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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

Impact of COVID-19 on Islamic and Conventional Stock Indexes

Almabrok F Ahmid[1], Ensar Agırman[2]

Abstract

The objectives of this research are to study Islamic stock indexes during the time of Covid-19 extensively and compare it with conventional stock indexes. Our research aims to analyse how stock returns indexes of Islamic and conventional have been affected by COVID-19. So, in other word, the research objected to analyse the effect of COVID-19 on the returns and volatility of Islamic and conventional stocks indexes by using ARIMA-X and EGARCH-X models. In keeping with this objective, the Islamic and conventional stocks indexes were used to estimate the financial stock return, and the dummy variable as of number of everyday cases of each country was used to estimate the effect of COVID-19.

The research investigates the levels of uncertainty and volatility in Islamic and conventional stock indexes prior to and during the Covid-19 crisis. Additionally, it compares Islamic stock markets with others and analyses the impact of the pandemic on these markets. The findings reveal statistically significant results, with certain indexes demonstrating significance at levels of 10%, 5%, and 1%.

By overall looking we can say that Nigerian indexes were affected the most among others which include the Islamic and the conventional, moreover the least affected by the uncertainty was in Indonesia and Malaysia and the Islamic indexes in general were better. We can conclude that Islamic stock indexes were affected like others by the COVID-19.

Keywords: Islamic stock indexes, COVID-19, ARIMA-X model, EGARCH-X model.
JEL Classification: F65, O16, F32

[1] Assistant Prof at Karabuk University, Faculty of Business Administration, Department of Finance and Banking
E-posta: almabrokahmid@karabuk.edu.tr
https://orcid.org/0000-0003-1143-6646

[2] Associated Prof at Ataturk University Faculty of Economics and Administrative Sciences, Business Administration Department of Accounting and Finance
E-posta: ensaragirman@gmail.com
https://orcid.org/0000-0001-5168-7023

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COVID-19'un İslami ve Geleneksel Hisse Senedi Endeksleri Üzerindeki Etkisi

Öz

Bu araştırmanın amacı, Covid-19 döneminde İslami hisse senedi endekslerini kapsamlı bir şekilde incelemek ve bunları geleneksel hisse senedi endeksleriyle karşılaştırmaktır. Araştırmamız, Covid-19'un İslami ve geleneksel hisse senedi endekslerinin getirileri üzerinde nasıl etkili olduğunu analiz etmeyi amaçlamaktadır. Başka bir deyişle, araştırma, ARIMA-X ve EGARCH-X modellerini kullanarak COVID-19'un İslami ve geleneksel hisse senedi endekslerinin getirileri ve oynaklığı üzerindeki etkisini analiz etmeyi hedeflemektedir. Bu amaç doğrultusunda, finansal hisse senedi getirisini tahmin etmek için İslami ve geleneksel hisse senedi endeksleri kullanılmış ve her ülkenin günlük vaka sayısına ilişkin dummy değişkeni COVID-19'un etkisini tahmin etmek için kullanılmıştır.

Araştırma, Covid-19 krizinden önce ve sırasında İslami ve geleneksel hisse senedi endekslerinde belirsizlik ve oynaklık düzeylerini incelemektedir. Ayrıca, İslami hisse senedi piyasalarını diğerleriyle karşılaştırır ve salgının bu piyasalara etkisini analiz eder. Bulgular istatistiksel olarak anlamlı sonuçlar ortaya koymaktadır ve belirli endekslerin %10, %5 ve %1 düzeylerinde anlamlılık gösterdiğini göstermektedir.

Genel olarak bakıldığında, Nijerya endekslerinin diğerleri arasında en çok etkilendiği söylenebilir, ayrıca belirsizlikten en az etkilenen ülkeler Endonezya ve Malezya'dır ve genel olarak İslami endeksler daha iyi performans göstermiştir. Sonuç olarak, İslami hisse senedi endekslerinin COVID-19'dan diğerleri gibi etkilendiği söylenebilir.

Anahtar Kelimeler: : İslami hisse senedi endeksleri, COVID-19, ARIMA-X modeli, EGARCH-X modeli.
JEL Sınıflandırması: F65, O16, F3

1. Introduction

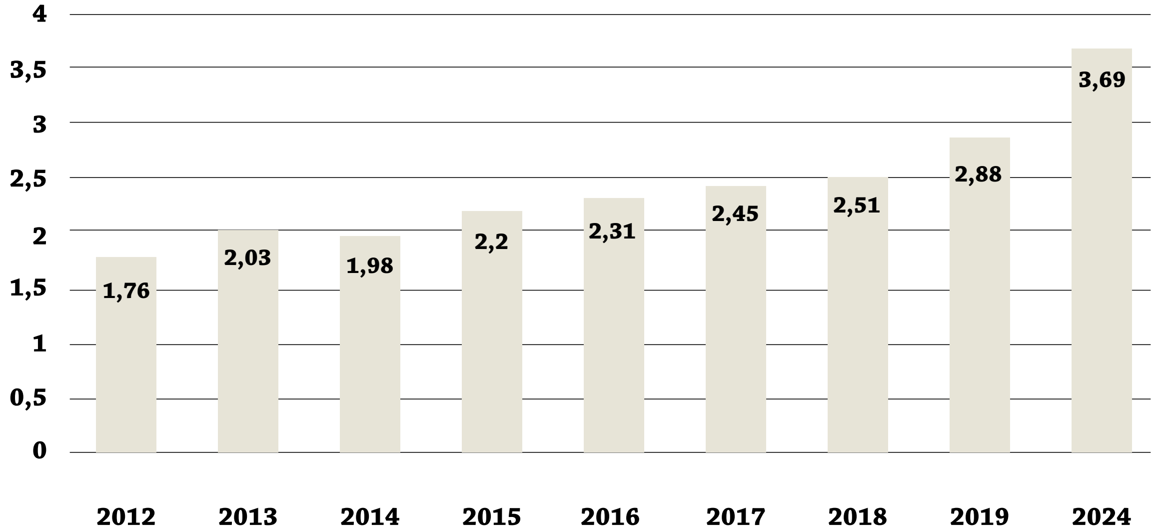
X The Covid-19 pandemic, which initially surfaced in January 2020, has had a significant negative influence on the financial sector globally. S&P Global Ratings downgraded the ratings of around 335 banks and nonbank financial businesses between March 1 and September 7, 2020. According to S&P Global Ratings, the primary banking sectors will not recover to their pre-Covid-19 levels until later Gunning et al. (2020).

