

The Influence of the COVID-19 on the GCC Stock Markets

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Abstract

This research paper examined the influence of the COVID-19 pandemic on the GCC stock markets indices. By employing the Event Study Methodology (ESM), the findings confirmed that all GCC stock market indices were affected negatively by the COVID-19 pandemic. The GCC stock markets interacted negatively with the early announcement of the first confirmed cases of COVID-19 in Wuhan city in China in December 2019. They were greatly affected when the World Health Organization (WHO) announced that the COVID-19 virus had become a pandemic. The cumulative average abnormal returns (CAAR) for all of the GCC stock market indices revealed that all of the GCC stock markets were negatively affected by the COVID-19 pandemic during all investigated event windows.

Keywords: COVID-19, GCC, event study methodology, stock markets

1. Introduction

Countries worldwide have suffered as a result of the COVID-19 virus since the first case was discovered in the Chinese city of Wuhan on December 27, 2019. This virus spread to other countries around the world with remarkable speed. On March 11, 2020, the World Health Organization (WHO) declared that the virus had become a pandemic and warned of its repercussions for individuals' health and the threat it posed to human life. The six Arab Gulf countries (GCC), including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE), also suffered due to COVID-19. All of the GCC countries were affected by the COVID-19 pandemic, leading to closed airports, the implementation of strict measures to combat the virus, the imposition of curfews and lockdowns on citizens, and the shutting down of governments, private institutions, schools, universities, and shops. The rapid spread of the Coronavirus induced instability, a shortage of stock market liquidity, and a loss of investor confidence and fear. Numerous studies have examined the impact of COVID-19 on stock markets in several countries worldwide by applying different methodologies and statistical tools. These methodologies include Vector Autoregression (VAR), the Error Correction Model (ECM), simple regression analysis (OLS), GARCH and the Event Study Methodology (ESM). They all concluded that the stock markets were affected negatively by the COVID-19 pandemic. Although the number of articles and publications on the impact of COVID-19 on the stock markets is vast, little attention has been paid to the GCC stock markets. The recent literature that tackled the impact of COVID-19 on the GCC stock markets includes Alber and Saleh (2020), Al Refai et al. (2021), Alkhatib et al. (2021), Salman and Ali (2021), and Al-Kandari et al. (2021).

This paper's importance comes from the stock markets' role in the GCC countries and the enormous funds invested in these markets. From this perspective, this paper attempts partially to fill this gap in the literature by enhancing our understanding of the impact of the COVID-19 pandemic on the GCC stock markets. The main objective of this research paper is to examine and analyse the impacts of the COVID-19 pandemic on the GCC stock markets by applying the event study methodology (ESM). Following this introduction, section 2 discusses the related literature, section 3 explains the methodology and data, and section 4 illustrates the experimental results. Finally, the conclusions and recommendations are presented in section 5.

2. Literature Review

More papers have been published on the impact of COVID-19 on the global stock markets than those that focus on earlier diseases, such as SARS in 2003 and Ebola in 2014. The research interest in this topic is because the COVID-19 pandemic has affected the stock markets more than SARS and Ebola did (Baker et al., 2020). However, the previously published research papers found that COVID-19 negatively affected the performance of stock markets around the world. Those papers reached mixed findings. For example, the Asian stock markets were affected more quickly than the European and US ones (Liu et al., 2020). These results are probably due to the integration between the East Asian stock markets. Also, some stock markets were more negatively affected by the restrictions related to the shutdown than by the disease itself (Scherf et al., 2021; Alexakis et al., 2021; Ali et al., 2020). Uncertainty about COVID-19's development and the related government interventions (lockdowns) affected investor behaviour and led to either an underreaction or overreaction that affected the stock market returns and volatility (Fernandez-Perez et al., 2021; Szczygielski et al., 2021; Xu, 2021; Baig et al., 2020; Souza and Silva, 2020; Liu et al., 2020).

The majority of the recent studies tackled the impact of the pandemic on a group of stock markets from several countries. Recent studies show that this pandemic negatively affected the performance of stock markets, caused significant losses, and significantly affected the volatility of these markets. These findings show a differential effect of COVID-19 across regions, firms, and periods. For example, Ashraf (2020) investigated the impacts of the COVID-19 pandemic on the stock returns of 64 countries from January 22, 2020, to April 17, 2020. He applied a panel data regression analysis, which revealed that the number of confirmed cases negatively impacted the stock market returns in all 64 countries. Another recent study by Topcu and Gulal (2020), using data from several countries, examined the impact of COVID-19 on 26 emerging stock markets listed by Morgan Stanley International (MSGI) for the period from March 10 to April 30, 2020. They revealed that COVID-19 negatively affected the emerging stock markets until April 10, 2020. In addition, Takyi and Bentum-Ennin (2021) applied a novel Bayesian structural time series method (a state-space model) to the period from October 1, 2019, to June 30, 2020. They reported that the returns of ten of the 13 African stocks were affected negatively by the COVID-19 pandemic, while the remaining stock markets were not. He et al. (2020,b) reported that COVID-19 has a negative short-term impact on the People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the United States of America.

