

Effects of the Covid-19 Pandemic on Islamic and Conventional Financial Markets

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Abstract

The recent global Covid-19 pandemic is resentfully affecting global financial markets which including both Islamic and conventional stock markets. This study conducted an empirical examination to investigate the extent to which Covid-19 result on both Islamic and conventional financial markets, particularly the interconnections within the market activities. Data were collected from several national sources from 6 June 2020 to 27 September 2022, in two main periods. The study determined wavelet correlations among different variables to examine the effects of the pandemic. The findings show that the number of Covid-19 deaths was a significant determinant factor within the Islamic stock markets, contrary to conventional stock markets. Moreover, the results showed a positive link between the number of Covid-19 deaths and the Morgan Stanley capital International (MSCI) emerging market Asia Islamic index and the MSCI emerging Asia index. The link between exchange rates and crude oil in MSCI Gulf Corporation Council (GCC) countries combined was uncertain. However, this had a weak effect on Islamic indices and a strong effect on conventional indices. These findings contribute to assisting both investors and the market in optimising investment and market strategies.

1.0 Introduction

Islamic finance, compared with conventional finance, is new. It became known early in the independence movements in Islamic nations and cultures at the end of the Second World War, which was the first reflection of what is considered Islamic finance today. For many decades, Islamic finance has appeared to exist as a mere cognitive exercise. Nevertheless, since the early 1960s, the market has experienced its first venture in making it an actuality with the support of governments or individuals. For instance, in 1962, pilgrimage activities funds were sponsored by the Malaysian government (Hachicha, Ben & Amar, 2015), and in 1963, the Egyptian economist Ahmad Al-Najjar introduced small-scale savings for the improvement of the agricultural town of Mit Ghamr. Nevertheless, the inception of independence was the basic component that led to the need for Islamic finance. Subsequently, the huge income achieved by the incorporation of Gulf Council nations subsequent to the oil shock permitted its actualisation and aided its development. From an economic perspective, the oil embargo declared in 1973 by the Gulf oil-producing countries resulted in doubling the value of oil between October and December 1973. The shock resulted in shifting revenue from Western nations to oil-producing nations. the members of Gulf Cooperation Council (GCC) countries rapidly accumulated wealth through Islamic finance in its early stages. The relationship between the growth in Islamic finance and the volume of oil income confirmed a decrease in hydrocarbon values in the first quarter of the 1980s. This sudden shock had a negative effect in contributing to the decline in the growth of Islamic financial institutions in GCC countries.

In recent decades, various global epidemics have been experienced, such as the Ebola virus, SARS and Covid-19. The findings of several previous studies that evaluated the effects of these viruses on the function of stock markets worldwide indicated their negative impacts. Regarding the Covid-19 pandemic, Goodell (2020) explained that it has negatively affected the entire global economy. The Covid-19 pandemic, which spread to more than 216 countries worldwide, influenced various economic aspects across the globe, including the stock market. In particular, the function of the global stock market was damaged by the Covid-19 pandemic. The

pandemic brought about too much risk, resulting in great losses by market participants within a short period. Aggravating to the issue, the appearance of the second wave of the Covid-19 pandemic in some countries showed that a remedy had not yet been found. Consequently, levels of uncertainty continued to rise as the pandemic continued. In response to the exceptional spread of the Covid-19 pandemic, various studies have examined its effects on the economy in general and the stock market in particular. From this perspective, Sherif (2020) critically reviewed various studies and concluded that the execution of Islamic and conventional stock market indices was a significant question, particularly during the Covid-19 pandemic. Similarly, Sherif (2020) showed that stockholders preferred to invest in high returns benefits and that Islamic stock indices were more excessive and competitive than conventional stock indices.

Throughout the global financial system challenges such as the Covid-19 pandemic, data on Islamic investments have been considered a main topic of interest by investors who have observed that market returns have not been affirmed. Saith et al. Saiti (2014) observed that Islamic stock indices were stronger in a financial crisis than their traditional counterparts. Significantly, *Shariah* principles do not allow transactions with cash as an asset. Fundamentally, in Islamic indices, the financial sectors are related to reassuring activity. Sherif (2020) examined the difference between conventional and Islamic indices regarding screening and financial features in relation to the application of *Shariah* consent investments. In Islamic indices, the low levels of purchase and report collectibles are a monetary feature of stock components that reduce financial danger and susceptibility, especially in periods of emergency, such as the Covid-19 pandemic. The impact of the Covid-19 pandemic on economic development and financial markets has attracted the attention of politicians, economists and other professionals (Aloui et al., 2020). Based on this, this paper aims to Empirically examine the effects of Covid-19 on Islamic commodities exchange against conventional counterpart on a global level, answering to the lack of researches on this topic as observed by Sherif (2020).