On the other hand, The Islamic financial services market is witnessing rapid growth and increasing interest in all countries, especially after the mortgage financial crisis, which highlighted the importance of ethical and social investments as more system-enhancing means. Islamic finance emerged in the 1960s thanks to a renewed interest in religion in Muslim countries and the accumulation of foreign exchange surpluses in the petrodollar Gulf, then was rapidly internationalized by immigration but also by the growing urgency and need for an ethics-based system.

With the increasing development of the concept of legitimate (Sharia) business and the awareness of Muslims to conduct their business in a manner consistent with their religious beliefs, they tend to invest in companies or stock markets that apply and respect the rules of Sharia. Moreover, religious beliefs are no longer the only motive for investing in Islamic assets, as the latter has become a safe haven for the risk-averse investor. The mortgage crisis has shed a lot of ink, and the issue of the durability of Islamic financial assets in the face of the crisis has been prominent in several studies, such as Chazi and Syed (2010), Ahmed (2010), and Kayed and Hassan (2011). Linking Islamic finance to the real and financial aspect made it have deep roots that ensured its solidity, or even disrupted the contagion wave from the chains of financial failures for many institutions. For instance, Abdul-Rahman and Gholami (2020) revealed the beauty of Islamic finance, by using its Profit-Loss Sharing Contract (PLSC) as a financing vehicle to aid in the recovery of the economy and enterprises from the COVID-19 economic crisis.

Islamic financing first appeared 50 years ago in nations with sizable Muslim populations that wanted to make sure their financial sources complied with Shariah law and Islamic tenets. The business experienced its biggest recorded increase since the global financial crisis in 2019 with assets in the Islamic finance sector totalling US$2.88 trillion as it showed in figure 1. The future is bright: this is anticipated to increase to US$3.69 trillion by 2024. Along with the fact that Muslim nations have turned to Shariah financing to quench their thirst for capital, another factor contributing to its popularity is the fact that Shariah financing is starting to gain traction with non-Muslim countries as well. Also, Moody's Investors Service said, (Islamic finance will continue to grow in 2022 as economic recovery accelerates, particularly in the Gulf Cooperation Council (GCC) region).

Figure 1: Global islamic finance assets growth (US$ trillions)



Source: ICD- Refinitiv Islamic Finance Development Report. December 2020

The objectives of this research are to study Islamic stock indexes during the time of Covid-19 extensively and compare it with conventional stock indexes. Our research aims to analyse how stock returns indexes of Islamic and conventional have been affected by COVID-19. So, in other word, the research objected to analyse the effect of COVID-19 on the returns and volatility of Islamic and conventional stocks indexes by using ARIMA-X and EGARCH-X models. In keeping with this objective, the Islamic and conventional stocks indexes were used to estimate the financial stock return, and the dummy variable as of number of everyday cases of each country was used to estimate the effect of COVID-19. The study utilized daily data on total Covid-19 cases, in line with other authors such as Gao et al (2022), Anh and Gan (2020), Ashraf (2020), Khan et al (2020), Ashraf (2021), Öztürk et al (2020), Nguyen et al (2021), and Rabhi (2020), who also focused on Covid-19 new cases. The study will examine the uncertainty and volatility of both Islamic and conventional stock indexes before, during the Covid-19 crisis.

2. Literature Review

The COVID-19 pandemic had a significant human cost. We all worry about how the crisis will affect the economy and finance in general. Also, the effects of the economic, financial, social, and psychological crisis are still being felt as of the time this research was being written. Islamic banking and finance were significant contributors to the 2008 financial crisis, therefore research into them in this crisis will be useful and fill a research gap.

The financial market downturn caused by COVID-19 resembles the Global Financial Crisis (GFC) of 2007-2009, as noted by Quinsee (2020). However, there is a notable difference between the two. The GFC was an endogenous shock driven by market participants, bankers, and speculators, resulting in increased debt and risk-taking. In contrast, the current situation, as mentioned by Roy and Kemme (2020), is caused by exogenous forces directly impacting the real economy.

Islamic investment instruments outperformed during the early aftermath of the GFC, as demonstrated by studies conducted by Alam and Rajjaque (2016), Hoepner et al. (2011), Masih et al. (2018), Ashraf (2013), and Saiti et al. (2014). Many times, the performance discrepancy is linked to the inherent features of Islamic banking, such as debt avoidance and connections to the actual economy. Abedifar et al. (2015), Chapra in (1985), and Ebrahim in (2009). Because the Coronavirus outbreak has led to the shutdown of significant portions of the actual economy, it exposures both conventional and Islamic investments to the same economic shock. The concern is whether Islamic investments will demonstrate the same level of resiliency or hedging advantages during the pandemic crisis as they did during the Great Financial Crisis.

Despite negative market action in the first quarter of 2020, S&P and Dow Jones claimed that their Islamic indexes excelled their conventional rivals. Welling (2020). In depressed markets, low leverage portfolios and indices outperform, and Islamic indices have superior stock selection despite having less diversification. Ashraf and Mohammad (2014) Mohammad and Ashraf (2015), Tahir and Ibrahim (2020), Boudt et al. (2019). Additionally, the outperformance is determined by the time frame and performance benchmark used to evaluate performance. The selection of the Shari'ah screening standard by Elfakhani et al. (2007) Ashraf (2016); Derigs and Marzban (2009).

Ashraf et al. (2022) conducted a global study using data from May 1, 2018, to April 30, 2021, to analyse how Islamic equity investments performed during the Coronavirus outbreak. They found that Islamic shares demonstrated significant excess returns and offered hedging benefits during extreme market declines. However, these hedging advantages were only observed during significant market swings, indicating that investors need to be mindful of the timing and market conditions when considering Islamic equity investments.