On the other hand, many researchers have applied the event study methodology (ESM) to examine the impact of COVID-19 on the stock markets. ESM is one of the available measurement methods that researchers have widely used to examine an event's impact on stock returns. For example, Ball and Brown (1968) and Fama et al. (1969) were among the first to propose using ESM in the finance literature. Studies that applied ESM include Liu et al. (2020), Singh et al. (2020), Khatatbeh et al. (2020), and Goker et al. (2021). For example, Liu et al. (2020) applied ESM to investigate the effects of the COVID-19 outbreak on 21 leading stock market indices from February 21, 2019, to March 18, 2020. The study selected January 20, 2020, as the event day and set up five event windows, including (0,6), (7,13), (14, 20), (21, 27) and (28, 34). The study confirmed that the COVID-19 outbreak negatively influenced the stock market returns of all 21 indices, while Asian countries reacted more quickly to the outbreak and recovered later. In addition, their abnormal returns were more negative than those in the other selected countries. Khatatbeh et al. (2020) examined the impact of COVID-19 on selected leading stock market indices for a group of the most affected countries, including Belgium, China, France, Germany, Italy, the Netherlands, South Korea, Spain, Switzerland, the United Kingdom, and the USA, using ESM. The study revealed that the announcement of the first confirmed COVID-19 case had a significant, negative impact on stock market returns. Moreover, these effects were more substantial following the WHO's announcement, on March 11, 2020, that COVID-19 had become a global pandemic. Singh et al. (2020) applied ESM to investigate the impact of COVID-19 on G20 countries, and revealed that both developing and developed countries had been affected negatively by COVID-19. Moreover, Khatatbeh et al. (2020) also used ESM and found that the 11 stock markets examined were negatively affected by the WHO's announcement, on March 11, 2020, that COVID-19 had become a global pandemic.

On the other hand, few researchers have investigated the GCC stock markets so far. For example, Bahrani and Filfilan (2020) applied panel data models for the period from April 1 to June 26, 2020. The relationship between the COVID-19 new and death cases and the GCC stock market indices is significant and negative. The study supported the previous studies (i.e., Al-Awadhi et al. 2020; Chowdhury and Abedin, 2020; Topcu and Gulal, 2020; Ashraf, 2020). Alber and Saleh (2020) reported that the GCC stock markets were sensitive only to new COVID-19 death cases. Other news, such as new cases, confirmed cumulative cases, and cumulative death cases, was not considered bad news. A recent study by Salman and Ali (2021) found that the GCC stock markets were less

negatively affected by COVID-19 than were the global stock markets, and the negative impact was only short term. Alkhatib et al. (2021) revealed that the Kuwait and Bahrain stock markets were more negatively affected by COVID-19 than the other GCC stock markets. Al-Kandari et al. (2021) investigated the impacts of the COVID-19 pandemic on the stock returns of ten out of the 12 sectors of the Kuwait Stock Market. They revealed that seven out of the ten sector indices had been negatively affected by the pandemic. However, our study will add to the recent literature by applying the event study methodology (ESM) to examine the effects of the Covid-19 pandemic on the GCC stock markets.

3. Data and Methodology

This research employs the daily closing stock indices of the GCC stock markets. These include the Qatar Exchange Share Index (QEAS), Bahrain Share Index (BAX), Muscat Stock Exchange General Index (MSI), Saudi Stock Exchange Tadawul FF Index (TASI), Abu Dhabi Securities Exchange General (Main) Index (ADI), and Kuwait Stock Exchange Index (KSEI). However, the MSCI emerging markets index was used as a benchmark index. The MSCI shows the performance of large and medium companies in 27 countries. This index includes the shares of companies listed in Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Kuwait, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates (Index Solutions: Emerging Markets Index - MSCI). All of the data were taken from the stock markets' websites and Yahoo Finance. The methodology of this research is based on the event study methodology (ESM). ESM was significantly used in the early finance literature to measure the impact of certain events on stock prices (Fama et al., 1969, McKinlay, 1997; Binder, 1998; Corrado, 2011). Kothari and Warner (2006) reported that 565 articles related to event studies were published in five major finance journals from 1974 to 2000. ESM continues to attract the attention of researchers in the areas of finance, economics, and accounting. For example, Singh et al. (2020) argued that ESM is one of the most appropriate approaches for investigating an event's impact on stock returns over an event period. ESM aims to measure the abnormal stock returns around the event. McWilliams and Siegel (1997) stated that the event study methodology "determines whether there is an abnormal stock price effect associated with an unanticipated event, from this analysis the researcher can infer the significance of the event" (McWilliams and Siegel, 1997, p.40). Based on previous arguments, this research paper applies ESM as follows:

