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Stock Market Reaction to the COVID-19 Pandemic: Evidence from Kuwait*

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Abstract

The purpose of this study is to examine the Kuwaiti Stock Exchange's (KDE) response to the COVID-19 pandemic and the precautions taken by Kuwaiti authorities to protect their citizens and other residents. To achieve this objective, daily data from four different indexes published by the Kuwait Stock Exchange (KSE) for the period between 24 February and 30 June 2020, as well as daily data on the number of people infected with COVID-19, the daily number of recovered people, the daily number of deaths, lockdown days, and days the country was under curfew. The findings show a significant positive association between the daily recovery of persons infected by COVID-19 and all indexes published by the KSE except for the Boursa Kuwait Main Market 50, where the association was positive but insignificant. A negative and significant association was also found between the closure of the country and each of the four indexes. Although the curfew imposed by the Kuwaiti authorities at an early stage of the pandemic appeared to have a negative effect on the four indexes, the level of association was statistically significant only in the cases of the Main Market index and Boursa Kuwait Main Market 50 index.

1. Introduction

Stock markets' reaction to the outbreak of COVID-19[1] has received great attention among scholars. The main issue of the literature is to estimate the market performance and response trends of the market's industry to the COVID-19 pandemic. Previous studies revealed that the outbreak of

COVID-19 has a severe negative impact on transportation, power, and the environment. They demonstrated that the value of the firms listed on the stock markets reduced and investors lost part of their wealth. They also documented that the effect of the reaction is more likely to be clearer in emerging than in developed stock markets. These results, however, seem to be uncertain for the markets where governments exercise control over the major economic activities in countries such as the Gulf Co-operation Council (GCC)[2]. These countries are oil-rich and are among the highest per capita income countries. They share unique political and cultural systems and they reached the same level of economic development.

More importantly, as Kuwait is a small country, in terms of population, and enjoys a surplus in oil revenues, it is able to provide the necessary support to its citizens to compensate for the economic closure taken by the government to prevent the spread of the COVID-19 pandemic. This may be reflected in the movement of stock prices of companies listed on the Kuwait Stock Exchange (KSE). Hence, the results of studying the impact of the Corona epidemic on stock prices in the Kuwaiti market may be different from other markets. This would help in providing different results from what was concluded by previous studies, adding a new dimension to the literature and contributing to the limited body of

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empirical studies about market reaction to the COVID-19 outbreak. In addition, studying the market reaction to the COVID-19 outbreak is important for policymakers since it might help to understand the stock market behaviors during the outbreak of pandemics.

Thus, the purpose of this paper is to explore the impact of the COVID-19 Outbreak on KSE indexes.

2. Literature Review and Hypotheses

The spread of the COVID-19 virus affected many economic activities (Adenoma et al., 2020). The virus was first detected in Wuhan, China, on November 17, 2019 (Khanthavit, 2021). It has created a substantial danger to the health of humans and the wealth of the investment community (Pirgaip, 2020). Some researchers claim that economic recovery is associated with the elimination of the virus (Çakmak et al., 2020). According to Ahmed (2020), the business response is likely to positively affect developed market returns, across short-and long-term while it seems that its effect on the emerging markets will be significant in the short-run, rather than the long-run.

Pendell and Cho (2013) examined the market reactions by investors of Korean agribusiness companies following five foot-and-mouth disease (FMD) outbreaks using an event study analysis. The results suggest that the FMD outbreaks caused the stock market to react in both a negative and positive manner to allied companies. The results also suggested that the market reactions were more gradual than instantaneous to the FMD outbreaks. Furthermore, the FMD outbreaks appear to have increased the volatility of the daily returns with the smaller companies facing the largest changes in volatility.

Furthermore, Lee and Lee (2020) examined South Korea's rapid response to the COVID-19 pandemic and concluded that it is important to take rapid adaptation of transportation infrastructure and location-based information technology to respond to public health crises. They think that governments can learn from past experience experimentation to accelerate their responses.

Qiu et al. (2018) discussed the impacts of SARS in 2003 and H7N9 in 2013 in China. They found that both outbreaks of SARS and H7N9 have had an impact on China, causing significant negative impacts on health, the economy, and even national and international security. They concluded that both SARS and H7N9 viruses presented a global pandemic threat, but the social and economic impacts of H7N9 were not as serious as in the case of SARS because of the response to H7N9 was more effective.

