focused on the performance of the African stock market before and during the COVID-19 pandemic; the researchers took a sample of 13 African countries. Out of 13, 10 countries are majorly and adversely affected, while three are unaffected by covid-19. Bayesian structural time series method was used to check the results and used data from 1 October 2019 to 30 June 2020. The study claims that during COVID-19, the African stock market performed negatively.

Post Covid-19

As we know, investor bias is vital in influencing investment decisions. (Rahim, Shah, Jan, & Aamir, 2020)studied the influence of overconfidence on the investment decision of the Pakistan stock investor in the post-COVID-19 pandemic period, they used a stratified sampling method by separating PSX into

three strata: KSE, LSE and ISE. The nature of the study is quantitative, and the author used descriptive statistics, correlation and association methods to test the result. The result shows that the post-pandemic influence of overconfidence bias significantly affects the investor's decision at PSX.

The unexpected COVID-19 emergency accompanies a terrible country's economic position. In the history of South Asia, this could be the worst experience in economic performance in the past 40 years. The reason behind the spread of COVID-19 in the South Asian countries was the higher ratio of poor population, as they were more prone to be infected with the Coronavirus. Maintaining social distance is difficult for them as they live in a small community. In addition, they have less admittance to take proper precautions, and even the interior community did not believe in coronavirus and refused to inject the vaccine. Due to COVID-19, several industries were affected, such as the traveller industry disturbed, restrictions on the supply chain, consumer interest in clothing falling, the interest of the financial investors in the stock market weakened, the foreign capital being taken and importing consumer products were being disturbed. (Bank, 2020)

Hypotheses

H1: Average returns for BSX, PSX, DSX, and CSX are the same.

H2: Pre-COVID, during-COVID and post-COVID average returns are the same.

H3: Pre-COVID, during-COVID and post-COVID average returns for BSX are the same.

H4: Pre-COVID, during-COVID and post-COVID average returns for CSX are the same.

H5: Pre-COVID, during-COVID and post-COVID average returns for DSX are the same.

H6: Pre-COVID, during-COVID and post-COVID average returns for PSX are the same.

H7: Pre-COVID average returns are the same for all markets

H8: During COVID, average returns are the same for all markets

H9: Post-COVID average returns are the same for all markets

3. METHODOLOGY

A few rising stock indices of SAARC countries have been chosen for this research: India, Pakistan, Sri Lanka and Bangladesh. The motive for conducting this research is to study the influence of COVID-19 on the stock markets' comparative performance of selected SAARC countries. Secondary data has been collected from www.investing.com for the BSE index (Bombay, India), KSE (Karachi, Pakistan), CSE (Colombo, Sri Lanka) and DSE (Dhaka, Bangladesh) for daily stock prices. The data was treated with Microsoft Excel to find the returns of BSX, DSX, CSX and PSX indices. Further, the Descriptive Statistics and Multiple Mean comparison model have been used to discriminate the results concerning the market and COVID-19 using SPSS.

Data & Variables

This research is based on Uni-variable, which is stock returns. In order to study the dynamics of the following countries' stock markets, the data was divided into three segments: Pre-COVID-19, During-COVID-19 and post-COVID-19. As mentioned in the first section, the period of COVID-19 started on 27 Jan 2020 in most developed countries. In the following BSX, KSX and CSX indices, the period of Pre covid-19 started from 1st Jan 2018 to 24th Jan 2020, During Covid-19 period started from 27th Jan 2020 to 31st Dec 2021, and Post covid-19 period started from 1st Jan 2022 to 5th May 2023. For DSX indices, the period of Pre covid-19 started from 1st Jan 2018 to 5th March 2020, During Covid-19 started from 8th Jan 2020 to 30th Dec 2021, and post-COVID-19 started from 1st Jan 2022 to 5th May 2023.

Statistical Models

Log Return

Firstly, a nature log has been taken to find the average stock returns for all four indices of SAARC countries. The mathematical equation for the log return is expressed below:

$$R_t=\ln (P_t/P_{(t-1)})$$

Where R_t shows the return in time t, P_t shows the stock price at present, whereas P_(t-1) shows the price at the earlier time.