- The daily stock index returns are calculated using $R_t = \ln(p_t/p_{t-1})$. Where R_t is the stock returns on day t , P_t is the price of the index on day t , and P_{t-1} the price of the index on the previous day.
- The event day when WHO announced the COVID-19 pandemic: March 11, 2020.
- The prediction window covers January 1, 2019, to December 25, 2019.
- Event windows: (-50, +50), (-25, +25), (-15, +15), (-5, +5), (1, 50), (1, 25), and (1, 15).

The single-factor model was applied to calculate the return to determine the expected behaviour of the stock market of each country's index by estimating the following equation using OLS:

$$R_{i,t} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Where $R_{i,t}$ is the daily return of the stock market index on trading day t , α_i the intercept, β_i the beta coefficients (slope), R_{mt} the daily return of the MSCI index in period t , and ε_{it} the error term. From eq.1, we obtain $\hat{\alpha}_i$ and $\hat{\beta}_i$, which we use to estimate the expected return and abnormal return of each sector index, as follows:

$$E(R_{i,t}) = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (2)$$

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \quad (3)$$

Where,

$E(R_{i,t})$, $R_{i,t}$, and $AR_{i,t}$ is the expected return, real return and abnormal return for each index on day t during the period of the event window. The average abnormal returns were calculated by:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (4)$$

Where $t = 0, 1, 2, 3$ etc. and N is the total number of observations in the event window.

However, as the last step, we calculate the cumulative abnormal return for each country's index as follows:

$$CAR_i(t_0, t_1) = \sum_{t_0}^{t_1} AR_{i,t} \quad (5)$$

Where the cumulative average abnormal return (CAAR) can be calculated as follows:

$$CAAR(t_0, t_0) = \sum_{t_0}^{t_1} AAR_t \quad (6)$$

4. Empirical Results

Figure 1 shows the number of confirmed COVID-19 cases in the GCC countries from January 2019 to December 2020. The most affected countries were Oman, Bahrain and Saudi Arabia.

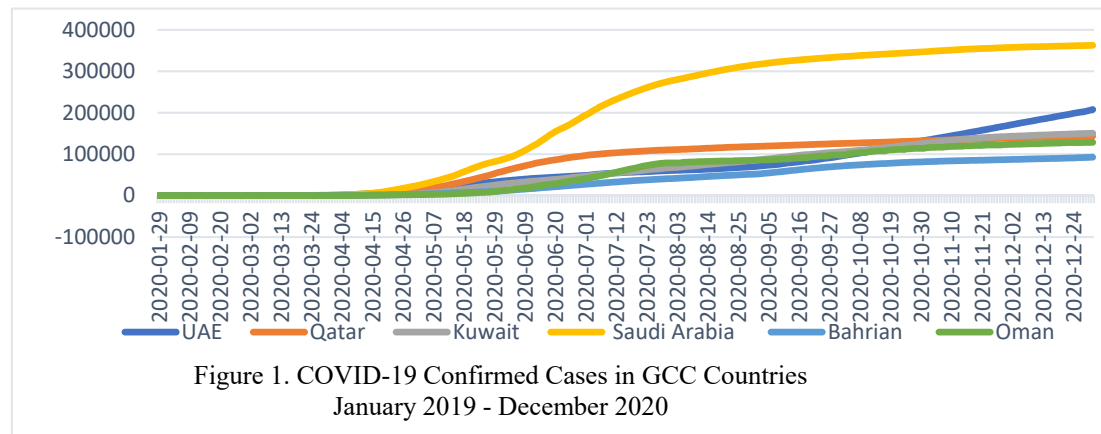


Figure 1. COVID-19 Confirmed Cases in GCC Countries
January 2019 - December 2020

The COVID-19 pandemic hit all GCC countries. Table 1 shows that the United Arab Emirates was the first GCC country to confirm a case of COVID-19, on January 29, 2020, followed by Bahrain, Oman, and Kuwait on February 24, 2020, while Qatar did so on February 29, 2020, and Saudi Arabia on March 2, 2020.

Table 1. Date of the first confirmed positive COVID-19 case

No.	Country	Date of First Confirmed Case
1	Bahrain	24/2/2020
2	Oman	24/2/2020
3	Saudi Arabia	2/3/2020
4	UAE	29/1/2020
5	Kuwait	24/2/2020
6	Qatar	29/2/2020

<https://ourworldindata.org/covid-cases>

Table 2 shows the results of a market model for the GCC stock markets indices. This table includes the intercept (α), slope (β), St-error, and Standard Deviation. The market model has good predictive power and is widely used (Armitage, 1995; Liu et al. 2020; Yan & Qian, 2020; and He et al., 2020).

