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PERFORMANCE OF ISLAMIC AND CONVENTIONAL EQUITY INDICES IN GCC COUNTRIES DURING COVID-19

Mohammad Elshqirat

School of Management, Walden University, 100 S Washington Ave Suite 1210, Minneapolis, MN 55401, USA.

E.mail: Moha mmad.elshqirat@waldenu.edu

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ABSTRACT

The main purpose of this study was to examine the performance of Shariah-based stock indices during the pandemic of COVID-19 and to compare that to the performance of its counterparts conventional indices in gulf cooperation council (GCC) countries. Study inquires included whether Islamic indices represent a diversification opportunity during the pandemic of COVID-19 and whether the effect of the pandemic on the performance of Islamic and conventional indices is different. Quantitative method of research was followed to achieve the objectives of this study by testing returns on the included Islamic and conventional indices for one year before the pandemic from the first of March, 2019 to the 10th of March 2020 and during the pandemic from 11th of March, 2020 to 29th of March, 2021. Risk-adjusted performance measures were used to evaluate the performance of the included indices and correlation analysis was used to determine if Islamic indices can be used as a diversification tool for the conventional indices. Data were downloaded from many websites including the websites of the GCC countries' exchanges and analyzed using some risk-adjusted performance measures, Friedman test, and correlation analysis. Study results revealed that the effect of the pandemic on the performance of Islamic indices and their conventional counterparts is the same and that Islamic indices do not represent a diversification opportunity for investors during the pandemic

INTRODUCTION

The pandemic of COVID-19 is affecting many sectors in the economy like banking, information technology, and retail industry (Chaudhary et al., 2020) because the pandemic causes closures of many sectors and because the lock down is affecting the movement and purchases of people. This effect may reach the financial markets where the stocks of companies operating in the affected sectors are listed. The problem is that COVID-19 pandemic affected stock markets in general (Narayan et al., 2021), its volatility (Sharma, 2020), and the stock prices in these markets (He, Sun, Zhang, & Li, 2020). These effects may leave investors with a new investment environment different from what they know. The specific problem is that it's still unclear whether the effect of the pandemic is the same on shariah-based indices and the conventional indices because the research in this area is limited and because the differences between Shariah-based and conventional investments is not fully discovered (Sherif, 2020). If the effect is different, investors can invest in the indices with the lower effect or even use it as a diversification tool to protect their investments in pandemics time if it has a negative relationship with other indices.

There are no studies that examined the difference in the effect of COVID-19 on the conventional and shariah-based indices in the gulf cooperation council (GCC) countries (GCC countries are: UAE, Saudi Arabia, Kuwait, Qatar, Bahrain, and Oman). These countries represent a major player in the world's energy markets as it produces about 21.8% of the global crude oil (United States Energy Information Administration, 2020) and thus, it may be important to understand the effect of the pandemic on the financial stability and equity markets of these countries. The main objective behind this study was to know if the performance of shariah-based and conventional stock indices in the GCC countries is different under the effect of the COVID-19 pandemic. Achievement of the study objective may help investors in determining in which index they should invest and which indices can be used for diversification purposes during pandemics like COVID-19. In addition, study results may help in promoting the establishment of shariah-based indices in equity markets all over the world to be a safe investment choice for investors and to keep financial markets from collapse during pandemics. Because Islamic indices are composed of companies with attributes different than those included in the conventional indices, its hypothesized that the effect of COVID-19 pandemic on these indices is different. The first hypothesis was developed to determine whether the effect of the pandemic on the performance of Islamic, or sharia-based indices, is different from that effect on the performance of conventional indices. The second hypothesis was formulated to test the relationship between conventional and Islamic indices during the pandemic to decide if Islamic indices can be used as a diversification tool during pandemics like COVID-19.

LITERATURE REVIEW

Effect of Epidemics and Pandemics on Financial Markets

Pandemics may affect financial systems through its massive economic costs (Goodell, 2020). The costs of epidemics include the costs of health systems to treat infected people and to control the infection spread (Bloom et al., 2018). Health costs are necessary to treat patients and increase the capacity of private and public hospitals to accommodate the increasing number of patients who need care and medicine. In addition, health costs may be needed to control the infection spread through sanitizing and extensive testing. The economic costs of epidemics may also include the decrease in work productivity of infected people and their caretakers, losses of closed sectors due to social distancing procedures, losses resulting from exchange rate fluctuating and trade imbalances (Bloom et al., 2018). All of these costs underline the need for more investments in preparing for the pandemics and epidemics before it occurs as suggested by Fan et al. (2018). By affecting financial systems, pandemics can also affect stock markets because stock markets represent a component of the financial system.

Epidemics can cause stocks prices to decline significantly in the affected countries. For instance, the loss resulted from severe acute respiratory syndrome (SARS) could be equal to the loss caused by the Asian financial crisis which was estimated by $2 trillion in equity on financial markets (DeLisle, 2003). SARS epidemic affected negatively the stock markets of China and Vietnam as concluded by Nippani and Washer (2004) and cause the stock prices of companies operating in tourism industry in Taiwan to decline by 29% (Chen et al., 2007). In addition, Ebola epidemic significantly affected market returns in African countries (Del Giudice & Paltrinieri, 2017). Similarly, ZIKA virus epidemic affected negatively the stock market of Brazil by causing the market index to decline significantly and record large negative returns (Macciocchi et al., 2016). From the effect of these epidemics, it can be concluded that such events have a great negative influence on stock markets in the affected countries. This may be true because breaking news related to epidemics may result in uncertainty in the market; this uncertainty combined with the overaction of investors to the breaking news may cause significant losses in the stock markets of the affected countries (Dalko & Wang, 2018). Based on this, COVID-19 pandemic may have the same negative effect on stock markets but this effect may be bigger in magnitude and spread as the pandemic is global and causing losses in all economic sectors.