Erdoğan et al. (2020) investigated the impact of the Coronavirus outbreak on both conventional and Islamic stock markets in Turkey. Using the DCC-GARCH approach and data from February 10, 2011, to September 2, 2020, the study found that Islamic financial stock markets exhibited greater resilience to the global shock of the Coronavirus outbreak compared to Turkey's traditional stock market.

Salisu and Sikiru (2021) examined the effectiveness of Asia-Pacific Islamic financial stock market in protecting investors from uncertainties caused by pandemics and epidemics (UPE). They found that Asia-Pacific Islamic financial stocks exhibited hedging potential against UPE, supported by a new dataset. However, the hedging effectiveness decreased during the Coronavirus outbreak. The study also revealed that using the UPE predictor improved out-of-sample predictions of stock returns.

Aloui et al. (2022) examined the impact of Coronavirus figures and related announcements on the interactions between Islamic and conventional equities in the Chinese market. They used various statistical models and analysed daily data from 2 December 2019 to 8 May 2020. The findings revealed that while recovered cases did not have a significant impact on the mean DCCs (dynamic conditional correlations) of financial stocks, infected cases and fatalities did. However, none of the factors mentioned had a significant effect on the variations in DCCs.

Sherif (2020) examined the immediate effects of the Coronavirus outbreak on the Dow Jones market index in the UK, which complies with Shariah. The study used daily data from 29 January 2020 to 20 May 2020 and analysed 10 UK industrial sector groupings. The results showed a significant and negative association between the Coronavirus outbreak and the performance of the traditional financial stock market index. However, the Islamic index, represented by the Dow Jones, had a negligible interaction with the disease.

Shahzad and Naifar (2022) conducted a network analysis to examine the dependencies within conventional and Islamic equities sectors and their variations during the COVID-19 pandemic. The study found that there was more spillover between sectors during the COVID-19 sub-period. Additionally, the dependence between conventional share returns was higher compared to the dependence between Islamic share returns during the Coronavirus outbreak. The findings have implications for risk management and portfolio selection, highlighting the advantages of limited diversification in portfolios consisting of Islamic stock categories such as industrials, basic materials, consumer services, and technologies.

Shear and Ashraf (2022) found that Shariah-compliant stocks outperformed conventional stocks during the Coronavirus market meltdown, suggesting their better performance during the crisis.

Hassan et al (2022) found that while both Islamic and conventional equity markets experienced significant declines during the Coronavirus outbreak, Asian Islamic markets showed more resilience and faster recovery compared to Western markets. Despite the overall decline, certain Islamic markets outperformed their peers, and traditional markets reacted uniformly to the COVID-19 aftershock.

Irfan et al (2021) studied the impact of the Coronavirus announcement on Islamic financial stock indexes in the Indian and Indonesian stock exchanges using threshold volatility and event study models. They found that the JII and BSE Shariah indexes showed positive correlations, but the BSE Shariah Index reacted negatively to the declaration of Coronavirus as a global outbreak.

Saleem et al (2021) analysed the response of Islamic stock markets in nine different countries during the Covid-19 pandemic using the GARCH approach. They found that the Islamic financial stock indexes in Australia and the GCC remained stable in the short term after the outbreak's announcement. However, the epidemic had a significant short-term impact on the Islamic financial stock indexes in Bahrain, Qatar, the UAE, ASEAN, as well as the Middle East and MENA regions.

Nomran and Haron (2021) compared the performance of Islamic and conventional financial stock markets during the Coronavirus outbreak. They used sample t-tests and panel pooled OLS regression with daily data from 15 nations. The findings indicate that after mid-April 2020, Islamic indices' returns became positive while conventional indices' returns remained negative. The study also shows that the Coronavirus had a significant negative impact on the performance of both stock indexes.

Adekoya et al (2022) examined the volatility relationship between conventional and Islamic financial stock markets. They analyzed nine sectors in each category and investigated the impact of the COVID-19 event. The findings suggest that Islamic markets are more resilient to the pandemic compared to traditional markets.

On the other hand, Hassan et al (2021) examined the impact of the Coronavirus outbreak on traditional and Islamic stock markets globally. They analysed the Dow Jones Index, FTSE Indexes, and found similar levels of volatility in both markets. The study refutes the decoupling theory and highlights strong interconnections between the two markets.

When Salisu and Shaik (2022) compared to the performance of their conventional equivalents, asked the research question, do Islamic stocks perform worse or have superior hedge potential? They discovered that, generally speaking, Islamic equities can be utilized as a hedge while conventional stocks are considered as being subject to uncertainty owing to pandemics over a range of time periods.

This study focuses on examining the impact of the COVID-19 pandemic on the returns and volatility of Islamic and conventional stock indexes across various countries worldwide, differentiating it from the previous research. The unique aspect of this study lies in its utilization of ARIMA-X and EGARCH-X models, making it distinct in this field, as there is no prior instance of these models being employed in similar studies.

To achieve its objectives, the research utilizes Islamic and conventional stock indexes to assess financial stock returns. Notably, the inclusion of a dummy variable based on the daily COVID-19 cases in each country adds an additional layer of analysis. The primary aim is to gauge the levels of uncertainty and volatility in both Islamic and conventional stock indexes before and during the COVID-19 crisis.

Furthermore, the study extends its analysis to compare Islamic stock markets with conventional ones, offering insights into the relative performance of these markets in the face of the pandemic. The research delves into understanding how the COVID-19 crisis has impacted Islamic and conventional stock markets, contributing to the broader understanding of the financial repercussions of the pandemic.

3. Data and Methodology

The Islamic and conventional stock indexes are/were used to analyse the impact of COVID-19 in the field of Islamic stock indexes in the research. The daily logarithmic return of the indexes were selected. In addition to that the data started before COVDI-19 from 2 December 2019 until 22 April 2022, thus VLOOKUP function was used to exclude the extra days from the data. The data was collected from www.investing.com. 16 indexes were selected from 6 countries such as Indonesia, Malaysia, Nigeria, Pakistan, Qatar and USA, 8 indexes were Shariah compliant indexes in contrast to that 8 conventional indexes were selected and the number of observations for each index is shown on the Appendix Table A. The indexes were chosen in each country in terms of the Islamic indexes and also the largest indexes from the conventional one.