Table 2. Results of the market model

	Bahrain (BAX)	Oman (MSI)	Saudi Arabia (TASI)	UAE (ADI)	Kuwait (KSEI)	Qatar (QEAS)
Intercept (α)	0.0007982	-0.000308	0.00015136	0.0000345	0.000942	-0.0000969
Slope (β)	0.0617407	0.0177611	0.096336	0.18748	0.039282	0.2069036
St. Error	0.0047403	0.0046987	0.009403	0.0077762	0.006154	0.0081393
STDEV.	0.0047783	0.0046774	0.009376	0.0079576	0.006153	0.008373

Source: Authors calculations.

4.1 Cumulative Abnormal Returns (CAR)

The cumulative abnormal returns (CAR) represent the total abnormal returns over short windows. CAR explains the behaviour of the GCC indices around the event day. Table 3 illustrates the CAR for seven windows: (-50,+50), (-25,+25), (-15,+15), (-5,+5), (1,50), (1,25), and (1,15). The MSI index has a negative CAR for all of the investigated windows with a significant t statistic, reflecting the large loss by the Muscat stock markets during the event windows. Except for (1,50) and (1,15) for the ADI index, all of the windows have negative CAR with a significant t. The Bahrain stock market index (BAX) and Kuwait stock market index (KSEI) display the same

results. Both of them had significant negative CAR for windows such as (-50,50), (-25,25), (-15,15), and (-5,5), while, for other windows, no significant CAR was found. The TASI index had three significant negative CARs for windows such as (-25,25), (-15,15), and (-5,5). The QEAS index had insignificant CARs for all of the investigated windows. In conclusion, on March 11, 2020, the WHO's announcement had a remarkably negative impact on all of the GCC indices. Additionally, previous studies reported similar findings for other countries (Liu et al., 2020; Ashraf, 2020; Topcu and Gulal, 2020; Khatatbeh et al., 2020; Phana and Narayan, 2020). However, for the QEAS, we did not obtain significant CARs.

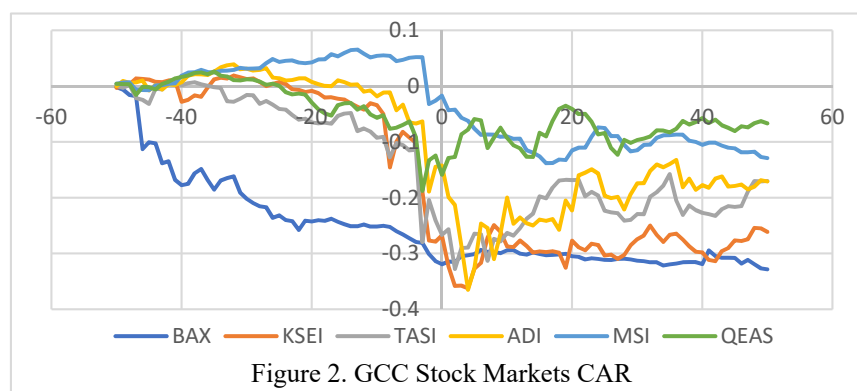
Table 3. Cumulative abnormal returns (CAR) for different windows

	Bahrain (BAX)	Oman (MSI)	Saudi Arabia (TASI)	UAE (ADI)	Kuwait (KSEI)	Qatar (QEAS)
CAR(-50,50)	-0.3284 (-6.894)*	-0.12901 (-2.732)*	-0.1668 (-1.765)	-0.1709 (-2.187)*	-0.2613 (-4.224)*	-0.06258 (-0.7650)
CAR(-25, 25)	-0.0754 (-2.229)*	-0.12381 (-3.689)*	-0.1902 (-2.833)*	-0.2120 (-3.818)*	-0.3078 (-7.003)*	-0.08818 (-1.517)
CAR(-15,15)	-0.0576 (-2.184)*	-0.17934 (-6.855)*	-0.1442 (-2.755)*	-0.2495 (-5.763)*	-0.2736 (-7.984)*	-0.04963 (-1.0951)
CAR (-5,5)	-0.03513 (-2.234)*	-0.12356 (-7.923)*	-0.1586 (-5.087)*	-0.2929 (-11.35)*	-0.2452 (-12.01)*	0.01042 (0.3862)
CAR(1,50)	-0.00913 (-0.272)	-0.11187 (-3.366)*	0.09674 (1.455)	-0.0287 (-0.522)	0.006187 (0.1421)	0.09221 (1.6022)
CAR (1,25)	0.00794 (0.335)	-0.05792 (-2.465)*	0.04317 (0.918)	-0.0544 (-1.399)	-0.03638 (-1.1821)	0.07498 (1.843)
CAR (1,15)	0.01849 (0.975)	-0.10874 (-5.975)*	0.06922 (1.9007)	-0.0968 (-2.489)*	-0.02874 (-1.2056)	0.07533 (1.851)