He et al. (2020) used an event study approach to estimate the market performance and response trends of Chinese industries to the COVID-19 pandemic. They found transportation, mining, power, and environmental industries

have been adversely impacted by the pandemic. They also observed that manufacturing, information technology, education, and healthcare industries are resilient to the pandemic.

Moreover, Al-Awadhia et al. (2020) used panel data analysis to test the impact of the COVID-19 virus. They found that both the daily growth in total confirmed cases and in total cases of death caused by COVID-19 have a significant negative impact on stock returns across all companies. In other words, they provided evidence of a significant negative impact of both measurements on stock returns across all companies included in the Hang Seng Index and Shanghai Stock Exchange Composite Index over the period of January 10 to March 16, 2020.

Drousia et al. (2019) used a unique, hand-collected data set of actual daily share repurchases from the Athens Stock Exchange to examine the stock market reaction around the disclosure date of actual share repurchases, the factors that affect the size of that reaction, and the motives behind share acquisitions. They found that different firms proceed to actual repurchases for different reasons: the results for the small firms and the firms with high book-to-market ratio repurchases are consistent with the signaling undervaluation hypothesis, while the results for the large firms and firms with low book-to-market ratio are in line with the price support hypothesis. In contrast to other studies, we find that long-term abnormal returns are higher for repurchasing firms compared to non-repurchasing controls and depend positively on the frequency of repurchases.

Harjoto et al. (2020) used the WHO announcement on 11 March 2020 and the Federal Reserve Bank announcement on 9 April 2020 as two events that represent the shock and the stimulus and found that COVID-19 caused a negative shock to the global stock markets, especially in emerging markets and for small firms. We find that the US stock market experienced positive abnormal returns from the Fed stimulus compared to other developed countries and emerging markets. We find that the positive abnormal returns from the stimulus were garnered by the US large firms instead of the small firms.

Another study performed by Liu et al. (2020) used an event study to examine the short-term impact of the coronavirus outbreak on 21 leading stock market indices in major affected countries including Japan, Korea, Singapore, the USA, Germany, Italy, and the UK. They found that the stock markets in major affected countries and areas fell quickly after the virus outbreak. They observed that stock markets of Asian countries react more quickly to the outbreak with some of them recovering slightly in the later stage of the pandemic. Moreover, Bash (2020) used the event study approach to examine the impact of the first registered case of COVID-19 for 30 stock market indices. He found that there is a downwards trend in cumulative abnormal returns

for all indices, indicating that there is a negative effect of COVID-19 on index returns.

Ahmed (2020) explored the effects of business and consumer sentiment on stock market performance, within the separate contexts of advanced and emerging markets. The empirical analysis is carried out using the cross-sectionally augmented autoregressive distributed lag (CS-ARDL) modeling approach, which considers time dynamics, cross-sectional heterogeneity, and cross-sectional dependence. The findings for developed markets suggested that business sentiment has positive leading effects on stock returns, across short- and long-term time horizons, while for emerging markets, the price impact of business sentiment turns out to be short-lived. On the other hand, consumer sentiment tends to affect positively both market types, albeit only in the short run. Furthermore, the influence of sentiment indicators seems to be stronger in emerging- than in developed-market countries. The results remain robust, even after controlling for a rich range of potential predictors of stock returns. Generally, such evidence highlights the relevance of psychological factors, such as business and consumer sentiment, in determining the future trajectory of asset prices.

Furthermore, Şenol and Zeren (2020) examined the impact of the COVID-19 outbreak on global markets between January 21, 2020, and April 7, 2020. They found that the values of firms registered on the stock markets decreased, prices of financial instruments decreased, and investors lost wealth.

Tahat and Ahmed (2020) examined stock market returns, liquidity, and COVID-19 Outbreak in the UK. They found that there is a statistically negative relationship between stock market returns and the outbreak of COVID-19. They also found that market liquidity has been shrunk during the outbreak of COVID-19. They observed that there is a significantly positive association between market returns and liquidity suggesting that investors either exit or hang on.

Sansa and Hasan (2020) used a simple regression model to investigate the impact of the COVID-19 on the financial markets during the period from dated 1st March 2020 to 25th March 2020 in China and the USA. They found that there is a positive significant relationship between the COVID-19 confirmed cases and all the financial markets. They observed that the COVID-19 had a significant impact on the financial markets from 1st March 2020 to 25th March 2020 in China and USA.