The logarithmic return is computed as, $Rt_{i,t+1} = 100 * \ln\left(\frac{P_{i,t+1}}{P_{i,t}}\right)$ where P is the Islamic and conventional indexes. In other words, the Log return was done for the 16 indexes.

Logarithmic returns are often taken when it comes to analysing financial series, to allow comparison with other financial series. Also, the price series of financial assets is not static, so we move on to adopting the first difference to make the series constant, which allows estimating the parameters of the given model. Hudson and Gregoriou (2015).

The research objected to analyse the effect of COVID-19 on the returns and volatility of Islamic and conventional stocks indexes by using ARIMA-X and EGARCH-X models. In keeping with this objective, the Islamic and conventional stocks indexes were used to estimate the financial stock return, and the dummy variable as of number of everyday cases of each country was used to estimate the effect of COVID-19. The study utilized everyday data on total COVID-19 cases, similar to other authors such as Gao et al (2022), Anh and Gan (2020), Ashraf (2020), Khan et al (2020), Ashraf (2021), Öztürk et al (2020), Nguyen et al (2021), and Rabhi (2020). These studies collectively contributed to the understanding of how COVID-19 cases relate to stock market dynamics.

4. Econometric Methodology

The effects of COVID-19 on Islamic and conventional stock market indexes were evaluated by using the ARIMA and ARCH/GARCH methodologies. The Islamic and conventional indexes were used to calculate stock returns for both Islamic and conventional. In order to analyse the effect of COVID-19 on return, the ARIMA approach was applied. As a result, ARIMA-X and GARCH-X models must be created. As indicated in the following equation, ARIMA model:

$$ISlamindex_t = u + \sum_{i=1}^{p} \beta_i \, Isindex_{t-i} + \sum_{k=1}^{q} \delta_k \, e_{t-k} + \varphi_1 COVIDcase + \varepsilon_t$$

$$Convindex_t = u + \sum_{i=1}^{p} \beta_i \, Convindex_{t-i} + \sum_{k=1}^{q} \delta_k \, e_{t-k} + \varphi_1 COVIDcase + \varepsilon_t$$

In Equation (1), μ denotes the constant term, β denotes the coefficients from the Autoregressive (AR) process, and δ denotes the coefficients from the Moving Average (MA) process. Additionally, ϕ and ε denote the coefficients that, respectively, describe how the coronavirus affects stock and the error term. In this case, it is anticipated that ϕ will be statistically significant negative. The fact that the datum or data to be used in the analysis remain constant is the most crucial aspect of time-series analysis. Additionally, error terms derived from the study must be devoid of the so-called “white noise” problems of auto-correlation and fluctuation. Brooks and Gujarati (2009).

The following equation illustrates how the COVID-19 has an effect on the return volatility of Islamic and conventional stock indices. Bollerslev created the GARCH model independently (1986). The GARCH model permits the conditional variance to depend on earlier own lags. Brooks (2019). The Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model was proposed by Bollerslev (1986), who also developed the ARCH model. Equation 2 demonstrates the GARCH model.

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{p} \alpha_i \, \varepsilon_{t-i}^2 + \sum_{j=1}^{q} \beta_j \, \sigma_{t-j}^2$$

In Equation 2, the cardinal numbers are shown as i, when i = 0, 1, 2 ... up to p, conditional volatility shown as as σ_t^2 p, residuals shown as ε_t, and the lagged conditional volatility shown as σ_{t-j}^2. ARCH components shown as ε_{t-i}^2, and ε_{t-i}^2, on other side GARCH components was shown as β_j and σ_{t-j}^2. Using the error terms of the conditional variance as well as the markers and magnitudes of the conditional standard deviation, Nelson (1991) created the exponential GARCH (EGARCH) model. Equation 3 below depicts the model.

$$\ln(\sigma_t^2) = \alpha_0 + \sum_{j=1}^{q} \beta_j \ln(\sigma_{t-j}^2) + \sum_{i=1}^{p} \alpha_i \left|\frac{\varepsilon_{t-i}}{\sigma_{t-i}}\right| + \sum_{k=1}^{r} \gamma_k \left|\frac{\varepsilon_{t-k}}{\sigma_{t-k}}\right| + \pi Covidcase$$

In the EGARCH model, positive news is signaled by $\varepsilon_{t-i} > 0$, whereas negative news is signaled by $\varepsilon_{t-i} < 0$. Positive news is said to have a α_i influence on conditional variance, whereas negative news has a $\alpha_i + \gamma_i$ effect. Increased volatility in the situation $\gamma_i > 0$, also known as the leverage effect at level I is reportedly the bad news. The impact of news is uneven. In Equation (3), v denotes the immediate shock, while π is the effect of COVID-19 on the conditional variance. The ARIMA model was used in this study to produce the mean Equation (3). Information criteria including Akaike, Schwarz, and Hannan-Quinn were used to select the mean equation. As price and price volatility price any news as required by behavioral finance, term π is anticipated to be positive with statistical significance. As a result, large coefficients for the COVID-19 dummy variable are anticipated.

5. Empirical Result and Discussions

The use of data that complies with time-series assumptions is the most crucial factor to consider when performing a time-series analysis. The normal distribution and series constancy are two of these presumptions. This study used the ADF tests recommended by Dickey and Fuller (1981) and the PP tests recommended by Phillips and Perron (1988) to examine unit root testing. The unit root test findings and descriptive data for the Islamic and conventional indexes and returns series are shown in Table 1-6 below.

As shown in Table 1-6, the ADF and PP unit root tests reveal that none of the Islamic and conventional indexes are constant at level value. Analysing with non-constant series could produce different outcomes in time-series analysis. As a result, the first difference between the conventional and Islamic indexes was determined. The return series Islamic and conventional indexes level value ADF and PP unit root tests were determined to be constant at a 1% significance level after the logarithmic first difference was calculated.