Descriptive Statistics

To test the normality of indices, Mean, standard deviation, Skewness and Kurtosis models were used for Pre-COVID, During-COVID and Post-COVID periods. The Standard Deviation is used to calculate the extent around the mean for data of every stock market over a given period and shows which indices have maximum risk.

Multiple Mean Comparisons

The multiple mean comparisons method is used to discover which pair of indices have different average ratios in market-wise and COVID-wise for three tenures. This method also used the same as the Analysis of Variance (ANOVA). Further, the Tukey test has been used when the null hypothesis is rejected.

4. RESULTS & DISCUSSION

Descriptive Statistics

Market Wise

Table: 01
Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
BSER	1314	-14.10	8.59	.0447	1.22220	-1.489	.067	21.138	.135
CSER	1237	-8.44	6.59	.0230	1.28962	-.825	.070	7.462	.139
DSER	1213	-6.39	9.68	-.0021	.96812	.818	.070	13.514	.140
PSER	1317	-7.10	4.68	.0028	1.14808	-.586	.067	4.259	.135
Valid N (listwise)	1213								

In Market wise Descriptive statistics, the sample indices (daily returns of price) of selected SAARC emerging stock markets from Pre-During-post covid-19 are presented. During the period of Pre-During-post covid-19, average returns of the Bombay Stock Exchange, Colombo Stock Exchange and Pakistan Stock Exchange were positive. In contrast, the Dhaka stock exchange shows a negative average return value over the period. However, when comparing the means of 4 indices, the Bombay Stock Exchange's return (.0447) shows the highest mean. Colombo stock exchange has the most significant standard deviation (1.28962), representing the maximum risk, followed by Bombay stock exchange (1.22220), Pakistan stock exchange (1.14808) and Dhaka stock exchange (.96812).

COVID wise

Table: 02
Descriptive Statistics

COVID		N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
							Statistic	Std. Error	Statistic	Std. Error
Pre COVID	Returns	2059	-3.7023	5.5760	-.01707	.8525575	.385	.054	3.236	.108
	Valid N	2059								
During COVID	Returns	1774	-14.1017	9.6848	.100874	1.4157326	-1.148	.058	12.474	.116
	Valid N	1774								
Post COVID	Returns	1248	-8.4449	6.5900	-.04457	1.2081521	-.492	.069	6.272	.138
	Valid N	1248								

Descriptive statistics are obtained concerning different COVID-19 time periods. The sample indices (daily returns of price) of selected SAARC stock markets from Pre, During and post covid are presented. It can be found that the average return for the period of During COVID is positive, whereas average returns for Pre-COVID and Post-COVID are negative. However, the period of During Covid-19 has the highest return (.100874) and also has the most significant standard deviation (1.4157326), representing the maximum risk, followed by Pre covid-19 (.8525575) and Post covid-19(1.2081521).

Mean Comparison: (Market wise)

Table: 03
ANOVA

Returns					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.761	3	.587	.433	.730
Within Groups	6887.488	5077	1.357		
Total	6889.249	5080			

The above table of ANOVA shows the average mean reversion of all four stock indices. The ANOVA output has an F-stat = .433, less than the standard value (F=4), followed by a significant value of .730, greater than 0.005. So, it concludes that no statistical difference exists in the average return value of Pre, during and post Covid-19.

Mean Comparison (COVID wise)

Table: 04
ANOVA

Returns						
Markets		Sum of Squares	Df	Mean Square	F	Sig.
BSX	Between Groups	.768	2	.384	.257	.774
	Within Groups	1960.556	1311	1.495		
	Total	1961.324	1313			
CSX	Between Groups	15.963	2	7.981	4.829	.008
	Within Groups	2039.657	1234	1.653		
	Total	2055.619	1236			
DSX	Between Groups	12.564	2	6.282	6.766	.001
	Within Groups	1123.384	1210	.928		
	Total	1135.948	1212			
PSX	Between Groups	.672	2	.336	.254	.775
	Within Groups	1733.926	1314	1.320		
	Total	1734.597	1316			

In the above ANOVA table, the null hypothesis for pre-during-post COVID for the Bombay stock exchange and Pakistan stock exchange has been retained, as the significant value of both indices is greater than 0.005, which shows that the average returns of both stock indices are equal in the pre-during-post COVID period. The average returns of the Colombo stock exchange and Dhaka stock exchange in the pre-during-post COVID period were not equal, so we applied the Tukey test to determine which pair has different average returns.