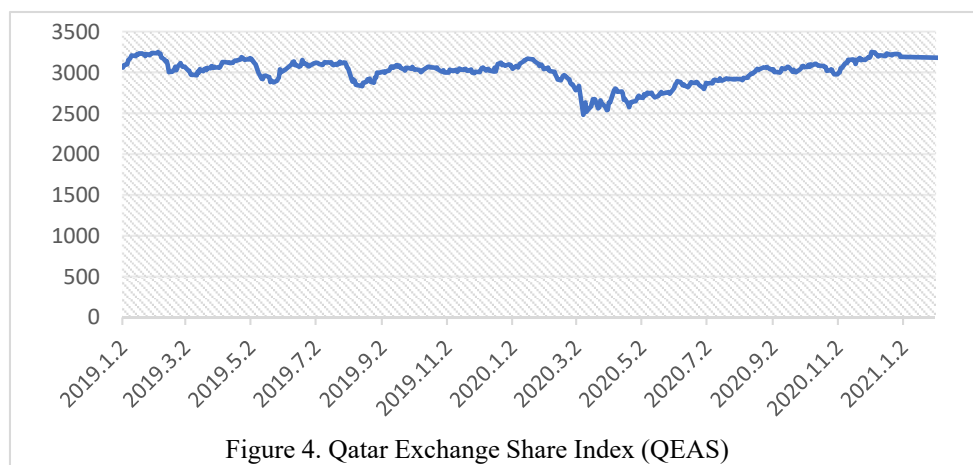
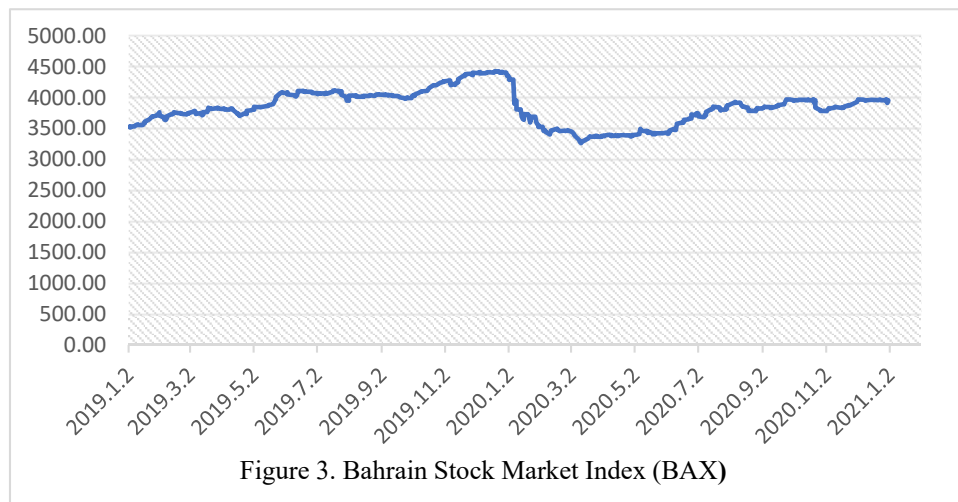
Source: authors' calculations.