Both Islamic and conventional stock markets play significant roles in the economic development and financial firmness of countries. Stock markets are a fundamental component of the financial system, playing essential roles that are needed for financial markets. The primary function of commodities exchange is very essential in determining the soundness of financial markets. In this regard, the benefits hence is the main factor for improving economies that is the reason why the benefits of financial markets is very significant.

Most studies in the literature have not investigated the importance of the strength of Islamic finance in relation to traditional finance as a consequence of the Covid-19 pandemic. The present study aims to find solutions and address these challenges by focusing on the effects of the Covid-19 pandemic on both conventional and Islamic stock markets in various countries associated with energy markets. In the next section, a review of the relevant literature is conducted. Section 3 describes the methodology adopted in this study. Section 4 discusses the findings of the data analysis. Section 5 summarises and concludes the study.

2.0 Literature Review

The period from 2020 to the present has been marked by an unprecedented struggle for social and economic survival in human history. The Covid-19 pandemic, which originated in the Chinese city of Wuhan, infected millions of people across the globe. This contagious disease has had adverse effects on all economic sectors. As part of concerted efforts to curb the spread of this novel pandemic, national government authorities have implemented several policies, such as banning travel to places identified as coronavirus epicentres (Raza et al., 2021). This was followed by complete lockdowns enforced in many countries around the world, during which both government parastatals and private sectors were closed to control the further spread of the pandemic. Subsequently, governments in several countries agreed that vaccination against the deadly virus was a major cure and preventive measure. Precedence was given to governmental frontline workers and elderly people before the entire populace was vaccinated (Grech & Borg, 2020; Teerawattananon & Dabak, 2020).

The Covid-19 pandemic has affected both national and international economies. In addition to the loss of lives, which peaked in 2020 and 2021, the loss of livelihoods had devastating effects on workers worldwide, and the health crisis led to an economic recession (Raza et al., 2021). The World Economic Outlook of the International Monetary Fund (2021) estimated that the global economy would incur over US \$9 trillion in losses within two years after the coronavirus outbreak. Several business enterprises were forced to close, while others were on the brink of collapsing, causing a huge population of employees to experience the challenges

of unemployment. This section reviews the relevant literature to determine the effects of the Covid-19 pandemic on Islamic and conventional financial markets since its outbreak.

Compared with conventional financial markets, Islamic finance is considered novel because its concept emerged following the end of the Second World War at the beginning of independence campaigns in Islamic countries. Thereafter, Islamic finance remained at the conceptual level and was the subject of a series of scholarly debates held for several decades (Mzoughi, Amine, Belaid, & Guesmi, 2022).

Nevertheless, the early 1960s saw a breakthrough in Islamic finance when it began to transform from a mere concept to being implemented in reality. According to Hachicha and Ben Amar (2015), a pilgrimage fund was sponsored by the Malaysian authority in 1962, and Egyptian economist Ahmad Al-Najjar founded a small bank in a small town called Mit Ghamr. Mzoughi, Amine, Belaid and Guesmi (2022) further argued that the huge revenue generated by GCC members from the oil shock in the early 1970s contributed immensely to the growth of projects implemented by Islamic finance. Specifically, the oil embargo proclaimed by GCC governments between October 1973 and December 1973 resulted in increased oil prices, from which they realised the huge revenues they used to implement most of their financial projects. The following subsections review previous studies on the impact of the Covid-19 pandemic on Islamic and conventional banks and Islamic and conventional stock markets.

2.1 Impact of Covid-19 on Banks

Research has affirmed that the outbreak of Covid-19 led to destabilising the financial sector, which adversely affected the banking industry Tibrizi & Wicaksono (2022). Confidence levels of investors and customers deteriorated in response to threats to the liquidity of the financial system by the outbreak of the coronavirus pandemic and the ensuing global economic crisis (Chen et al., 2018; Financial Stability Board, 2020). To maintain a reasonable level of liquidity during the difficult period of the pandemic, central banks in various countries provided bailouts to maintain their stability and liquidation among other financial industries, the failure of which reached 50% worldwide (Baret et al., 2020; OECD, 2020). However, similar to the global economic crisis roughly a decade ago, Islamic banks have been found to have more resilience in the face of economic recession than their conventional bank counterparts (Mirzaei, Saad, & Emrouznejad, 2022).