Islamic and Conventional Indices

Islamic financial institutions can be defined as those institutions that follow

principles of Koran in its operations and objectives (Warde, 2000); these institutions represent what is known as Islamic finance. Operations in Islamic finance should be free of interest (Riba) and should avoid investment in industries that are Haram (prohibited in Islam) (Warde, 2000) like alcohol and pork. Such restrictions do not exist in the conventional financial systems where interest is allowed and all kinds of industries are open for investment. One component of financial systems is the stock markets where instruments like shares and bonds are traded; in Islamic financial system, this component exists but it's operated under the rules of Shari'ah which prohibit interest (Riba) and encourage risk sharing (Iqbal & Mirakhor, 2011). Based on this, two kind of stock markets exist: Islamic stock markets and conventional stock markets and consequently, Islamic indices and conventional indices. Many Islamic indices were created all over the world including DMI 150 index, Dow Jones Islamic market index (Ata & Buğan, 2015), and MSCI Islamic indices that were used in the study.

The Islamic indices are different than their conventional counterparts in their inclusion criteria. To be included in the Islamic or shari'ah-based indices, the stock should satisfy the screening criteria derived from Shari'ah (Anjum & Rajput, 2020). Not all Islamic indices, however, have the same rules which means that one company may be included in one Islamic index but excluded from another (Zaidi et al., 2015) but generally, these rules fall in two categories: core business and financial ratios (Rizaldy & Ahmed, 2019). Core business means that companies generating most of its income from prohibited sources like alcohol, interest income, and pork are excluded from the index and financial ratios mean that companies may be excluded based on indicators like liquidity level and debt level. This study includes Islamic indices of Morgan Stanley capital international (MSCI) for all GCC countries except Oman which has no MCSI indices. The screening criteria for these indices are summarized in Table 1(MSCI, 2019).

Effect of COVID-19 on Stock Markets and Indices

COVID-19 is the latest pandemic that hit the world and spread very fast among people. COVID-19 was announced as a pandemic on 11th of March, 2020 (World Health Organization, 2020) and now it has many variants in many countries. Furthermore, this pandemic affected stock prices (He et al., 2020) and market volatility (Sharma, 2020) which made the investment environment more risky or at least different than what it was before. As a reaction to this change, some investors' activities have been changed like trading intensity and usage of leverage (Ortmann et al., 2020). In addition, stock markets dropped quickly after the beginning of the pandemic and the stock indices started to make abnormal returns (Liu et al., 2020). The pandemic negatively affected stock markets in developed markets like market of the United States, Italy, South Korea, Japan,

Spain, and France (He et al., 2020) in addition to emerging markets in Asia, south America, Europe, and the Middle East (Topcu & Gulal, 2020).

Table 1. Selection criteria for MCSI Islamic indices

Core business criteria	Financial ratios criteria	Dividend's purification
Islamic indices exclude companies that are directly active in or derive more than 5% of its revenue from the following activities: Alcohol, tobacco, pork products, conventional financial services (and not Islamic financial services), defense and weapons, gambling and casino, music, hotels (excluding revenues from hotel operating in Saudi Arabia), cinema, and adult entertainment	. To be included in the indices, the following ratios for the company should not exceed 33.33%: - Total debt to total assets (shari'ah compliant debt and instruments are excluded from total debt except for Saudi Arabia) - Sum of company's cash and interest-bearing securities to total assets (shari'ah compliant debt and instruments are excluded from the sum of company's cash and interest-bearing securities except for Saudi Arabia) - Sum of the company's accounts receivable and cash to total assets . The stock that is not currently included in the indices will be considered in compliance with the financial ratios criteria if the above ratios do not exceed 30%	Reinvested dividends are subject to adjustment factor calculated as follows: (Total earnings – (income from prohibited activities + interest income)) / total earnings

The same negative effect was detected in the stock markets of Africa and Western pacific countries (Al-Qudah & Houcine, 2021) and in frontier markets like Morocco, Nigeria, and Romania (Aslam et al., 2020). In GCC countries, however, stock markets were affected negatively and significantly by the number of new and total COVID-19 confirmed deaths (Bahrini & Filfilan, 2020). Because the pandemic affected stock markets negatively, it can be said that market indices were also affected negatively by COVID-19 pandemic; this

negative effect may include Islamic and conventional indices.

The performance of Islamic indices compared to its conventional counterparts was studied by many researchers. Some researchers concluded that there are no differences in the performance of the Islamic and conventional indices (Alansari & Shaheen, 2021; Trabelsi et al., 2020) while others claimed that Islamic indices are more efficient than their conventional counterparts (Ali et al., 2018; Rejeb & Arfaoui, 2019). When compared to the conventional indices, Shari'ah-based indices can give investors almost the same return and an opportunity to diversify their portfolio during normal periods (Alam & Ansari, 2020). Because Islamic indices are considered less risky than conventional ones, its performance is better when measured using the risk-adjusted return (Aarif et al., 2020).