Yar (2020) determined the impact of COVID-19 on the performance of Pakistani Stock Market. This study used the data of COVID-19 related positive cases, fatalities, recovers, and the closing prices of the PSX 100 index of the first half of 2020. The findings of the study suggested that only COVID-19 recoveries are influencing the performance of the index and the daily positive cases and fatalities are insignificantly related to the performance. Further studies can be performed by incorporating other variables such as economic growth, interest rate, and inflation rate along with the COVID-19 related variables at a cross-country level.

Heyden and Heyden (2020) studied the short-term market reactions of US and European stocks during the beginning of the COVID-19 pandemic. Employing an event study, they documented that stocks reacted significantly and negatively to the announcement of the first death in the given country. While their results suggest that the announcements of country-specific fiscal policy measures negatively affect stock returns, monetary policy measures have the potential to calm markets. These reactions are either intensified or lessened by firm-specific characteristics such as tangible assets, liquidity, and institutional holdings.

Alam et al. (2020) examined the extent of the influence of the lockdown on the Indian stock market and whether the market reaction would be the same in the pre- and post-lockdown period caused by COVID-19. The Market Model Event study methodology was used. The results indicated that the market reacted positively with significantly positive Average Abnormal Returns during the present lockdown period, and investors anticipated the lockdown and reacted positively, whereas in the pre-lockdown period investors panicked and it was reflected in negative AAR. The study found evidence of a positive AR around the present lockdown period and confirms that lockdown had a positive impact on the stock market performance of stocks till the situation improves in the Indian context.

Rabhi (2020) empirically examined the emerging Asian stock market vulnerability to pandemics. Taking the COVID-19 virus as a case study, they used the ARDL panel data approach to investigate the impact of the daily COVID-19 confirmed cases along with a behavioral component based on a triggering fear event related to news about COVID-19 deaths. The results indicated that both the reported daily growth of COVID-19 confirmed cases along with the triggering fear event related to news about death, affected the Asian stock markets performance negatively, other variables such as oil price, gold price, exchange rates, and the US stock market, were also found to be determinants of the Asian stock markets during the studied period.

Çakmak et al. (2020) quantified the macroeconomic effects of COVID-19 for a small open economy by calibrating a SIR-multi-sector-macro model. They measured sectoral supply shocks utilizing teleworking and physical job proximity, and demand shocks with credit card purchases. Both shocks are also affected by changing infection rates under different lockdown scenarios. Being an open economy amplifies the economic costs through two main channels. First, the demand shock has domestic and external components. Second, the initial shock is magnified due to domestic and international input-output linkages.

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Pirgaip (2020) explored the impact of share repurchase transactions on stock returns in an emerging market severely hit by COVID-19. Their analyses revealed that market reaction to repurchase activity in the aftermath of the pandemic declaration of March 11, 2020 was significantly positive. Moreover, the short-term stock performance of repurchasing firms was far greater than that of their non-repurchasing peers. These results have important policy implications in terms of corporate payout decisions which have recently been challenged by the new coronavirus.

Ryandono et al. (2021) examined the reaction of sharia stock in the Indonesian capital market to the global COVID-19 pandemic. The method used in this study is an event study with a Market Adjusted Model (MAM) approach. The result of this study found that the global COVID-19 pandemic is bad news, with the indicators as follows: a) the average expected return is negative; b) the average actual return is negative; c) the average abnormal return is negative, and d) the increase selling action of stock as a cut loss strategy. There is a negative abnormal return and significant Trading Volume Activity (TVA) before, during, and after the announcement of the global COVID-19 pandemic. However, this study found no difference in abnormal return and TVA before and after the announcement of the global COVID-19 pandemic. From these results, this study indicates that the sharia stocks in the capital market in Indonesia can respond quickly to the information that existed. Therefore, the capital market of Indonesia is a capital market with a semi-strong efficient form.

Ha (2021) examined the factors affecting real estate prices during the COVID–19 Pandemic in Vietnam. He found that the area of the house, the number of bedrooms, and the location of the land have a positive effect on the real estate price. He also found that the distance from the land to the center of the district has a negative effect on the price, which means that the further away land is from the center, the lower the price. He concluded that the government needs to create a fund to stabilize the real estate market during the COVID-19 pandemic or in the context of market-related shocks.