Tibrizi & Wicaksono (2022) found that due to the Covid-19 pandemic, both Islamic and conventional banks were in difficult situations. Among their chief challenges was that businesses were becoming short of cash, and their only recourse was to turn to banks to ensure their survival. Consequently, because of the terrible situations faced by their customers, banks were forced to issue a substantial number of loans to prevent them from collapsing. However, as the Covid-19 situation was further exacerbated, borrowers' abilities to repay their loans significantly decreased, causing lending banks to experience credit losses and increasing exposure to credit risk. In addition, the eventual tremendous increase in operating costs worsened the negative effects of the economic crisis on the banks' balance sheets. In an endeavour to withstand the unfavourable economic situation caused by the pandemic, banks were compelled to incur a substantial number of operating expense, such as investment in digitisation and arrangements for working remotely. Despite this difficult situation, banks (both Islamic and conventional) were committed to identifying extremely affected economic sectors and finding ways to stabilise their customers. As in the previous global economic crisis, Islamic banks were found to have a higher ability to withstand the economic crisis of the Covid-19 pandemic than their conventional counterparts (Discussion Draft, 2020).

2.2 Impact of Covid-19 on Stock Markets

In addition to the novel coronavirus, the 21st century has seen a host of epidemics, each of which has had negative effects on the global economy (e.g., Beck et al., 2013; Farooq & Zaheer, 2015; Hassan & Dridi, 2010). Since the first wave of the virus, some studies have shown the adverse effects of Covid-19 on stock markets (e.g., Mansour & Razali, 2021). According to Sherif (2020), Covid-19 had destructive effects on the performance of stock markets, as daily increases culminated in risks that translated into substantial losses incurred by investors across the globe.

A plethora of studies have been conducted to identify the effects of the novel coronavirus on the economy in general and stock markets in particular. Significantly, among the most relevant studies is Sherif (2020), who, after having reviewed many studies on this topic, concluded that decisions regarding conventional or Islamic

stock market indices raised a very important empirical question, particularly during the pandemic. According to Sheriff (2020), investors across the globe preferred investments that yielded extremely high profits, and Islamic stock market indices were significantly more efficient and competitive than their conventional stock market indices. Hence, the recent wave of Covid-19, research on Islamic investment structures has tended to attract the interest of investors who perceive stock market returns as uncertain (Mansour & Razali, 2021).

Mansour and Razali (2021) investigated the effects of the Covid-19 pandemic on Islamic and conventional stock market returns. Applying sample t-tests and panel-pooled OLS regressions, they analysed data collected from 15 countries between 1 September 2019 and 30 April 2020. Their results showed that the Covid-19 pandemic affected both Islamic and conventional stock markets, but its effects on the former were weaker than on the latter. The Islamic stock market returns would become positive by mid-April 2020. However, conventional stock market returns remained negative throughout the study period. Overall, the Islamic stock market outperformed its conventional counterpart both before and during the current Covid-19 pandemic.

Similarly, Ahmed, Khan, Abdullah and Matlani (2022) investigated the effects of the Covid-19 pandemic on Islamic and conventional stock market returns in Pakistan. Using a panel regression approach to analyse data collected from 25 February 2020 to 3 February 2021, the study found a negative correlation between Covid-19 and both Islamic and conventional stock markets. Specifically, the correlation between the two variables (i.e., Covid-19 and stock markets) remained negative throughout the first wave of the pandemic. However, in the second wave of Covid-19, the correlation was positive. During these two waves, the overall negative effect of the pandemic was higher on conventional stocks than on Islamic stocks.

Moreover, Erdogan, Ismail and Gedikli (2020) investigated the effects of the Covid-19 pandemic on the Islamic stock market in comparison with its conventional counterpart in Turkey. Adopting the dynamic conditional correlation (DCC) GARCH method to analyse data collected from 10 February 2011 to 2 September 2020, the researchers found that both the Islamic and conventional stock markets were negatively affected by the pandemic, whereas the former was more stable in the face of the pandemic than the latter.