However, there are some differences between the Islamic and conventional indices that may result in different reactions to the pandemic of COVID-19. For instance, Islamic indices are considered less risky than the conventional ones because of the prohibition of some risky activities like the use of leverage (Miniaoui et al., 2015); this activity may have become even riskier during the pandemic because of the high uncertainty. In addition, Islamic indices exclude some industries like gambling and Hotels (Nasiri & Bakhkhat, 2021) which were severely affected by the pandemic. Because of these differences, the response of Islamic or Shari'ah-based indices to COVID-19 pandemic may be different from that of the conventional indices. One example of this different response is the shari'ah-compliant United Kingdom Dow Jones market index which was concluded to be insignificantly affected by COVID-19 while its conventional counterparts were affected significantly by the pandemic (Sherif, 2020). Another example is the study of Haroon et al., (2021) who claimed that Islamic indices are less risky and less responsive to market movements during the pandemic than conventional indices. In addition, Islamic markets outperform their conventional counterparts during the COVID-19 pandemic as evidenced by Chowdhury et al., (2021). Aside from the study of Abdullahi (2021) who claimed that the reaction of the Islamic and conventional indices to COVID-19 is the same, the results of many previous studies indicate that the reaction may be different. The difference in performance of Islamic and conventional indices during COVID-19 has never been studied before in the GCC markets and thus, this study is the first study to explore that difference in this part of the world. The value that this study may add to the literature is the exploration of the differences in the performance of Islamic and conventional stock indices during the pandemic and how these differences (if any) can be exploited to create a diversification opportunity during pandemics like COVID-19.

Hypotheses

Results of previous studies indicated that the performance of the Islamic indices

may be different than their conventional counterparts during the COVID-19 pandemic. Based on this, the first hypothesis of the study was developed to determine if this difference in the performance (in terms of returns) exists in the GCC stock markets and whether its significant or minor. The second hypothesis was formulated to test the relationship between Islamic and conventional indices in the GCC markets and whether the nature of this relationship represents a diversification opportunity for the investors. The following two hypotheses represent the main hypotheses of this study:

H1: The effect of COVID-19 pandemic on the performance of Islamic indices is different than that on the performance of its conventional counterparts
H2: There is a negative and significant relationship between the performance of the Islamic indices in the GCC markets and its conventional counterparts during COVID-19 pandemic

METHOD

Research Data

Islamic and conventional indices (standard, large and mid-cap) of Morgan Stanley capital international (MSCI) for all GCC countries were used in this study except for Oman who has no MCSI indices. data for these indices were downloaded from the MCSI website for the period from March 2019 to March 2021. The indices of local countries stock exchanges were used as the benchmark market to calculate beta of the indices. Data about these local indices except for Kuwait were downloaded from the website "investing.com" (Investing.com, 2021) for the same period; the data of Kuwait stock index were downloaded from the website of "countryeconomy.com" (Countryeconomy.com, 2021) . The performance of the included indices was measured before the pandemic using data from 1st of March, 2019 to 10th of March, 2020 and during the pandemic using data for the period from 11th of March, 2020 to 29th of March, 2021. Data about Risk-free rate in the countries included in the study were proxied by treasury bills for Bahrain, Kuwait, and Qatar and by SAMA bills for Saudi Arabia while there were no treasury bills for UAE. The risk-free rate for UAE was calculated by subtracting the inflation difference between UAE and United States from the one-year yield of US treasury bills. Data about all treasury bills and SAMA bills were downloaded from the central bank of the relevant country while data about the US treasury bills were downloaded from the US department of the treasury. Collected data were analyzed using Friedman test and correlation analysis.

Research Design

A quantitative research design was used in this study to determine whether the

effect of COVID-19 on Islamic indices is different than that on conventional indices and whether Islamic indices represent a diversification opportunity for the conventional indices. To achieve the objectives of the study, the performance of Islamic indices and their conventional counterparts was measured before and during the pandemic using four measures: sharp ratio, Jensen's Alpha, Treynor Ratio, and Modigliani–Modigliani (M2) measure. After that, Friedman test was used to determine whether these ratios are different across Islamic and conventional indices. In addition, correlation analysis was used to examine the relationship between the returns of Islamic and conventional indices during the pandemic to determine if Islamic indices represent an opportunity for investment diversification purposes.

Risk-Adjusted Performance Measures

Risk-adjusted performance measures were used in this study to measure the performance of Islamic and conventional indices. These measures include (Rana & Akhter, 2015): sharp ratio, Jensen's Alpha, Treynor Ratio, and Modigliani–Modigliani (M2) measure. Sharp ratio was introduced by William Sharpe in 1966 (Sharpe, 1966) and its used to measure the performance of a portfolio by calculating how much risk premium the portfolio generates for each unit of its risk. The risk here is estimated using the standard deviation of the portfolio's returns. This ratio is calculated as follows (Tewari et al., 2019):

$$S = (R_p - R_f) / \sigma_p \quad (1)$$

Where S is the Sharp ratio, R_p is the average return on portfolio, R_f is the risk-free rate, and σ_p is the standard deviation of the portfolio's returns. This formula was adjusted as follows to measure the performance of the indices:

$$S = (R_i - R_f) / \sigma_i \quad (2)$$

Where R_i is the average return on the index, R_f is the average risk-free rate, and σ_i is the standard deviation of the index returns. The larger the Sharp ratio the better is the performance of the index. The values of R_i were calculated as follows:

$$R_i = [(P_{it} - P_{it-1}) / P_{it-1}] * 100 \quad (3)$$

Where R_i is the return on index i, P_{it} is the closing price of the index at day t, P_{it-1} is the closing price of the index at the previous day.

Jensen's Alpha introduced by Michael Jensen in 1968 (Jensen, 1968) is used to measure the excess return earned by a portfolio compared to the return estimated using the capital asset pricing model (CAPM) and its calculated as follows (Tewari et al., 2019):

$$a = R_p - (R_f + b(R_m - R_f)) \quad (4)$$

Where R_p is the average return on portfolio, b is the beta of the portfolio, R_m is the average return on market, and R_f is the risk-free rate. This equation was adjusted to reflect the performance of the indices. The new equation is as follows:

$$a = R_i - (R_f + b(R_{bm} - R_f)) \quad (5)$$

Where R_i is the average return on the index, R_f is the average risk-free rate, b is the beta of the index (related to the benchmark market index), R_{bm} is the average of returns on the benchmark market index. the values of R_{bm} were calculated as follows:

$$R_{bm} = [(P_{bmt} - P_{bmt-1}) / P_{bmt-1}] * 100 \quad (6)$$

Where R_{bm} is the return on the benchmark market index (the country market index), P_{bm} is the closing price of that index at day t, and P_{bmt-1} is the closing price of the index at the previous day.