It is evident that a limited number of empirical studies have been undertaken to examine the impact of COVID-19 on the performance of listed firms in stock markets. This suggests the need for additional empirical testing. Therefore, the current research is undertaken to test the following hypotheses:

H1: *KSE Indexes react negatively to the daily announced new cases of COVID-19.*
H2: *KSE Indexes react positively to the daily announced recovered cases from COVID-19.*
H3: *KSE Indexes react negatively to the daily announced deaths as a result of COVID-19.*
H4: *KSE Indexes react negatively to the closure of the country.*

H5: *KSE Indexes react negatively to the curfew imposed on the country.*

3. Data and Methodology

3.1. Data Collection

The current study uses the daily indexes published by KSE together with announcements made by the Ministry of Health and the Ministry of Interior about the newly discovered COVID-19, the country closure, and the timing of the curfew over the period between February 24 and June 30, 2020. KSE publishes four different indexes[3] on a daily basis. The time period chosen corresponds to the start of discovering the first cases of the pandemic and the government's extreme steps to stop it from spreading, as well as the time when the country reopened and began to return to normal.

3.2. Model Development

As mentioned earlier, the aim of the study is to determine the response of different KSE indexes to the announcements made by the Ministry of Health on the impact of the spread of the Corona pandemic (number of infected, recovered, and deceased persons) and measures taken by the government (lockdown and curfew) to limit the spread of the pandemic. Since KE publishes four indexes, four regression models will be estimated. In each model, one of the KSE indexes will be used. The four models can be expressed mathematically as follows.

$$LNAS = a_i - B_i DCC + B_2 DRC + B_3 DDT \\ + B_4 CLOS + B_5 CURF + \text{\Euro}_{it} \qquad (1)$$

$$LNPMS = a_i - B_i DCC + B_2 DRC + B_3 DDC \\ + B_4 CLOS + B_5 CURF + \text{\Euro}_{it} \qquad (2)$$

$$LMMS = a_i - B_i DCC + B_2 DRC + B_3 DDC \\ + B_4 CLOS + B_5 CURF + \text{\Euro}_{it} \qquad (3)$$

$$LBMS = a_i - B_i DCC + B_2 DRC + B_3 DDC \\ + B_4 CLOS + B_5 CURF + \text{\Euro}_{it} \qquad (4)$$

Where:

LNAS	=	Natural logarithm of the All-Share Index - Market Cap Weighted (TR) Index
LNPMS	=	Natural logarithm of the Premier Market Index - Market Cap Weighted (TR) Index
LMMS	=	Natural logarithm of the Main Market Index - Market Cap Weighted (TR) Index

LBMS	=	Natural logarithm of the Boursa Kuwait Main Market 50 Index- Market Cap Weighted (TR) Index
DCC	=	Daily confirmed cases of persons with COVID-19
DRC	=	Daily recovered cases from COVID-19
DDC	=	Daily death cases as a result of COVID-19
CLOS	=	Closure: zero is given for no closure imposed on that day; 1 a closure is imposed.
CURF	=	Curfew, zero is given for no curfew imposed on that day; 1 a curfew is imposed.
a_i	=	Value of the constant or intercept derived from the analysis
B_i	=	Estimated coefficient
ϵ_{it}	=	The Random Residual Error

4. Empirical Results

As mentioned earlier, KSE publishes four different indexes on a daily basis including: All Shares (AS), Premier Market (PM), the Boursa Kuwait Main Market 50 (BKMM 50), and the Main Market (MM). AS index includes all shares listed on the market, the PM index includes high liquidity and medium to large market capitalization companies, BKMM 50 index reflects the top 50 liquid companies and the MM index includes companies with minimum liquidity threshold as set by KSE. Figure summarizes the stock price movements under each of the four indexes published by the KSE during the period between February 24 and June 30, 2020. The Figure shows that there is a strong association in

the movement of the indexes during the mentioned period, despite that each index contains different sets of companies (Figure 1).

To identify the nature of the relationship in the movement of stock prices represented by the various indexes the correlations among these indexes were performed and presented in Table 1. It is obvious from the table that although AS index was strongly correlated with the three other indexes published by the KSE, the strongest correlation is recorded between AS index and the PM index and MM index. This means that COVID-19 has a significant impact on companies that are highly liquid and have a large market capitalization.