Table 1: Descriptive Statistics for Indonesia

	JKII	JKII70	JKSE
Mean	-0.002165	-0.000137	0.039347
Standard D.	1.596180	1.536165	1.255602
Skewness	0.476213	0.418385	0.246104
Kurtosis	12.93535	13.05070	13.49312
Jarque-Bera (Prob.)	2415.745*** (0.000)	2466.631*** (0.000)	2675.937*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-12.26368*** (0.000)	-12.07836*** (0.000)	-12.10733*** (0.000)
Phillips-Perron (PP) (Prob.)	-24.56118*** (0.000)	-24.22743*** (0.000)	-23.60153*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

The Islamic indexes (JKII70) and (JKII) in Indonesia had lower means compared to the conventional index (JKSE), indicating better performance. The standard deviation was higher in the Islamic indexes, indicating greater dispersion. Skewness was positive for all indexes, suggesting a preference for positive shocks, particularly in Islamic indexes. Kurtosis was greater than 3, indicating higher risk in the conventional index. Unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. As we can see in the table 1.

Table 2: Descriptive Statistics for Malaysia

	FTFBMHS	FTFBMS	KLSE
Mean	0.005952	0.007772	0.009898
Standard D.	1.039760	0.947025	0.955444
Skewness	0.070118	-0.022960	-0.367086
Kurtosis	6.733588	10.55606	12.83374
Jarque-Bera (Prob.)	342.0040 *** (0.000)	1398.857*** (0.000)	2382.415*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-24.32289 *** (0.000)	-25.00400*** (0.000)	-15.28085*** (0.000)
Phillips-Perron (PP) (Prob.)	-24.35518 *** (0.000)	-25.07299*** (0.000)	-24.30873*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

The Islamic indexes (FTFBMHS) and (FTFBMS) in Malaysia had lower means compared to the conventional index (KLSE), indicating potentially better performance. The standard deviation was higher in the Islamic index (FTFBMHS), suggesting greater dispersion. Skewness was positive for (FTFBMS) and negative for (KLSE), indicating a preference for positive shocks in the Islamic index and negative shocks in the conventional index. Kurtosis was greater than 3 for all indexes, indicating higher risk. Unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. These findings align with similar results observed in Indonesia. As we can see in the table 2.

Table 3: Descriptive Statistics for Nigeria

	NGSE30	NGSEINDEX	NGSELOTUS
Mean	0.085355	0.101774	0.102162
Standard D.	0.981220	0.899533	1.023114
Skewness	0.572177	0.701575	0.766762
Kurtosis	11.60400	11.68986	9.458353
Jarque-Bera (Prob.)	1858.347*** (0.000)	1911.237*** (0.000)	1086.863*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-12.71398*** (0.000)	-12.58320*** (0.000)	-19.64543*** (0.000)
Phillips-Perron (PP) (Prob.)	-19.14250*** (0.000)	-19.05952*** (0.000)	-20.08562*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

The Islamic index (NGSELOTUS) in Nigeria had a higher mean compared to the conventional indexes (NGSE30) and (NGSEINDEX), indicating potentially better performance. The standard deviation was higher in the Islamic index (NGSELOTUS), suggesting greater dispersion. Skewness was positive for all indexes, indicating a preference for positive shocks. Kurtosis was greater than 3 for all indexes, indicating higher risk. Unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. Similar findings were observed in Malaysia and Indonesia. As we can see in the table 3.

Table 4: Descriptive Statistics for Pakistan

	KMIAS	KSE
Mean	0.041273	0.035528
Standard D.	1.255909	1.230196
Skewness	-0.611575	-0.886150
Kurtosis	7.748489	8.805958
Jarque-Bera (Prob.)	598.1005*** (0.000)	916.6486*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-22.03047*** (0.000)	-21.91598*** (0.000)
Phillips-Perron (PP) (Prob.)	-22.20505*** (0.000)	-22.12806*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

The Islamic index (KMIAS) in Pakistan had a higher mean compared to the conventional index (KSE), indicating potentially better performance. The standard deviation was slightly higher in the Islamic index (KMIAS), suggesting slightly greater dispersion. Skewness was negative for both indexes, indicating a preference for negative shocks. Kurtosis was greater than 3 for both indexes, indicating higher risk. Unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. Similar findings were observed in Malaysia, Indonesia, and Nigeria. As we can see in the table 4.

Table 5: Descriptive Statistics for Qatar

	QERI	QSI
Mean	0.068543	0.058693
Standard D.	0.875247	0.903325
Skewness	-1.878205	-2.249123
Kurtosis	24.81381	27.91525
Jarque-Bera (Prob.)	12187.58*** (0.000)	15944.98*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-21.97770*** (0.000)	-22.89944*** (0.000)
Phillips-Perron (PP) (Prob.)	-21.98902*** (0.000)	-22.90714*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

In Qatar, the conventional index (QSI) had a higher mean compared to the Islamic index (QERI), suggesting potentially better performance. The standard deviation was slightly higher in the conventional index, indicating slightly greater dispersion. Skewness was negative for both indexes, indicating a preference for negative shocks. Kurtosis was greater than 3 for both indexes, indicating higher risk. The unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. Similar findings were observed in previous countries. As we can see in the table 5.

Table 6: Descriptive Statistics for USA

	DJI100X	NDX	SPX
Mean	0.027244	0.074712	0.050545
Standard D.	1.122878	1.854163	1.597567
Skewness	-0.571605	-0.461402	-0.604289
Kurtosis	10.81701	9.248558	15.29761
Jarque-Bera (Prob.)	1622.725*** (0.000)	1037.297*** (0.000)	3969.991*** (0.000)
Augmented Dickey-Fuller (ADF) (Prob.)	-22.67816*** (0.000)	-7.488235*** (0.000)	-7.158998*** (0.000)
Phillips-Perron (PP) (Prob.)	-22.70079*** (0.000)	-32.25752*** (0.000)	-32.14492*** (0.000)

Note: In parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

In the USA, the conventional indexes (NDX) and (SPX) had higher means compared to the Sharia-compliant index (DJI100X), indicating potentially better performance. The standard deviation was relatively higher in the conventional indexes, suggesting greater dispersion. Skewness was negative for all indexes, indicating a preference for negative shocks. Kurtosis was greater than 3 for all indexes, implying higher risk. The SPX index was found to be highly risky compared to the others. Unit root tests showed that the indexes were not constant at the level value, and the first difference was calculated, indicating suitability for the GARCH model. As we can see in the table 6.