The value of a can be positive, negative, or equal to zero; if its zero, then the index return is the same suggested by CAPM, if the value is positive then the index is generating return more than that estimated by CAPM, and if the value is negative then the index is generating return less than expected using CAPM; the higher the value of a the better the performance of index. Alpha values for Islamic and conventional indices can be then compared to determine if there are any differences in performance.

Another risk-adjusted measure for performance is the Treynor Ratio which was first explained by Jack Treynor (Treynor, 1965) and it's the same as Sharp ratio except that the risk here is measured using the portfolio beta instead of the returns' standard deviation. the equation for this ratio is as follows (Tewari et al., 2019):

$$T = (R_p - R_f) / \beta_p \quad (7)$$

Where R_p is the average return on portfolio, R_f is the risk-free rate, b is the beta of the portfolio calculated using the traditional CAPM, this formula was adjusted to reflect the performance of the indices as follows:

$$T = (R_i - R_f) / \beta_i \quad (8)$$

Where R_i is the average return on the index, R_f is the average risk-free rate, b is the beta of the index calculated using the traditional CAPM where the stock market index in each country is the benchmark market. The same rule of Sharp

ratio applies here, the larger the Treynor ration the better the index performance.

The last performance measure is the M2 or the risk-adjusted performance (RAP) measure which was first introduced by Modigliani and Modigliani in 1997 (Modigliani & Modigliani, 1997). This measure is a modification to Sharp ratio and its calculated as follows (Scholz & Wilkens, 2005):

$$RAP = S\ \sigma_m + R_f \quad (9)$$

where S is the Sharp ratio calculated in Equation 2, σ_m is the standard deviation of the benchmark market returns (benchmark index in this study), and R_f is the risk-free rate. Like the Sharp ratio, the performance of an index is considered better with higher RAP measure. This measure is considered easier to understand than Sharp ratio (Wiberg, 2006).

RESULTS

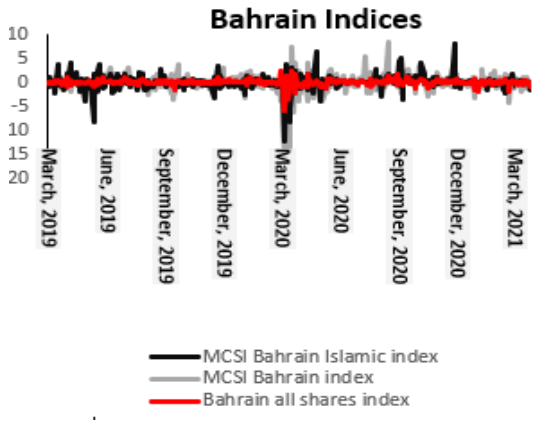
Descriptive Statistics

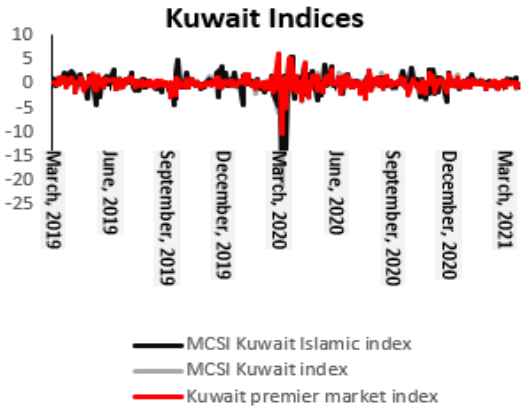
Descriptive statistics about the indices included in this study are summarized in Table 2. It can be noted from the Table that the average return of all indices increased during the pandemic except for the MCSI Bahrain index and the Bahrain all shares index for which the average return fell down slightly. It can be noticed also that for most of indices, the standard deviation of returns decreased during the pandemic which means that the indices became less risky than before the pandemic. One explanation for this may be that the effect of the pandemic was sever only during the first few weeks after the announcement of the pandemic and then the effect went down and the indices started to recover. This explanation can be confirmed by the movement of the returns of the included indices depicted in Figure 1. As can be noticed from the figure, all indices dropped around March 2020 and then recovered after that.

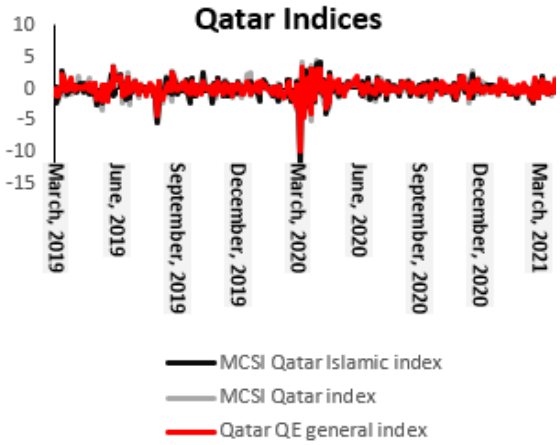
Table 2. Descriptive statistics for the indices included in the study

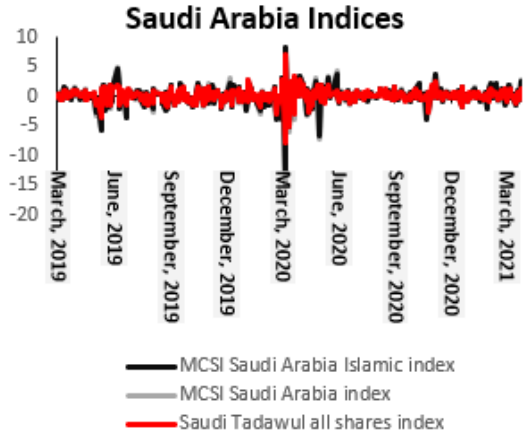
Index	Before the pandemic		During the pandemic	
	Return mean%	Standard deviation%	Return mean%	Standard deviation%
MCSI Bahrain index	0.038	1.425	0.012	1.751
MCSI Bahrain Islamic index	-0.012	1.353	0.092	1.322