3.0 Methodology

3.1 Data

To investigate the impact of Covid-19 on the Islamic stock markets and compare market reactions with traditional stock markets, we collected daily data on the world death counts of COVID-19 and different stock market indices from 22 January 2020 to 22 November 2022. The Morgan Stanley capital International (MSCI) Emerging Market Asia index (MXMS) and MSCI GCC countries combined index (MXGCC) were used as proxies for the conventional stock market. In contrast, the MSCI Emerging Market Asia Islamic index (MIMS) and MSCI GCC countries' combined Islamic indexes (MIGCC) were employed to represent the movement of Islamic stock markets. I obtained data on stock market indices from Thomson Reuters Eikon and the *World Street Journal* (WSJ) and the Covid-19 death counts from Roser, Ritchie, according to Ortiz-Ospina, and Hasell (2020), who compiled real-time data on the Covid-19 pandemic.

I defined the stock index R_t , for all variables, as follows:

$$R_t = P_t - P_{t-1}$$

3.2 Wavelet

In the present study, the main objective of studying correlations between oil price–exchange rates and oil price–stock markets was to determine whether oil prices led to an exchange rate (stock market) or reverse. I determined the wavelet correlation between the variables to investigate this issue. The wavelet approach measures the degree to which the two series move together and captures both frequency-varying and time features. Hence, if coherence is close to 1, the time series illustrates a strong common behaviour. If it is close to 0, the time series does not behave in a coherent way. I utilised wavelet phase differences to distinguish between negative and positive correlations. The principal advantage of the wavelet approach is its capacity to realise a local analysis of time series by designing movements of index returns and oil prices over two frequency bands. Moreover, the wavelet approach is appropriate for analyses in which there are no stationary variables.

The wavelet approach was applied to shed light on the spillover effects across international stock and commodity markets, indicating the possible presence of spillovers and contagion. In other words, the wavelet approach is helpful in portfolio diversification and risk management.

Wavelet functions are composed of scale parameters, location and a mother wavelet function ($\psi \in L^2(\mathbb{R})$), defined as follows:

$$\psi_{\tau,s}(t) = \frac{1}{\sqrt{|s|}} \psi\left(\frac{t-\tau}{s}\right), s, \tau \in \mathbb{R}, s \neq 0$$

where

$\frac{1}{\sqrt{|s|}}$ represents a normalisation factor guaranteeing unit variance of the wavelet and $\|\psi_{\tau,s}\|^2 = 1$. s

is a climbing element which controls the width of the wavelet; scale has an inverse relationship to frequency. A higher scale show a straighten wavelet which is acceptable for the observation of a lower regularity is a transformation framework which controls the locality of the wavelet. There are several forms of wavelets. In this paper, we will be concentrated on wavelet coherency (WTC), that was prescribed by Torrence and Compo (1998) and Aguiar-Conraria et al. (2008) as the ratio of the cross spectrum to the result of each series spectrum. It can be thought of as the local relationship between two time series in time–frequency space.

As stated by Torrence and Compo (1998), WTC is defined as follows:

$$R_{xy}^2 = \frac{|SW_{xy}|^2}{S(|W_x|^2)S(|W_y|^2)}$$

where S is a sleeking operator in both scale and time. Noticeably, R_{xy}^2 close to 1 indicates evidence of strong correlation, whereas R_{xy}^2 close to 0 provides a weak correlation.

I estimated the statistical significance of WTCI based on the Monte Carlo method because the theoretical distribution of WTC was not derived (Grinsted et al., 2004).

I could not differentiate between negative and positive relationship due to the squared WTC. I needed the phase difference tool to introduce negative or positive relationship and a lag–lead link between two time series as a function of frequency.

In this research, our emphasis is the difference phase of tool of the direction of arrows in the WTC plots. Arrows pointing to the left (or right) indicate that two time series were out of phase. Arrows pointing down and up show causality links between them. Specifically, if arrows point straight down (or up), the first variable $y(t)$ is lagging (leading).

4.0 Empirical Results

Figure 1 shows the wavelet coherence between Covid-19 deaths and each return market of the conventional and Islamic oil stock markets. The black contour lines denote 95% confidence intervals. The horizontal and vertical axes illustrate the period of study in days and frequency, respectively. The colour varies from blue to yellow: blue designates a low level of coherence and yellow designates a high level of coherence. The lighter black line sets the limits of the state with high power and the “cone of influence”, where edge effects were significant. The direction of the arrows indicates information concerning the phase lag–lead link between Covid-19 deaths and conventional and Islamic stock markets.