Schwarz's information criterion was used to choose which model to use for the mean equation, as shown in Table 7 for the index JKII. The error terms from the ARIMA (9, 0, 8) model were used to create the variance equation. Its own long-term volatility has a beneficial impact on the conditional variance (β =0.938230). The asymmetrical effects ($\gamma \neq 0$) are also depicted by the EGARCH model. The coefficient is negative (-1.39E-08) at the 5% level of significance for the effect of COVID-19 on conditional variance, often known as volatility, which is significant for the purposes of this study. This finding indicates that COVID-19 cases have an impact on the return volatility of the JKII index, which is consistent with behavioural finance.

In Al-Awadhi's (2020) analysis, certain sectors such as Transportation, Hotels, and Beverages were adversely affected during the COVID-19 period, while sectors like Medicine and IT experienced positive effects. This demonstrates how investors consider various information, influencing return volatility. To mitigate income losses, investors should diversify away from vulnerable sectors and towards sectors capable of investing income. The Islamic and conventional sectors are expected to be impacted by phenomena like COVID-19, as negative news dominates volatility compared to positive news. Figure 1 shows a significant increase in the conditional standard deviation of the JKII Index starting from February 2020, aligning with the principle that investments decline with rising uncertainty, as suggested by Dixit and Pindyck (1995) in the real options theory.

Table 7: EGARCH-X Model Results for JKII index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	-0.007519		-0.142825
Variance Equation			
α_0	-0.116482***		-3.045207
α_1	0.220040***		3.993661
Γ	-0.089790***		-3.250517
Β	0.938230***		46.24394
Π	-1.39E-08**		-2.519901
R^2	0.045656	Akaike info criterion	3.298821
Adjusted R^2	0.016424	Schwarz criterion	3.473464
Durbin-Watson stat	1.759056	Hannan-Quinn criter.	3.366946

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 2: Conditional Standard Deviation of JKII Index

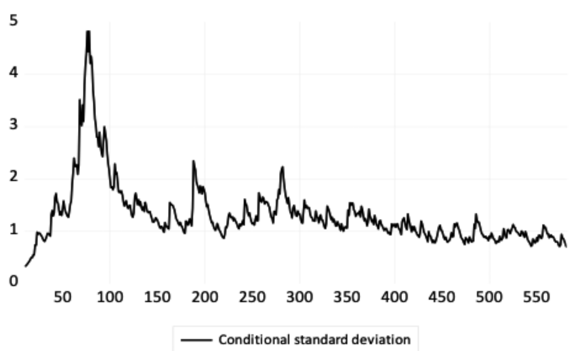
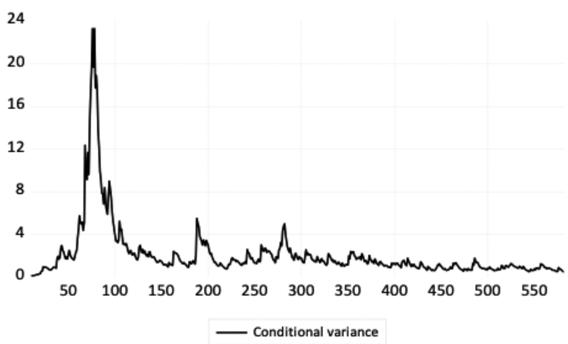


Figure 3: Variance of JKII Index



As indicated in Table 8 for the index JKII70, Schwarz's information criterion was utilized to determine which model to apply with the mean equation. The variance equation was built using the ARIMA (8, 0, 9) model's error terms. The conditional variance benefits from its own long-term volatility (β = 0.941197). The asymmetrical effects (γ≠0) are likewise described by the EGARCH model. The coefficient indicating the effect of COVID-19 on conditional variance, also known as volatility, is negative (-1.24E-08) at the 5% level of significance, which is significant for the objectives of this study. A Durbin-Watson is 1.776054 so, when the score of 2 indicates that there is no autocorrelation issue with the models being projected. A positive correlation is shown by numbers under 2, whilst a negative autocorrelation is indicated by values over 2.

Table 8: EGARCH-X Model Results for JKII70 index

Variable	Coefficient	z-Statistic	
Mean Equation			
Constant	-0.000996	-0.023238	
Variance Equation			
α_0	-0.124251***	-2.834764	
α_1	0.216386***	3.675878	
Γ	-0.081302***	-3.051024	
Β	0.941197***	42.58811	
Π	-1.24E-08**	-2.091776	
R^2	0.055477	Akaike info criterion	3.227497
Adjusted R^2	0.026597	Schwarz criterion	3.401905
Durbin-Watson stat	1.776054	Hannan-Quinn criter	3.295524

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 4: Conditional Standard Deviation of JKII70 Index

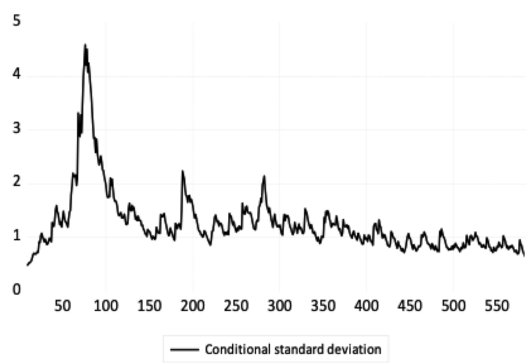
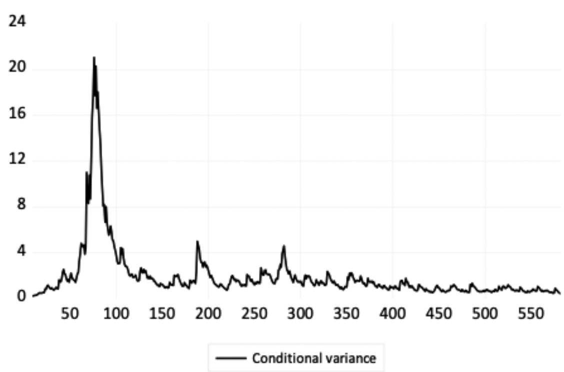