Bahrain all shares index	0.024	0.658	-0.007	0.641
MCSI Kuwait index	-0.016	1.563	0.09	1.316
MCSI Kuwait Islamic index	-0.003	1.7	0.133	1.456
Kuwait premier market index	-0.012	1.46	0.084	1.245
MCSI Qatar index	-0.068	1.28	0.046	1.03
MCSI Qatar Islamic index	-0.084	1.166	0.051	0.934
Qatar QE general index	-0.065	1.055	0.081	0.909
MCSI Saudi Arabia index	-0.105	1.523	0.131	1.17
MCSI Saudi Arabia Islamic index	-0.093	1.48	0.139	1.09
Saudi Tadawul all shares index	-0.08	1.28	0.14	1.116
MCSI UAE index	-0.089	1.305	0.099	1.706
MCSI UAE Islamic index	-0.059	1.509	0.028	1.794
UAE ADX general	-0.067	1.11	0.131	1.595




Kuwait Indices
10
5
0
-5
-10
-15
-20
-25
March, 2019
June, 2019
September, 2019
December, 2019
March, 2020
June, 2020
September, 2020
December, 2020
March, 2021
MCSI Kuwait Islamic index
MCSI Kuwait index
Kuwait premier market index


Qatar Indices
10
5
0
-5
-10
-15
March, 2019
June, 2019
September, 2019
December, 2019
March, 2020
June, 2020
September, 2020
December, 2020
March, 2021
MCSI Qatar Islamic index
MCSI Qatar index
Qatar QE general index


Saudi Arabia Indices
10
5
0
-5
-10
-15
-20
March, 2019
June, 2019
September, 2019
December, 2019
March, 2020
June, 2020
September, 2020
December, 2020
March, 2021
MCSI Saudi Arabia Islamic index
MCSI Saudi Arabia index
Saudi Tadawul all shares index

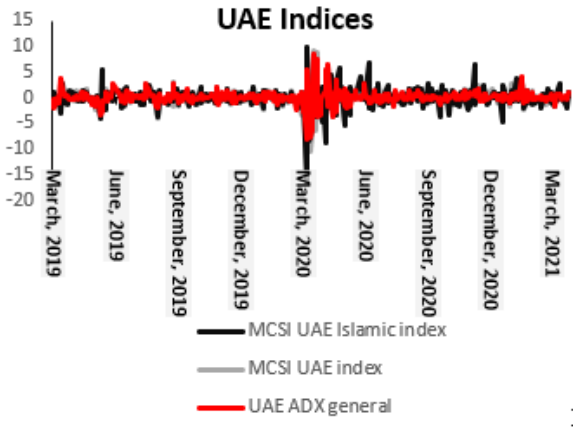


Figure 1: Movement of returns of GCC indices before and during the pandemic

Hypotheses Testing

Hypothesis One

The first hypothesis was formulated to determine if the effect of COVID-19 is the same on Islamic and conventional indices. To test this hypothesis, four measures of performance were calculated for each Islamic and conventional indices. These measures were calculated using Equations 2, 5, 8, and 9. Results of these measures are summarized in Table 3.

Table 3. Results of calculating risk-based performance measures

Index	Sharp ratio	Jensen's alpha	Treynor ratio	M2
MCSI Bahrain index (BP)*	-2.295	3.244	-1.640	1.964
MCSI Bahrain index (DP)*	-1.500	2.093	-1.476	1.685
MCSI Bahrain Islamic index	-2.455	1.592	-2.212	1.870
MCSI Bahrain Islamic index	-1.927	0.206	-2.443	1.414
MCSI Kuwait index (BP)	-1.972	0.361	-2.664	0.850
MCSI Kuwait index (DP)	-1.037	0.146	-1.182	0.256
MCSI Kuwait Islamic index	-1.806	0.706	-2.420	1.036
MCSI Kuwait Islamic index	-0.908	0.279	-1.076	0.405
MCSI Qatar index (BP)	-1.652	0.355	-1.760	0.201
MCSI Qatar index (DP)	-0.371	0.002	-0.331	0.070
MCSI Qatar Islamic index	-1.826	0.059	-1.998	0.006
MCSI Qatar Islamic index	-0.405	-0.043	-0.377	0.037
MCSI Saudi Arabia index	-1.535	0.566	-1.777	0.442

MCSI Saudi Arabia index (DP)	-0.503	0.061	-0.497	0.227
MCSI Saudi Arabia Islamic index (DP)	-1.572	0.525	-1.799	0.400
MCSI Saudi Arabia Islamic index (DP)	-0.532	0.015	-0.538	0.198
MCSI UAE index (BP)	1.319	-0.459	1.427	-0.348
MCSI UAE index (DP)	1.618	-0.152	2.641	0.052
MCSI UAE Islamic index (DP)	1.160	-0.096	1.719	-0.525
MCSI UAE Islamic index	1.500	1.195	4.997	-

*(BP): before pandemic, (DP): during the pandemic

To test if the effect of the pandemic on the performance of Islamic and conventional indices is different, the following hypotheses were developed:

H0: The difference in the means of performance measures for Islamic indices and their conventional counterparts is the same before and after the pandemic.
H1: The difference in the means of performance measures for Islamic indices and their conventional counterparts is not the same before and after the pandemic.