Markets=CSX

Tukey HSDa,b			
COVID	N	Subset for alpha = 0.05	
		1	2
Post COVID	309	-.120100	
Pre COVID	495	-.013686	-.013686
During COVID	433		.166921
Sig.		.474	.118
Means for groups in homogeneous subsets are displayed.			

a. Uses Harmonic Mean Sample Size = 396.515.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Since the null hypothesis for pre, during, and post-COVID returns equality for the Colombo stock exchange has been rejected, the Tukey test has been applied to determine which pair has different average returns. The output shows that pre & post, and pre & during COVID have equal returns, whereas during and post-COVID have different average returns.

Markets=DSX

Tukey HSDa,b			
COVID	N	Subset for alpha = 0.05	
		1	2
Post COVID	526	-.084577	
Pre COVID	285	-.052290	
During COVID	402		.141312
Sig.		.889	1.000
Means for groups in homogeneous subsets are displayed.			

a.Uses Harmonic Mean Sample Size = 379.868.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Since the null hypothesis for pre, during, and post-COVID returns equality for the Dhaka stock exchange has been rejected, the Tukey test has been applied to determine which pair has different average returns. The output shows that pre & post have equal returns, whereas during & pre and during & post COVID have different average returns.

Pre-During-Post Mean Comparison

Table: 05
ANOVA

Returns					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	19.601	2	9.801	7.245	.001
Within Groups	6869.648	5078	1.353		
Total	6889.249	5080			

The above table of ANOVA shows the average mean reversion of the Pre-During-Post COVID period. The ANOVA output has an F-stat = 7.245which is less than the standard value (F=4), followed by the significant value., 001which is less than 0.005. So, it concludes that there is a statistical difference occurs in the average return value of Pre-during-post COVID-19. The Tukey test has been applied to determine which test pair has a different average return.

Homogeneous Subset

Tukey HSDa,b			
COVID	N	Subset for alpha = 0.05	
		1	2
Post COVID	1248	-.044571	
Pre COVID	2059	-.017077	
During COVID	1774		.100874
Sig.		.779	1.000
Means for groups in homogeneous subsets are displayed.			

a.Uses Harmonic Mean Sample Size = 1621.050.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Since the null hypothesis for pre, during, and post-COVID returns equality for all the markets has been rejected, the Tukey test has been applied to determine which pair has different average returns. The

output shows that pre & post have equal returns, whereas during & pre and during & post COVID have different average returns.

Table: 06
ANOVA

Returns						
Markets		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Pre COVID	Between Groups	4.146	3	1.382	1.904	.127
	Within Groups	1491.721	2055	.726		
	Total	1495.866	2058			
During COVID	Between Groups	5.050	3	1.683	.840	.472
	Within Groups	3548.572	1770	2.005		
	Total	3553.622	1773			
Post COVID	Between Groups	2.930	3	.977	.669	.571
	Within Groups	1817.230	1244	1.461		
	Total	1820.160	1247			

In the above ANOVA table, the null hypothesis for pre-during-post COVID for all the markets has been retained, as the significant value of all periods is greater than 0.005, which shows that the average returns of all indices are equal in the pre-during-post COVID period.

Discussion

Several researches have been done on various countries' stock markets using different methodologies to know the results. Like, the study was conducted by (Sharma, 2020). For this study, the author took five established Asian countries: Hong Kong, Russia, Singapore, Japan and South Korea. The Unit root test, the GARCH model and the Mean comparison were used to test the indices of each country. The result shows that the coronavirus also adversely affects the Asian stock markets. Similarly, (Adnan, Nawaz, & Khan, 2021) studied how the Pakistani stock market reacted by sharing fake news on social media during the coronavirus period.