4.1. Descriptive Statistics

Table 2 contains descriptive statistics about all variables used to estimate the regression models. The table revealed that the PM index achieved the highest value. The highest standards deviation associated with the PM index indicates variations in the share prices

Table 1: Correlations Among KSE Indexes

	AS	BM	PM	MM
AS	1.000			
	0.000			
BM	0.822**	1.000		
	0.000	0.000		
PM	0.996**	0.797**	1.000	
	0.000	0.000	0.000	
MM	0.946**	0.908**	0.925**	1.000
	0.000	0.000	0.000	0.000
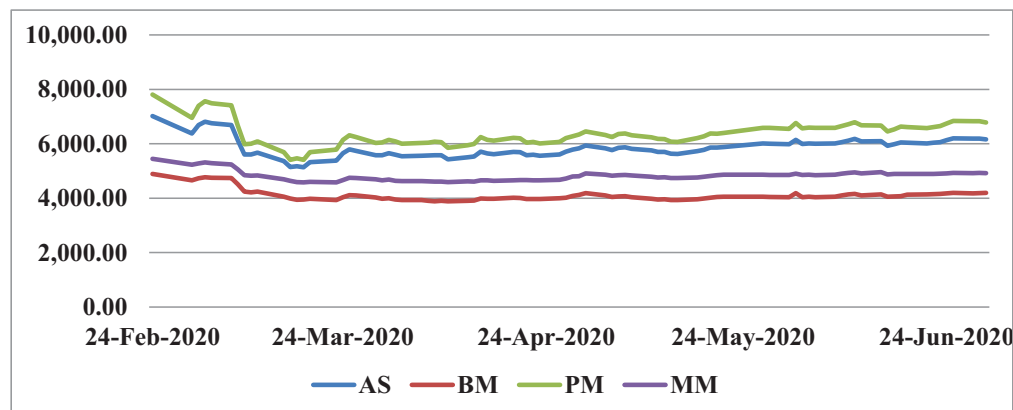
Figure 1: Kuwait Stock Exchange Indexes Movement

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Table 2: Descriptive Statistics of Variables used in the Regression Model

	Mean	**Medium**	**Standard Deviation**	**Minimum**	**Maximum**
LNAS	5,845	5,786	352	5,135	7,016
LNPMS	6,364	6,293	445	5,409	7,809
LMMS	4,814	4,824	179	4,580	5,442
LBMS	4,098	4,044	211	3,880	4,890
DCC	363	246	351	0	1,073
DRC	311	129	418	0	1,513
DDC	2	2	3	0	10

Table 3: Unit Root Results (ADF)

Variables		**With Constant**	**With Constant & Trent**	**Without Constant & Trent**
DCC	Level	−1.0729	−1.6319	−0.0417
		0.7231	0.7718	0.6660
d(DCC)	First difference	−19.2639	−19.1512	−19.2500
		0.0001***	0.0000***	0.0000***
DRC	Level	−1.2303	−1.6319	−0.5986
		0.6580	0.7718	0.4552
d(DRC)	First difference	−8.9693	−8.9133	−8.9776
		0.0000***	0.0000***	0.0000***
DDC	Level	−2.3456	−5.0208	−0.6233
		0.1605	0.0005	0.4443
d(DDC)	First difference	−8.0964	−8.0738	−8.1219
		0.0000***	0.0000***	0.0000***
CLOS	Level	−1.5847	−1.8052	−0.8301
		0.4858	0.6935	0.3534
d(CLOS)	First difference	−8.9443	−9.2583	−9.0000
		0.0000***	0.0000***	0.0000***
CURF	Level	−2.4352	−2.5784	−0.6604
		0.1354	0.2911	0.4282
D(CURF)	First difference	−8.9809	−8.9577	−9.0000
		0.0000***	0.0000***	0.0000

*Significant at the 10%; **Significant at the 5%; ***Significant at the 1%; Lag Length based on SIC.

of the companies that formed the index. The table also highlighted that the average daily confirmed cases of COVID-19 during the period between 24 February and 30 June 2020 were 363. The relatively high standard deviation together with the minimum and the maximum number of daily confirmed cases showed large fluctuations. The table further revealed that the daily recovered cases were relatively high while the daily confirmed deaths were very low. The maximum number of the daily confirmed death was only 10 persons.

4.2. Unit Root Tests

Before executing the regression analysis of the time series data, a unit root test was performed to assess the stationarity of the time series. A time series is stationary when the statistical properties such as the mean, variance, and covariance of the distribution are constant over time. If the time series is nonstationary, the regression results will become meaningless. Accordingly, the unit root test was performed. The outcome of the test is presented in Table 3.