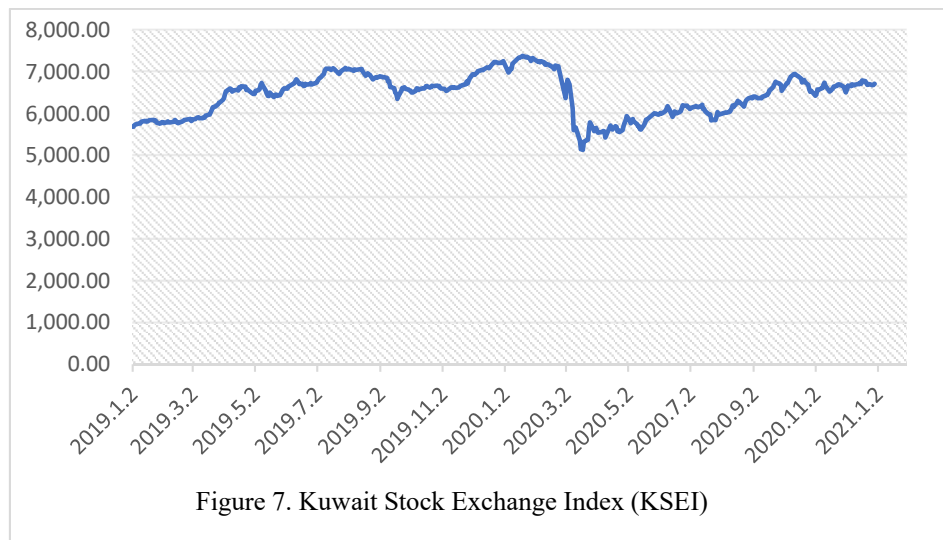
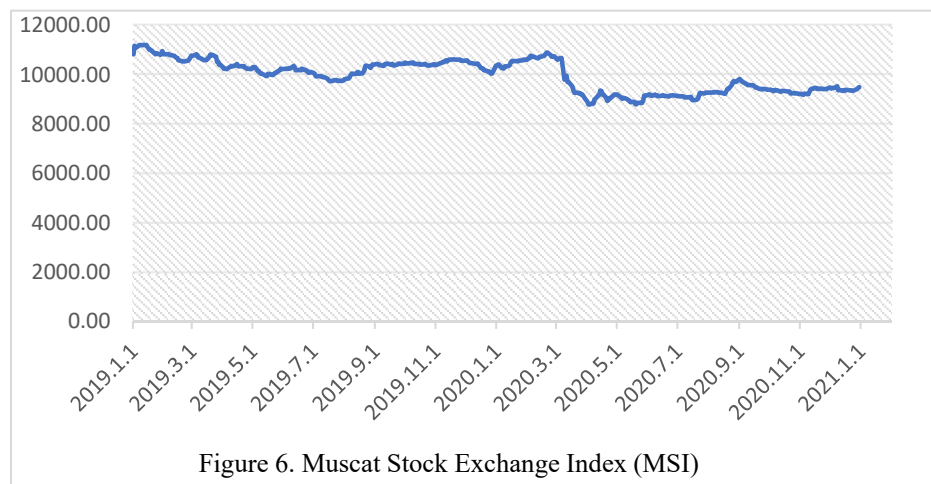
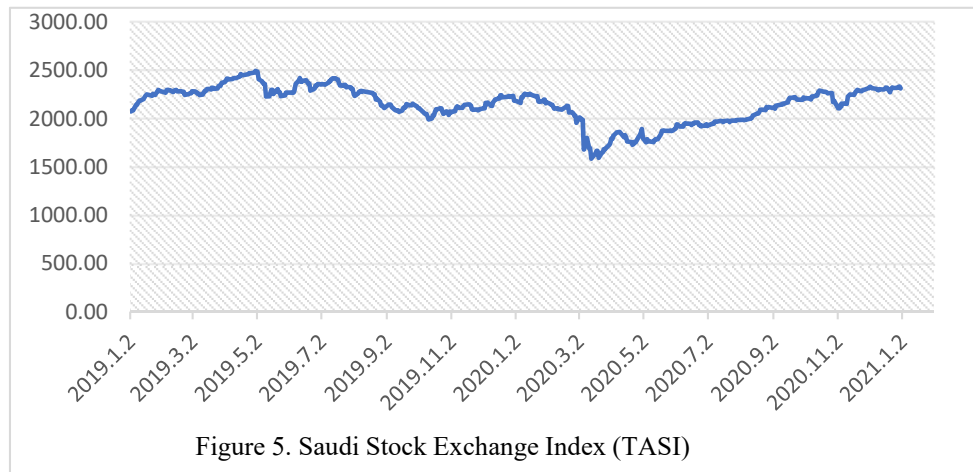
Note. *Significant at different degrees of freedom (0.02 and 0.05 per cent).

Plotting the cumulative abnormal returns (CAR) for each index would help to clarify the GCC indices' behaviour before and after the day of the event (March 11, 2020). Figure 2 shows that the BAX had a positive decreasing CAR during the event window, which became more negative after the event day. This adverse reaction might be due to the fact that the Bahrain Stock Market was very sensitive to the COVID-19 news when it was first announced by China. However, the KSEI trends also recorded a loss after the event day (Figure 2). Alkhatib et al. (2021) found almost the same findings, reporting that the Kuwait and Bahrain stock markets were more negatively affected by COVID-19 than the other GCC stock markets. Moreover, similar findings were reported by He et al. (2020a), who found that the WHO's announcement negatively affected the Shanghai stock exchange but positively affected the Shenzhen stock exchange. This figure shows that all of the GCC indices recorded negative cumulative abnormal returns (CARs) during the post-event day. For example, the most negative CAR was for BAX, followed by KSEI, TASI, ADI, MSI, and QEAS. These findings are online, with similar studies including Bahrani and Filfilan (2020), Alber and Saleh (2020), Salman and Ali (2021), and Alkhatib et al. (2021).