The best test that can be used to test these hypotheses is Two-way Anova but before using it, data should be tested for normality assumption. The normality assumption was tested using Shapiro-Wilk test of normality. The null hypothesis for this test is that the data is normally distributed. As can be seen in Table 4, the test was significant for three out of four groups which means that the normality assumption of Anova test was violated. For this reason, the nonparametric equivalent test for Anova was used which is Friedman test. The results of Friedman test showed that there was no significant difference between the performance of Islamic and conventional indices before th.

e pandemic, Chi-square = 3.200 $p = .074$ and no significant difference between them during the pandemic, Chi-square = 3.200 $p = .074$ and thus, the null hypothesis cannot be rejected. This means that the effect of COVID-19 pandemic on the performance of both indices was the same.

Table 4. Results of Shapiro-Wilk test of normality

Group	Shapiro-Wilk statistic	*p*
Performance before	.939	.032
Performance during	.895	.001
Performance of	.974	.467
Performance of Islamic	.932	.019

Hypothesis Two

The second hypothesis was developed to test if Islamic indices can be used for diversification purposes during the pandemic of COVID-19. To test this hypothesis, Pearson correlation analysis was used. The hypotheses for this test are:

H0: The correlation coefficient between the performance (returns) of Islamic and conventional indices during the pandemic is not significantly different than zero

H1: The correlation coefficient between the performance (returns) of Islamic and conventional indices during the pandemic is negative and significant

Pearson correlation test results showed that the correlation coefficient between the returns of Islamic and conventional indices during the pandemic was positive and significant, Pearson coefficient = .715, $p < .001$ for one- tailed test. Based on this, Islamic indices cannot be used for diversification purposes with their conventional counterparts during the pandemics of COVID-19. It's worth mentioning here that the same correlation results were found between the two indices before the pandemic, Pearson coefficient = .874, $p < .001$. The correlation coefficients between Islamic indices, their conventional counterparts, and local exchange indices before and during the pandemic were all positive and significant at 1% level as summarized in Table 5. These results indicate that Islamic indices cannot be used as a diversification for their conventional counterparts or the indices of their local markets from where they originally filtered.

Table 5. Results of Pearson correlation test between indices before and during COVID-19 pandemic

Index	Islamic indices	Conventional indices	Local
Before pandemic	C h		
Islamic indices	1	.874*	.748*
Conventional	.874*	1	.816*
Local indices	.748*	.816*	1
During the			
Islamic indices	1	.715*	.610*
Conventional	.715*	1	.791*
Local indices	.610*	.791*	1

*: significant at 1% level

CONCLUSION AND DISCUSSION

The results of data analysis showed that the effect of COVID-19 pandemic on both Islamic and conventional indices is the same and thus, Islamic indices cannot be considered as a safe haven during pandemics like COVID-19. In addition, the results indicated that Islamic indices do not represent a diversification option for their conventional counterparts or even their local countries' indices. These results are opposite to the results of Sherif (2020) who concluded that the effect of COVID-19 pandemic was significant on the conventional indices and insignificant on Islamic indices and the study of Chowdhury et al., (2021) who concluded that Islamic indices outperformed the conventional indices during the pandemic of COVID-19. The results of this study, however, are in line with the results reached by Alansari and Shaheen (2021) who found that the performance of S&P Islamic and conventional indices in the GCC countries was the same before the pandemic and Trabelsi et al. (2020) who concluded that there were no significant differences in the performance of MCSI Islamic indices and their conventional counterparts for the United States and other 15 emerging markets during the period from 2002 to 2017. The conclusions of this study confirmed the results of Abdullahi (2021) who found that the reaction of Islamic and conventional indices in countries from different continents during the COVID-19 pandemic was the same and that both indices move together. One possible explanation for this similarity in the effect of COVID-19 on Islamic and conventional indices in GCC markets may be the presence of herding behavior among investors which leads them to copy each other's investments in all companies regardless of its sharia-compliance status. This explanation can be evidenced by the conclusions of Abdeldayem and Al Dulaimi (2020) who found that the pandemic has a significant positive impact on herding behavior in GCC markets. Another explanation may be that GCC markets are less efficient than other markets (Mensi et al., 2018) which means that information about the pandemic may not be reflected in the stock prices of the companies included in conventional and Islamic indices and thus, the effect of the pandemic is the same on both indices because it's not considered at all by investors of both indices

Study results can be considered valid for all financial markets that have the same attributes of the GCC markets because the study included five out of six markets in this region and because the criteria of MCSI Islamic indices included in this study are very similar to that of other Islamic indices. This study is among the first few studies conducted to test the difference in the effect of COVID-19 pandemic on Islamic and conventional indices and the first study to explore that difference in the GCC markets. The results of this study may be useful for investors to know that Islamic indices are not a safe haven during pandemics and they cannot be used for diversification purposes which means that they should search for other investing options. This benefit may be relevant to those investors who are investing in inefficient equity markets like the GCC markets

but not for investors who invest in efficient markets. The difference in the performance of Islamic and conventional indices during the pandemic in equity markets may need to be studied using two-stages: test the market for efficiency first and then test the difference in indices generated from that market. This kind of studies represents an example of future research needed for more exploration of the pandemic effect on Islamic and conventional indices. In addition to the previous benefit, study results may be of great interest for the parties responsible for managing equity markets all over the world because it helps them understand how they can exploit the difference in the effect of pandemics like COVID-19 on different indices and then start to establish more indices to help investors diversify their investments during pandemics.