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Table 4: Results of the Regression Analysis

Dependent Variables	Independent Variables	*F*-statistic	Sig. *F*	R^2	*t*-statistic	Sig. *t*
LNAS		14.68879	0.000000	0.484958		
	DNCC				0.805298	0.4231
	DR				2.408177	0.0184
	DD				0.010080	0.9920
	CLOSURE				–6.232213	0.0000
	CURFEW				–1.091065	0.2786
LNPMS		13.64295	0.000000	0.466538		
	DNCC				0.779038	0.4383
	DR				2.435532	0.0172
	DD				–0.075122	0.9403
	CLOSURE				–6.027570	0.0000
	CURFEW				–0.489610	0.6258
LMMS		22.06899	0.000000	0.585866		
	DNCC				0.937765	0.3513
	DR				2.080976	0.0407
	DD				0.486900	0.6277
	CLOSURE				–6.994554	0.0000
	CURFEW				–4.178327	0.0001
LBMS		22.60189	0.000000	0.591643		
	DNCC				–1.002531	0.3192
	DR				1.275250	0.2060
	DD				0.127215	0.8991
	CLOSURE				–7.225694	0.0000
	CURFEW				–4.368062	0.0000

5. Findings

To identify the effect of various aspects of COVID-19 on KSE indexes, each of the indexes was regressed against the above discussed explanatory variables. The results of the regression are summarized in Table 4. The overall significance in regression analysis is high, as seen by the reported *F*-statistics and its significance, as shown in the table. In addition, the table revealed that the result of the analysis was almost identical in that the daily announcement of recovery from COVID-19 had a significant positive effect on all indexes used in the regression model except for BKMM 50 index where the relationship was positive but insignificant. The table further revealed that the government's closure of the country and the suspension of commercial activities during the early stage of the outbreak of the COVID-19 pandemic had a significant negative impact on all daily indexes published by the KSE. Moreover, although the table pointed to a negative association between imposing curfews on each of the four indexes, the associations of the curfews and the movement in the MM and the BKMM 50 Indexes were statistically significant. In other words, news related to COVID-19 together with measures undertaken by the government to contain the effect of the pandemic had a significant effect on large and high-liquated shares listed on the KSE.

6. Conclusion

At the end of February 2020, Kuwait as well as most countries of the world was affected by the COVID-19 pandemic. Kuwait was one of the first countries in the world to take immediate measures to prevent the spread of the virus and protect the health of its citizens and other residents.

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The government took a variety of measures, including shutting down the economy and imposing a curfew at various times between February 24 and June 30, 2020. Moreover, the Kuwaiti Ministry of Health used to publish daily statistics on the number of people infected with COVID-19, the number of people who recovered, and the number of daily deaths during this time period. Kuwait's economy was crippled by the country's lockdown and curfew, which had a severe impact on KSE. In this study, the attempt is made to determine the impact of the daily data issued by the Ministry of Health on the number of infected, recoveries, deceased persons together with measures taken by the authorities, including the closure of the economy and curfews on each of the KSE indexes during the first phase of the pandemic.

To achieve the objective of this study, daily data was collected for the period between February 24 and June 30, 2020. The daily collected announcements made by the Kuwaiti authorities and the KSE daily published indexes were used to estimate four multi-regression models. In each regression model, one of the four indexes was used as the dependent variable and regressed against the daily statistics that appeared in the Ministry of Health daily announcements as well as measures taken by the Kuwaiti authorities to minimize the spread of the COVID-19. The results of the four regression models revealed that the economic lockdown had a significant negative impact on the KSE indexes (in all four models). The regression also revealed that announcements on the number of cases recovered from COVID-19 had a positive and significant impact on all indexes, with the exception of BKMM 50, which had a positive but marginally significant effect. Thus, it can be concluded that an effective health services system together with less closure of the economy are more likely to minimize the effect of the epidemic on the KSE and the economy at large.

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Endnotes

[1]On December 31st 2019, the China Office of World Health organization (WHO) received reports about an unknown virus that caused a number of deaths in Wuhan City in the Eastern part of China.

[2]GCC established in May 25 1981 and consists of six countries namely Bahrain, Kuwait, Saudi Arabia, Qatar, Oman, and United Arab of Emirates.

[3]Kuwait Stock Exchange publishes four indexes: All Shares Market, Premier Market Main Market and Boursa Main Market 50.