They used an exploratory research design, and the data was collected from various social media websites and used Google's documented form to collect the public responses. Further, they use the regression model, and the result shows that human motivation is the main predictor of sharing fake news of the coronavirus pandemic. Another study was conducted by (Verma, 2023) on the stock market in Hong Kong, Malaysia, Korea, Indonesia, Japan, China, Taiwan and Israel to know about the prolonged connection among these stock indices. The research has been done by using the Johansen cointegration test. The findings confirmed that the cointegration relationship between the chosen stock indices remains dynamic and found no COVID-19 effect on these dynamics.

In terms of stock returns, another study was conducted (Mugiarni & Wulandari, 2021) to study the performance of stock returns in the Indonesia stock exchange during COVID. The authors used everyday data of COVID-19 confirmed cases, confirmed death cases, and stock returns data in the Indonesia stock exchange from 2 January 2020 to 31 December 2020. To estimate the results, the panel-data regression model was used. The result shows that stock returns react negatively when daily COVID-19 cases and death cases increase. (Mori & Takeda, 2022) conducted a study to examine Japan's stock market during COVID-19 using data on the 225 firms listed on the Japanese stock market. Compared to the other countries, Japan has succeeded in keeping up with the number of positive cases and confirmed cases of death at a very low level. This study used panel data, and the result shows that changes in the new positive cases of coronavirus and the SVI (Search Volume Index) have adversely affected the stock returns of 225 listed companies from January to September 2020.

(Baig, Butt, Haroon, & Rizvi, 2021) They investigated the connection between the quantity of causality, confirmed death cases and lockdown during COVID-19. The author used the GARCH model to estimate the result. The finding of this study shows that the number of death cases, the period of lockdown and confirmed reported cases conversely affected the risk and return of the US stock market. Similarly, (Akhtaruzzaman, Boubaker, & Sensoy, 2021) have also declared the connection between the reported death cases, the quantity of causality and stock return in G7 nations. This study also revealed that the impact of the coronavirus pandemic on economic firms is more advanced than the non-economic firms,

which influence the hedged prices for controlling risk.

5. CONCLUSION, LIMITATIONS & RECOMMENDATIONS

Conclusion

This study highlights the COVID impact on the stock market of selected SAARC countries: Pakistan, India, Srilanka and Bangladesh. This research focused on three COVID tenures, the Pre-During-Post, starting from 1st Jan 2018 to 5th May 2023. In order to understand the COVID impact over the period, the data set was split into two sub-sets: COVID-wise and market-wise. To know how the stock markets of the selected SAARC countries were performed in these three tenures (Pre-During-Post), a Descriptive model has been applied. According to the result of Descriptive market statistics, the average returns of the Bombay Stock Exchange, Colombo Stock Exchange and Pakistan Stock Exchange were positive. In contrast, the average returns of the Dhaka Stock Exchange show a negative mean value over the period. Further, the result of Descriptive statistics concerning COVID-19 wise the average returns were positive during COVID in contrast with the Pre and Post COVID period. Moreover, the Multiple Mean Comparisons model has been applied to know which pair of indices have different average mean ratios. The findings have confirmed that the average returns of all four stock indices are equal over time.

Limitations

There are certain limitations in this research. Firstly, this research only focuses on stock returns of selected SAARC countries' indices. Secondly, selected only four rising stock indices of the SAARC countries: Pakistan, India, Srilanka and Bangladesh. Therefore, results could not be generalized to other stocks market indices in SAARC countries.

Recommendations

The findings of this research show some important insinuations for future researchers, financial investors and policymakers. For financial investors looking forward to investing in a strong market like the international stock market, the outcome shows that which market performed better and had higher risky equity during the COVID period compared to pre and post COVID time period. For future researchers, findings permit the develop knowledge into the dynamic performance of the stock market in those SAARC nations which were highly affected by COVID pandemic period in order to analyse the best stock decision. For policymakers, this study shows some critical roles that government and political leaders can play in reviling the extent of COVID news to the investors who have negative feelings regarding the stock market. Also, they can spread positive indications in investors' minds to decrease uncertainty.

Competing Interests

The authors did not declare any competing interest.

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