Figure 5: Variance of JKII70 Index



Schwarz's information criterion was used to choose the model to use with the mean equation, as shown in Table 9 for the index JKSE. The error terms of the ARIMA (9, 0, 10) model were used to construct the variance equation. The long-term volatility of the conditional variance (β = 0.918027) is advantageous. The EGARCH model also adequately describes the asymmetrical effects (γ≠0). At the 5% level of significance, the coefficient reflecting the influence of COVID-19 on conditional variance, also known as volatility, is negative (-2.25E-08), which is significant for the study's goals. Given that the models being projected have a Durbin-Watson score of 2, there is no autocorrelation problem. This score is 1.714556. Numbers under 2 suggest a positive correlation, whereas numbers over 2 imply a negative autocorrelation.

Table 9: EGARCH-X Model Results for JKSE index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	0.050692		1.425372
Variance Equation			
α_0	-0.145618***		-3.010552
α_1	0.239745***		3.673320
Γ	-0.084595***		-2.837436
B	0.918027***		38.92268
Π	-2.25E-08***		-3.067193
R^2	0.049091	Akaike info criterion	2.834051
Adjusted R^2	0.016420	Schwarz criterion	3.023881
Durbin-Watson stat	1.714556	Hannan-Quinn criter.	2.908100

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 6: Conditional Standard Deviation of JKSE Index

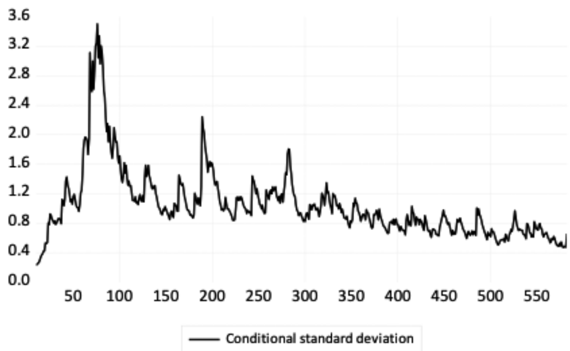
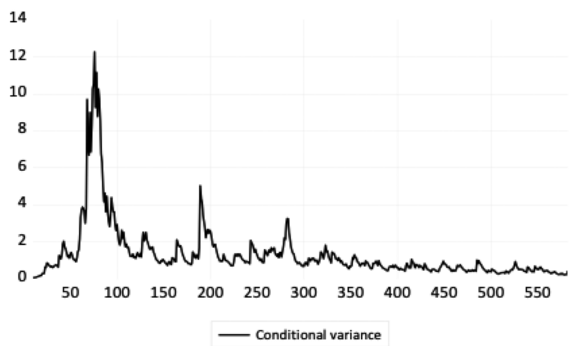


Figure 7: Variance of JKSE Index



As indicated in Table 10 for the index FTFBMHS, the model to employ with the mean equation was chosen using Schwarz's information criterion. The variance equation was built using the ARIMA (9, 0, 8) model's error terms. It is favorable that the conditional variance's long-term volatility (β = 0.958012) is low. The asymmetrical effects (γ≠0) are likewise properly described by the EGARCH model. The coefficient representing the effect of COVID-19 on conditional variance, commonly known as volatility, is negative (-1.25E-08) at the 5% level of significance, which is significant for the objectives of the study.

Table 10: EGARCH-X Model Results for FTFBMHS index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	-0.016902		-0.551663
Variance Equation			
α_0	-0.105169***		-3.352271
α_1	0.147751***		3.595154
Γ	-0.029068		-1.540950
Β	0.958012***		45.18644
Π	-1.25E-08*		-1.682727
R^2	0.068422	Akaike info criterion	2.770083
Adjusted R^2	0.040192	Schwarz criterion	2.943330
Durbin-Watson stat	1.920698	Hannan-Quinn criter.	2.837631

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 8: Conditional Standard Deviation of FTFBMHS Index

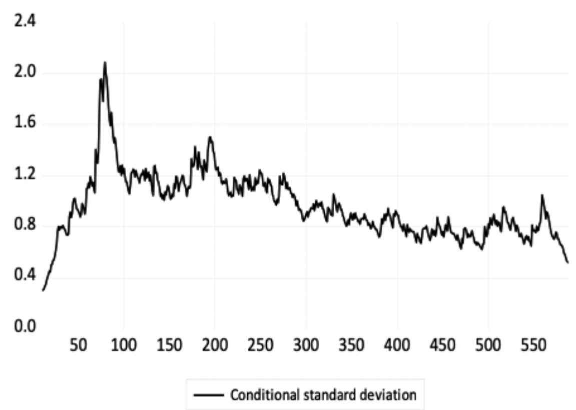
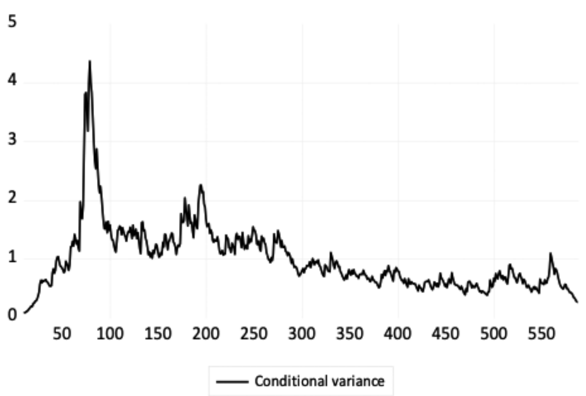


Figure 9: Variance of FTFBMHS Index



The model to use with the mean equation was selected using Schwarz's information criterion, as shown in Table 11 for the index FTFBMS. The ARIMA (5, 0, 5) model's error terms were used to construct the variance equation. It is advantageous that the long-term volatility of the conditional variance (β = 0.949376) is minimal. Similarly, the EGARCH model adequately describes the asymmetrical effects (γ≠0) it is crucial for the study's goals that the coefficient indicating the impact of COVID-19 on conditional variance, also known as volatility, is negative (-1.66E-08) at the 5% level of significance.