REFERENCES

Aarif, M. B. H., Rafiq, M. R. I., & Wahid, A. N. (2020). Do 'Shariah' indices surpass conventional indices? A study on Dhaka stock exchange. International Journal of Islamic and Middle Eastern Finance and Management, 14(1), 94-113. https://doi.org/10.1108/IMEFM-01-2020-0027

Abdeldayem, M. M., & Al Dulaimi, S. H. (2020). Investors herding behavior and pandemic-risk related in the GCC stock markets. Academy of Accounting and Financial Studies Journal, 24, 1-14. Retrieved from https://www.abacademies.org/journals/academy-of-accounting-and-financial-studies-journal-home.html

Abdullahi, S. I. (2021). Islamic equities and COVID-19 pandemic: measuring Islamic stock indices correlation and volatility in period of crisis. Islamic Economic Studies. Retrieved from https://www.emerald.com/insight/1319-1616.htm

Alam, M. and Ansari, V.A. (2020), Are Islamic indices a viable investment avenue? An empirical study of Islamic and conventional indices in India. International Journal of Islamic and Middle Eastern Finance and Management, 13(3), 503-518. https://doi.org/10.1108/IMEFM-03-2019-0121

Alansari, M. A., & Shaheen, R. (2021). Comparison the volatility of Islamic equity indices and their conventional counterparts based on evidence from GCC S&P index family. PalArch's Journal of Archaeology of Egypt/Egyptology, 18(13), 889-898. Retrieved from https://www.archives.palarch.nl

Ali, S., Shahzad, S. J. H., Raza, N., & Al-Yahyaee, K. H. (2018). Stock market efficiency: A comparative analysis of Islamic and conventional stock markets. Physica A: Statistical Mechanics and Its Applications, 503, 139-153. https://doi.org/10.1016/j.physa.2018.02.169

Al-Qudah, A.A, & Houcine, A. (2021). Stock markets' reaction to COVID-19: evidence from the six WHO regions. Journal of Economic Studies. Advance online publication. https://doi.org/10.1108/JES-09-2020-0477

Anjum, N., & Rajput, S. K. O. (2020). Forecasting Islamic equity indices alpha. International Journal of Islamic and Middle Eastern Finance and Management, 14(1), 183-203. https://doi.org/10.1108/IMEFM-02-2019-0068

Aslam, F., Mohmand, Y. T., Ferreira, P., Memon, B. A., Khan, M., & Khan, M. (2020). Network analysis of global stock markets at the beginning of the coronavirus disease (Covid-19) outbreak. Borsa Istanbul Review, 20(1), S49-S61. https://doi.org/10.1016/j.bir.2020.09.003

Ata, H. A., & Buğan, M. F. (2015). Comparison of the performances Islamic and conventional market indices and their causal relationship. International Journal of Business Management and Economic Research (IJBMER), 6(6), 455-62. Retrieved from https://ijbmer.com/

Bahrini, R., & Filfilan, A. (2020). Impact of the novel coronavirus on stock market returns: Evidence from GCC countries. Quantitative Finance and Economics, 4(4), 640-652. https://doi.org/10.3934/QFE.2020029

Bloom, D. E., Cadarette, D., & Sevilla, J. P. (2018). Epidemics and economics. Finance &Development, 55(002), 45-48. https://doi.org/10.5089/9781484357415.022.A015

Chaudhary, M., Sodani, P. R., & Das, S. (2020). Effect of COVID-19 on Economy in India: Some Reflections for Policy and Programme. Journal of Health Management, 22(2), 169-180. https://dx.doi.org/10.1177/0972063420935541

Chen, M. H., Jang, S. S., & Kim, W. G. (2007). The impact of the SARS outbreak on Taiwanese hotel stock performance: an event-study approach. International Journal of Hospitality Management, 26(1), 200-212. https://doi.org/10.1016/j.ijhm.2005.11.004

Chowdhury, M. I. H., Balli, F., & de Bruin, A. (2021). Islamic equity markets versus their conventional counterparts in the COVID-19 age: Reaction, resilience, and recovery. International Review of Finance. https://doi.org/10.1111/irfi.12349

Countryeconomy.com. (2021). Global stock market indexes. Retrieved from https://countryeconomy.com/stock-exchange

Dalko, V., & Wang, M. H. (2018). Is the Stock Market a VUCA Environment?. Journal of Applied Business & Economics, 20(2), 10-19. https://doi.org/10.33423/jabe.v20i2.323

Del Giudice, A., & Paltrinieri, A. (2017). The impact of the Arab Spring and the Ebola outbreak on African equity mutual fund investor decisions. Research in International Business and Finance, 41, 600-612. https://doi.org/10.1016/j.ribaf.2017.05.004

DeLisle, J. (2003). SARS, greater China, and the pathologies of globalization and transition. Orbis, 47(4), 587-604. https://doi.org/10.1016/S0030-4387(03)00076-0

Fan, V. Y., Jamison, D. T., & Summers, L. H. (2018). Pandemic risk: how large are the expected losses?. Bulletin of the World Health Organization, 96(2), 129-134. https://doi.org/10.2471/BLT.17.199588

Goodell, J. W. (2020). COVID-19 and finance: Agendas for future research. Finance Research Letters, 35. https://dx.doi.org/10.1016/j.frl.2020.101512

Haroon, O., Ali, M., Khan, A., Khattak, M. A., & Rizvi, S. A. R. (2021). Financial Market Risks during the COVID-19 Pandemic. Emerging Markets Finance and Trade, 1-8. https://doi.org/10.1080/1540496X.2021.1873765

He, P., Sun, Y., Zhang, Y., & Li, T. (2020). COVID–19's impact on stock prices across different sectors—An event study based on the Chinese stock market. Emerging Markets Finance and Trade, 56(10), 2198-2212. https://doi.org/10.1080/1540496X.2020.1785865

He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on stock markets. Economic and Political Studies, 8(3), 275-288. https://doi.org/10.1080/20954816.2020.1757570

Investing.com. (2021). Indices. Retrieved from https://www.investing.com/indices

Iqbal, Z., & Mirakhor, A. (2011). An introduction to Islamic finance: Theory and practice. Clementi, Singapore: John Wiley & Sons(Asia).