Arrows pointing to the right indicate in-phase variables, whereas those pointing to the left indicate out-of-phase variables. In addition, arrows pointing to the left-up or right-down indicate that Covid-19 deaths lead the conventional stock market and Islamic stock markets, while the left-down or right-up arrows show that Covid-19 deaths lagged behind the movements of the conventional and Islamic stock markets. The in-phase areas indicate a cyclical interaction between Covid-19 deaths and markets, whereas the anti-phase areas display an anticyclical effect.

Regarding the stock markets, Figure 1 shows that Covid-19 deaths-MIGCC, Covid-19 deaths-MXGCC, Covid-19 deaths-MIMS and Covid-19 deaths-MXCM pairs exhibited a high degree of in-phase co-movement on the long-term frequency scales (64–256 days) from 2020–2021, which are indicated by the concentration of the yellow regions and the right-direction arrows. There was a high level of long-term co-movement between Covid-19 deaths and conventional stock markets. Considerable co-movement was found for the Islamic stock market at the same level. In shorter periods, from 4–8 days, the co-movement between Covid-19 deaths and conventional stock markets and between Covid-19 deaths and Islamic stock markets was generally low, as the WTC values were below 0.3. Regarding medium-run horizons from 16–64 days, the

contour plots illustrate some high co-movement around the Covid-19 crisis. Our findings showed that Islamic stock market was more volatile during the crisis period compared with conventional finance.

The direction of the arrows in the areas of high co-movement shows that Covid-19 deaths exhibited a time-varying lag–lead link vis-à-vis stock markets in the time–frequency space. Beyond the higher frequencies up to 128 days and low frequencies, the findings showed substitute periods of right-down arrows when Covid-19 deaths lagged behind the stock market.

Figure 1 shows a high level of out-phase co-movement on the long-term frequency band (128–256 days) for MSCI Emerging Market Asia Islamic and conventional indexes from 2021–2022. The direction of arrows is oriented to the left, indicating that the co-movement between Covid-19 deaths and the MSCI Emerging Market Asia Islamic and conventional indexes were out of phase. This result indicated a negative link between Covid-19 deaths and MSCI Emerging Market Asia Islamic and conventional indexes.

Regarding the comparison of Islamic and conventional stock markets, the results demonstrated that the number of Covid-19 deaths was an important determining factor in the Islamic stock markets, in contrast to the conventional stock markets. Furthermore, the results confirmed a positive link between the number of Covid-19 deaths and the MSCI Emerging Market Asia Islamic index and the MSCI Emerging Market Asia index, while the relationship between exchange rates and crude oil in the MSCI GCC countries combined with Islamic and the MSCI GCC countries is undetermined.

Moreover, to comprehend the correlation between conventional and Islamic stock indicators, we determined wavelet consistency in every set of market indices. The investigation of the correlated market index movement assisted us in discovering the effect between both markets. Similarly, we observed a badge relationship between conventional and Islamic markets in different stages, which enabled us to determine the features of the determinant (i.e., positive or negative).

As shown in Figure 1, a correlation was found between the markets on each regulatory band. Furthermore, the arrows highly shifting to the right show a positive relationship between the market indices for both MSCI emerging market Asia and MSCI GCC nations combined. Nevertheless, we observed that the dynamic correlation remained, as we observed the diversion of the arrow within the period of the GCC index. First, the Islamic index led from 1–4 days simultaneously within a short period. Nevertheless, the Islamic market indicator emerged as the major index on 3 August 2021. The shift in the major–badge correlation was more relevant for emerging Asia indices than for GCC indices. In general, the highly collaborative and frequently positive relationships among these indices indicated high correlations between both stock markets. These results were expected, as Islamic indicators are a subdivision of their traditional counterparts. The spillover of Covid-19 was transferred to all markets, as indicated by the major–badge relationship between the equity of both markets. It also showed that Islamic stock markets were not disassociated from conventional stock markets. Thus, the Islamic indices did not indicate any hedging or safe-haven gains for market participants. Similar to traditional equity markets, Islamic equity markets are also subject to financial crises, such as the Covid-19 pandemic. Consequently, the *sharia* process in Islamic markets ceased to make provisions for immunity against the unexpected market shock induced by the Covid-19 pandemic