However, all of the GCC stock markets except for Oman (MSI) reacted negatively and declined after the news of the first COVID-19 cases was announced in December 2019 by the Chinese authorities. Figures 3-8 explain the movements of the GCC stock markets indices during the years 2019 and 2020. These figures show that several indicators declined after China announced the first COVID-19 cases. The drop in the stock indices was not continuous because the markets were awaiting news about the developing situation regarding COVID-19. Three out of the six GCC indices started declining in January 2020 (i.e. BAX on January 2, 2020, QEAS on January 27 and the TASI on January 30). In contrast, ADI declined on February 12, KSEI on March 1 and MSI on March 2, 2020. The GCC stock markets interacted with external events, noting that the substantial declines in all these markets began immediately after the World Health Organization announced that COVID-19 had become a pandemic.





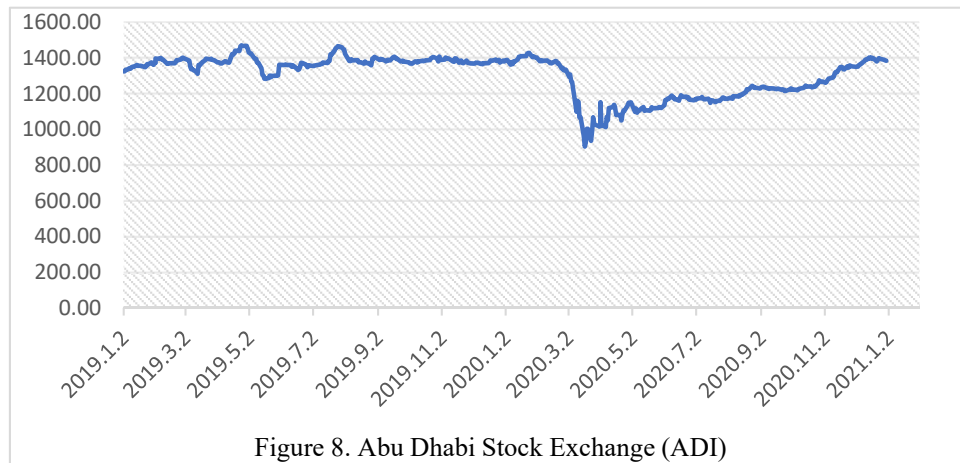


Figure 8. Abu Dhabi Stock Exchange (ADI)

4.2 Abnormal Returns (AR)

Figure 9 illustrates the abnormal returns (ARs) around the event day, which is March 11, 2020 (the World Health Organisation declared date). This figure shows the daily abnormal returns (AR) of the 101 days around the event day (-50, 50). QEAS and TASI indices showed significant negative AR on the event day. In contrast, all of the other indices, including ADI, KSEI, and MSI, reported significant negative AR the day after the event day. In comparison, BAX showed significant negative AR on the day before the event day (-1). Moreover, BAX had the most significant negatives ARs during the pre-event day.

All of the GCC indices show that significant negative abnormal returns occurred on the event day and on the following day, indicating that these stock markets reacted quickly and witnessed high volatility during the post-event day (Figure 9). Similarly, Liu et al. (2020) revealed that the Asian stock markets responded negatively to the World Health Organisation (WHO) outbreak more quickly than the European and US ones.

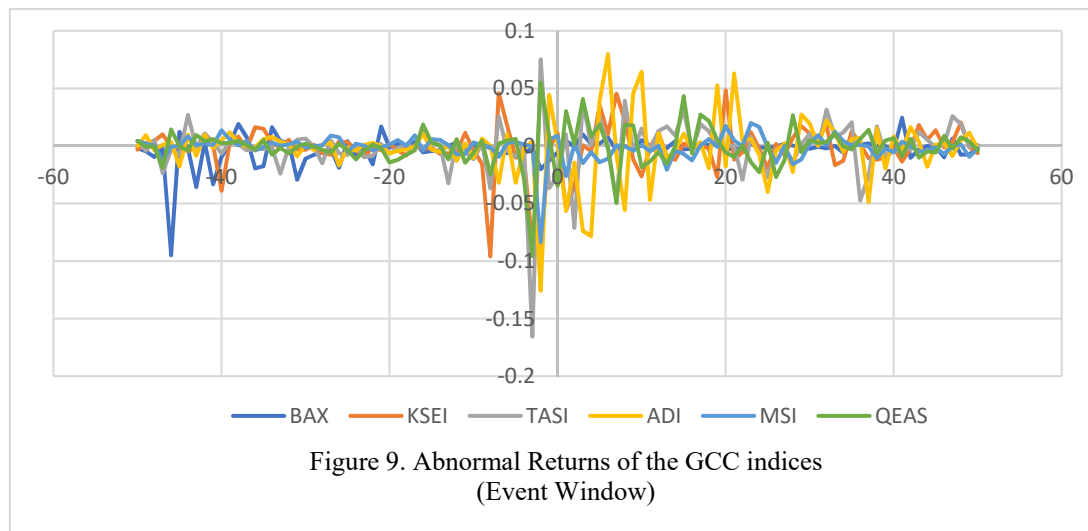


Figure 9. Abnormal Returns of the GCC indices (Event Window)