Jensen, M. C. (1968). The performance of mutual funds in the period 1945-1964. The Journal of finance, 23(2), 389-416. https://doi.org/10.1111/j.1540-6261.1968.tb00815.x

Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. International Journal of Environmental Research and Public Health, 17(8), 2800. https://doi.org/10.3390/ijerph17082800

Macciocchi, D., Lanini, S., Vairo, F., Zumla, A., Moraes Figueiredo, L. T., Lauria, F. N., ... & Ippolito, G. (2016). Short-term economic impact of the Zika virus outbreak. New Microbiologica, 39(4), 287-289. Retrieved from https://discovery.ucl.ac.uk/

Mensi, W., Hamdi, A., & Yoon, S. M. (2018). Modelling multifractality and efficiency of GCC stock markets using the MF-DFA approach: A comparative analysis of global, regional and Islamic markets. Physica A: Statistical Mechanics and its Applications, 503, 1107-1116. https://doi.org/10.1016/j.physa.2018.08.130

Miniaoui, H., Sayani, H., & Chaibi, A. (2015). The impact of financial crisis on Islamic and conventional indices of the GCC countries. Journal of Applied Business Research (JABR), 31(2), 357-370. https://doi.org/10.19030/jabr.v31i2.9171

Modigliani, F., & Modigliani, L. M. (1997). Risk-adjusted performance. Journal of portfolio management, 23(2), 45-54. https://doi.org/10.3905/jpm.23.2.45

MSCI. (2019). MSCI Islamic index series methodology. Retrieved from https://www.msci.com/eqb/methodology/meth_docs/MSCI_Islamic_Indexes_Methodology_May2019.pdf

Narayan, P. K., Gong, Q., & Aliahmed, H. J. (2021). Is there a pattern in how COVID-19 has affected Australia's stock returns?. Applied Economics Letters, 1-4. https://doi.org/10.1080/13504851.2020.1861190

Nasiri, I., & Bakhkhat, M. D. (2021). The creation of an Islamic stock market index on the Moroccan financial place according to the S&P method. Recherches et Applications en Finance Islamique (RAFI), 5(1), 107-123. https://doi.org/10.48394/IMIST.PRSM/rafi-v5i1.23672

Nippani, S., & Washer, K. M. (2004). SARS: A non-event for affected countries' stock markets?. Applied Financial Economics, 14(15), 1105-1110. https://doi.org/10.1080/0960310042000310579

Rana, M. E., & Akhter, W. (2015). Performance of Islamic and conventional stock indices: empirical evidence from an emerging economy. Financial Innovation, 1(1), 1-17. https://doi.org/10.1186/s40854-015-0016-3

Rejeb, A. B., & Arfaoui, M. (2019). Do Islamic stock indexes outperform conventional stock indexes? A state space modeling approach. European Journal of Management and Business Economics, 28(3), 301-322. https://doi.org/10.1108/ejmbe-08-2018-0088

Rizaldy, M. R., & Ahmed, H. (2019). Islamic legal methodologies and Shariah screening standards: Application in the Indonesian stock market. Thunderbird International Business Review, 61(5), 793-805. https://doi.org/10.1002/tie.22042

Scholz, H., & Wilkens, M. (2005). A jigsaw puzzle of basic risk-adjusted performance measures. Journal of performance measurement, 9(3), 57-64. Retrieved from https://spauldinggrp.com/

Sharma, S. S. (2020). A note on the Asian market volatility during the COVID-19 pandemic. Asian Economics Letters, 1(2). https://doi.org/10.46557/001c.17661

Sharpe, W. F. (1966). Mutual fund performance. The Journal of business, 39(1), 119-138. Retrieved from https://www.jstor.org

Sherif, M. (2020). The impact of Coronavirus (COVID-19) outbreak on faith-based investments: An original analysis. Journal of Behavioral and Experimental Finance, 28, 100403. https://doi.org/10.1016/j.jbef.2020.100403

Tewari, C. K., Shukla, V., & Yadav, A. (2019). Performance evaluation of stocks: A comparative study of PSU's stock performance and private sector company's stock performance. Performance Evaluation, 4(1), 33-37. Retrieved from https://www.ijtsrd.com/

Topcu, M., & Gulal, O. S. (2020). The impact of COVID-19 on emerging stock markets. Finance Research Letters, 36. https://doi.org/10.1016/j.frl.2020.101691

Trabelsi, L., Bahloul, S., & Mathlouthi, F. (2020). Performance analysis of Islamic and conventional portfolios: The emerging markets case. Borsa Istanbul Review, 20(1), 48-54. https://doi.org/10.1016/j.bir.2019.09.002

Treynor, J. L. 1965. How to rate management of investment funds. Harvard Business Review, 43, 63-75. Retrieved from https://hbr.org/

United States Energy Information Administration. (2020). Annual petroleum and other liquids production data. retrieved from https://www.eia.gov

Warde, I. (2000). Islamic finance in the global economy. Edinburgh, United Kingdom: Edinburgh University Press.

Wiberg, D. (2006). Risk-adjusted performance of Swedish bond funds in the years 2000-2003; An application of the Modigliani-measure. Corporate Ownership & Control, 4(1), 284-292. https://doi.org/10.22495/cocv4i1c2p4

World Health Organization. (2020). WHO announces COVID-19 outbreak a pandemic. Retrieved from http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-o

Zaidi, S.A.H., Shah, I.H., Umair Ashraf, R., Ghauri, S.M.K. and Hassan, I. (2015). Standardization of Islamic market indices. International Journal of Commerce and Management, 25(2), 240-256. https://doi.org/10.1108/IJCoMA-04-2013-0037