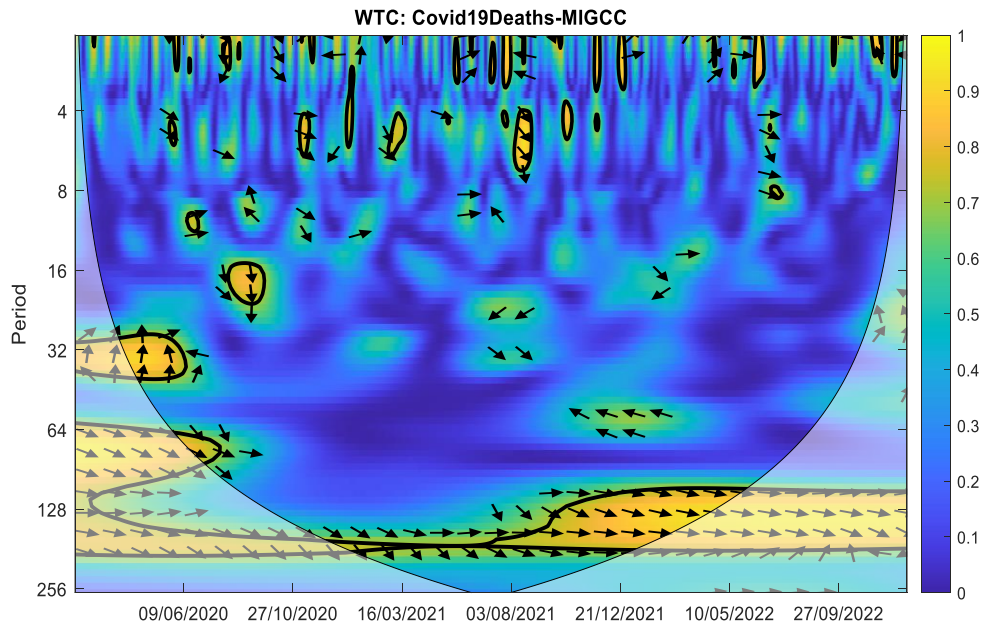


Fig. 1 WTC: Covid19Deaths-MIGCC

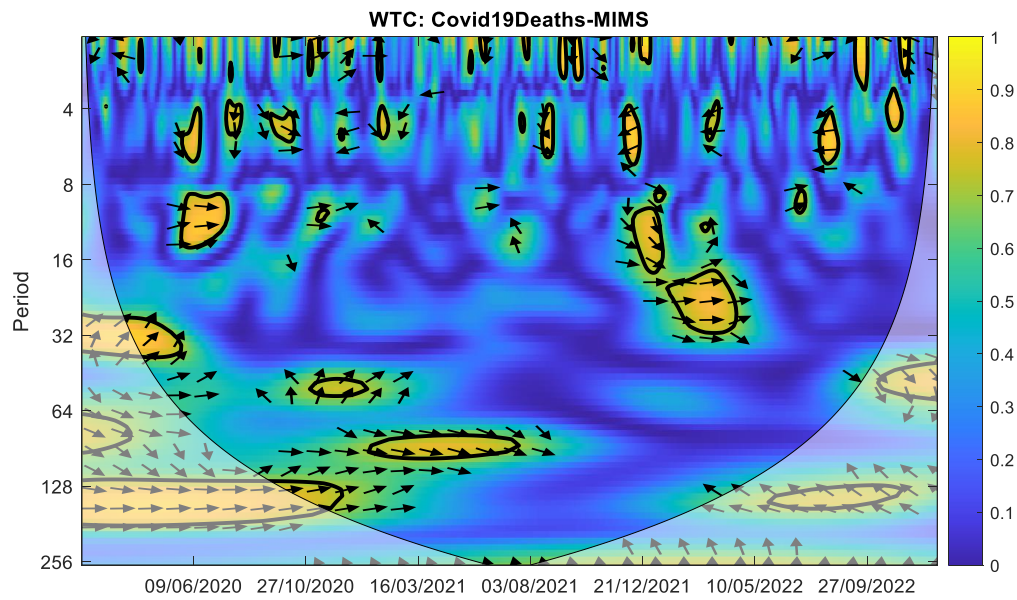


Fig. 2 WTC: Covid19Deaths-MMS

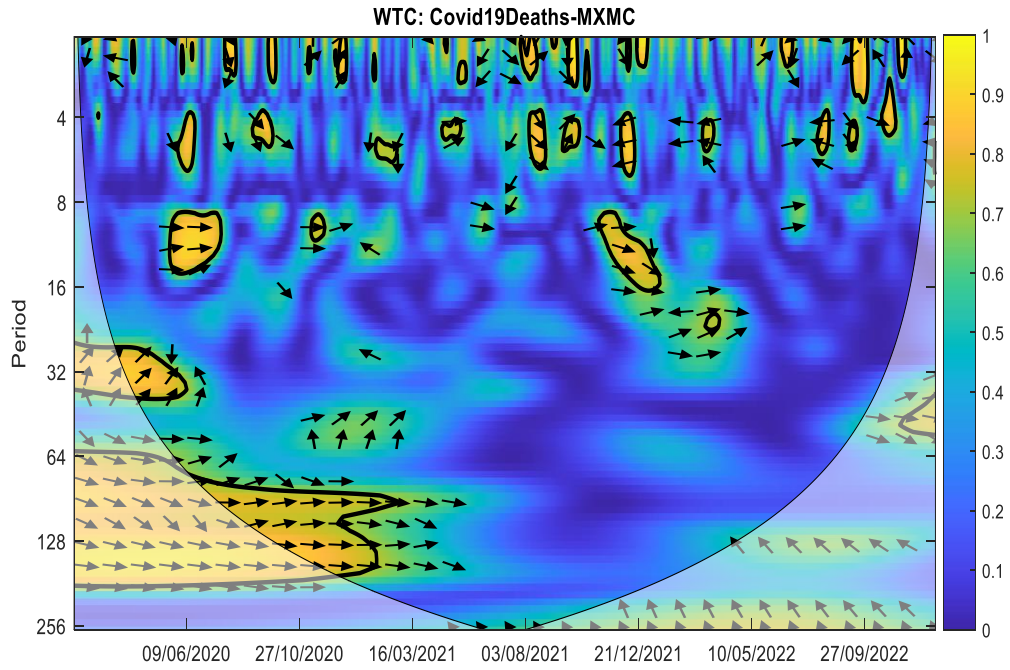


Fig. 3 WTC: Covid19Deaths-MXMC

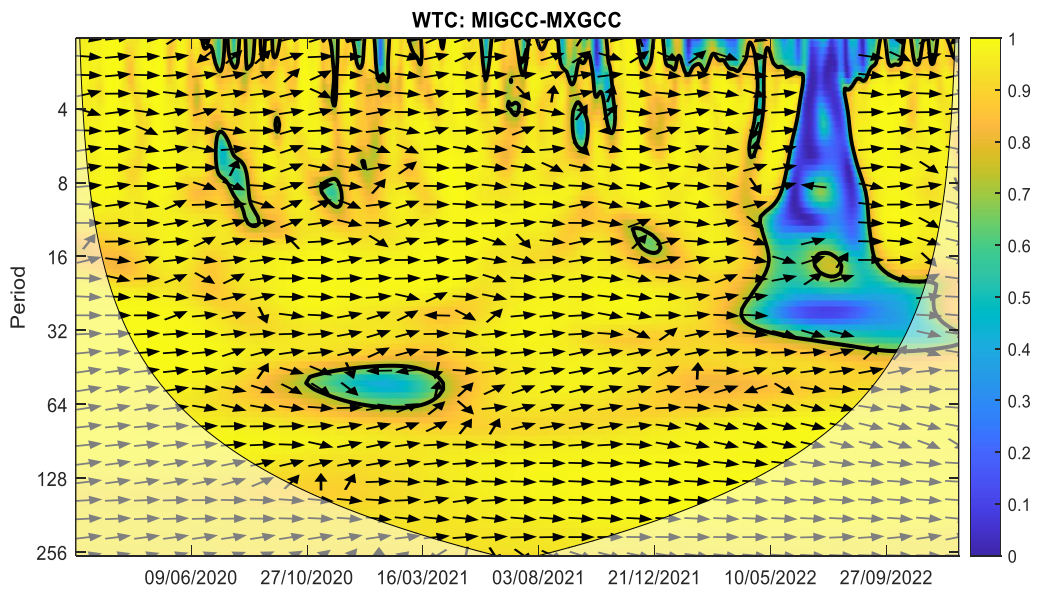


Fig. 4 WTC: MIGCC-MXGCC

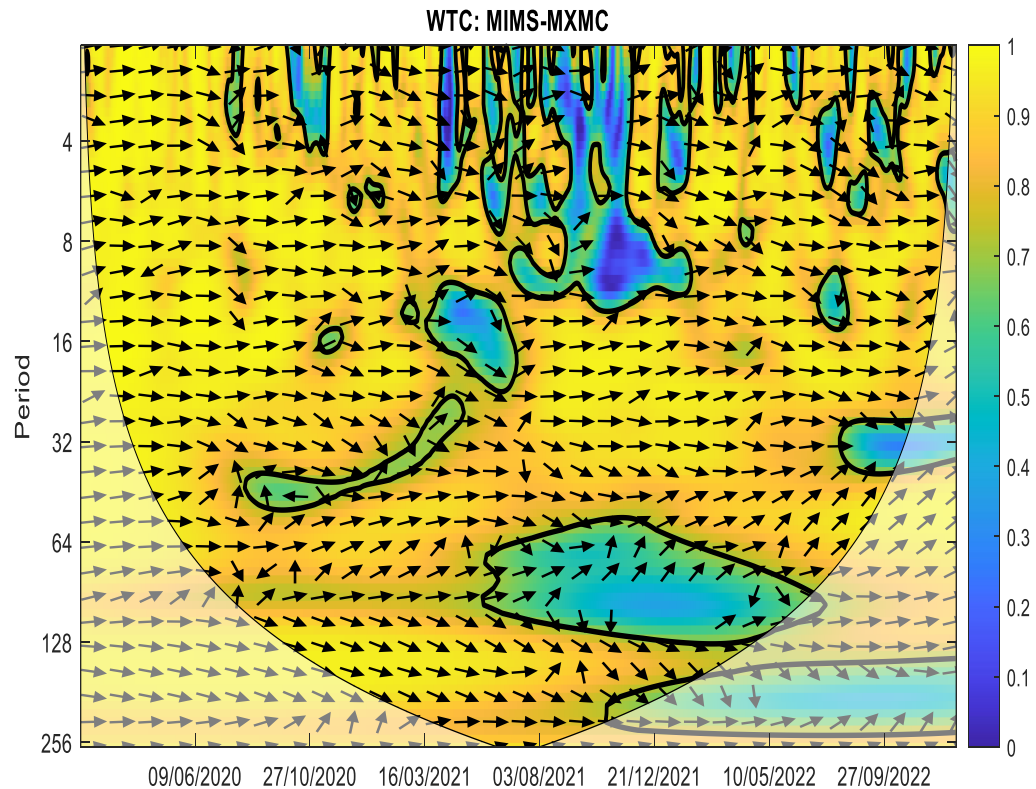


Fig. 5 WTC: MMS-MXMC

5.0 Conclusion

This study conducted an empirical analysis of the effects of Covid-19 on both Islamic and traditional stock markets. A wavelet approach was applied to analyse two sets of traditional and Islamic stock indices (MSCI GCC countries combined and MSCI Emerging Markets Asia) and daily data collected from 9 June 2020 to 27 September 2022.

The results showed that the Islamic and conventional stock markets were similarly resilient and highly correlated throughout the study period. The Islamic stock markets ceased to provide hedging or safe-haven benefits for market participants. The Islamic *sharia* process was unable to ensure security in the Islamic stock market in the face of the economic downturn caused by the Covid-19 pandemic. Thus, Islamic stock markets ceased to be feasible substitutes for protecting investments in conventional stock markets.

The results provide valuable information for Islamic folder supervisors and shareholders regarding the acceptance of investment and hedging plans during crises such as the Covid-19 pandemic. Shareholders should be aware that Islamic stocks cease to trade with hedging opportunities or other senior investments, particularly during crisis periods. Moreover, the findings of the current study provide significant information for policymakers and administrators concerning the dynamic relationship between the Covid-19 pandemic and the stock exchange. Administrators are recommended to become more cautious in taking pre-emptive measures. Therefore, the stock exchange market will cease to be involved in subsequent crises. These findings can be useful in developing fiscal stimulus packages to assist the financial system by improving market reliance efficiently and effectively

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