4.3 Cumulative Abnormal Average Returns (CAAR)

It is clear from the previous results that the GCC stock markets were negatively affected by the COVID-19 pandemic. It may be appropriate to examine the average impact of all of the stock indices returns on the WHO announcement date (March 11, 2020). However, a clear general conclusion can be reached regarding the six GCC selected stock markets' indices' responses to the COVID-19 announcement date by taking the average abnormal returns (AAR) for all of the selected indices and calculating the cumulative average abnormal returns (CAAR). Table 3 shows the Cumulative Average Abnormal Return (CAAR) and t statistical test results during all of the event windows. CAAR responded negatively to the World Health Organization's announcement date and was found to be significantly negative for all of the investigated windows. These results indicate that all of the GCC indices, on average, responded negatively to the WHO's declaration.

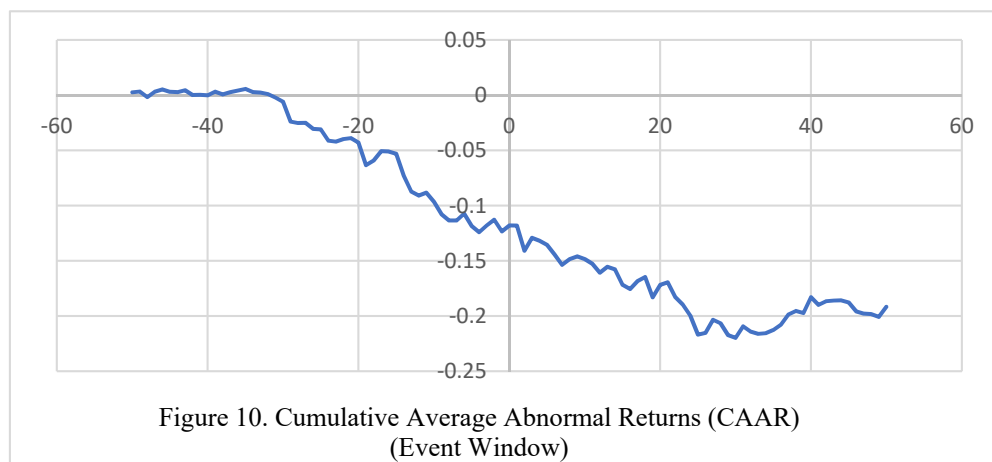
Table 3. Cumulative abnormal average returns (CAAR)

Event Window	CAAR	t-statistics
CAR(-50,50)	-0.19161	-6.448*
CAR (-25,25)	-0.18621	-8.819*
CAR(-15,15)	-0.12065	-7.329*
CAR(-5,5)	-0.02821	-2.876*
CAR(1,50)	-0.07372	-3.526*
CAR(1, 25)	-0.09896	-6.694*
CAR(1,15)	-0.05372	-3.633*

Source: authors' calculations.

Note. *Significant >1.95.

Figure 10 shows the Cumulative Average Abnormal Return's (CAAR) relationship to time during the event window (-50, +50). This figure summarizes the effects of the COVID-19 announcement date on all of the selected indices' cumulative average abnormal returns (CAAR). The World Health Organization's announcement of the pandemic had a negative effect on the GCC stock markets.



5. Conclusion and Recommendations

This research paper examined the influence of the COVID-19 pandemic on the GCC stock market indices. It applied the Event Study Methodology (ESM) to seven windows around the event day (March 11, 2020). The Event windows included: (-50, 50), (-25,25), (-15,15), (-5,5), (1,50), (1,25), and (1,15). Except for the Qatar Stock Exchange index (QEAS), the results revealed significant negative CAR for all of the GCC stock market indices in several event windows. The results also show that all of the GCC stock markets, except for Oman, reacted negatively to the announcement of the first confirmed cases of COVID-19 in Wuhan city in China in December 2019. However, the GCC stock indices were greatly negatively affected when the World Health Organization (WHO) announced that the COVID-19 virus had become a pandemic. When the cumulative average abnormal returns (CAAR) for all of the GCC stock market indices were examined, the findings revealed that all the GCC stock markets were negatively affected by the COVID-19 pandemic during all of the investigated windows.

The limitation of this research paper is the fact that it is based on the ESM approach only. It would be helpful to conduct further research using panel regression analysis and the ARDL approach.

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