Table 11: EGARCH-X Model Results for FTFBMS index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	-0.019383		-0.565399
Variance Equation			
α_0	-0.158829***		-4.302128
α_1	0.203829***		4.574195
Γ	-0.041104*		-1.834452
B	0.949376***		41.32799
Π	-1.66E-08**		-2.012423
R^2	0.020744	Akaike info criterion	2.515626
Adjusted R^2	0.003624	Schwarz criterion	2.635508
Durbin-Watson stat	1.997804	Hannan-Quinn criter.	2.562354

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 10: Conditional Standard Deviation of FTFBMS Index

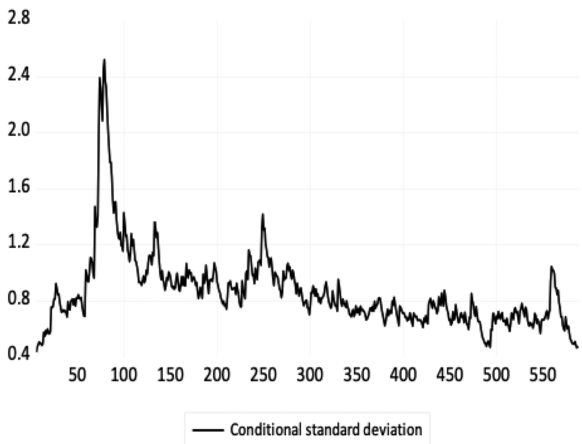
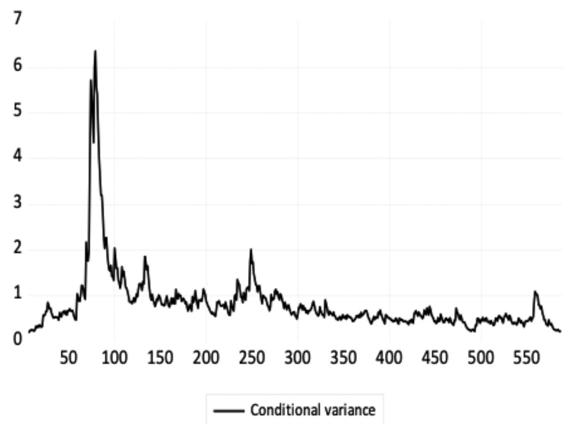


Figure 11: Variance of FTFBMS Index



Schwarz's information criterion was used to choose the model to utilize with the mean equation, as can be seen in Table 12 for the index KLSE. The variance equation was built using the error terms from the ARIMA (10, 0, 10) model. It is favorable that the conditional variance's low long-term volatility (β = 0.945501) is present. For the purposes of the study, it is critical that the coefficient reflecting the influence of COVID-19 on conditional variance, also known as volatility, is negative (-1.65E-08) at the 1% level of significance. Similarly, the EGARCH model adequately reflects the asymmetrical effects (γ≠0).

Table 12: EGARCH-X Model Results for KLSE index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	-0.018576		-0.545256
Variance Equation			
α_0	-0.171014***		-3.855490
α_1	0.207788***		4.222230
Γ	-0.087984***		-3.273321
B	0.945501***		35.67786
Π	-1.65E-08*		-1.599906
R^2	0.073419	Akaike info criterion	2.412248
Adjusted R^2	0.040148	Schwarz criterion	2.608353
Durbin-Watson stat	1.932691	Hannan-Quinn criter.	2.488715

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 12: Conditional Standard Deviation of KLSE Index

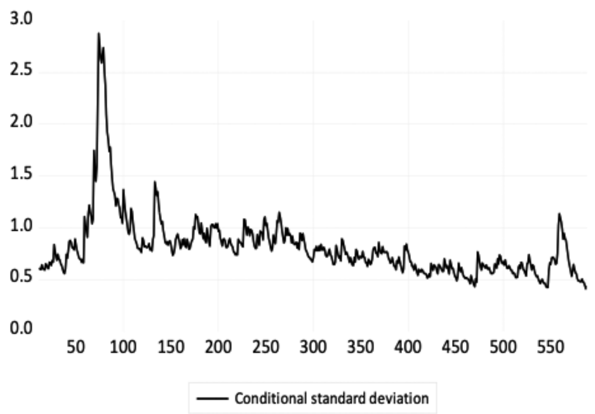
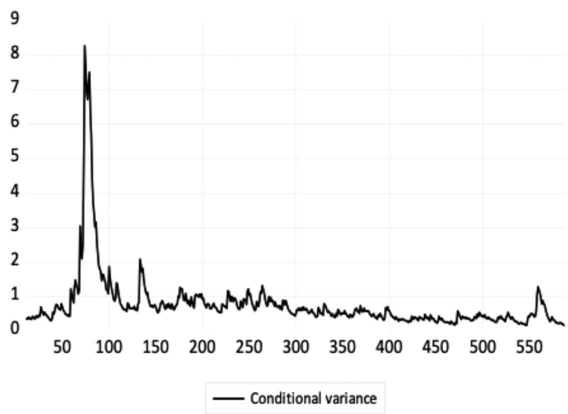


Figure 13: Variance of KLSE Index



As shown in Table 13 for the index NGSE30, the model to employ with the mean equation was chosen using Schwarz's information criterion. The error terms from the ARIMA (7, 0, 9) model were used to construct the variance equation. The low long-term volatility of the conditional variance (β = 0.414588) is advantageous. The coefficient representing the impact of COVID-19 on conditional variance, often known as volatility, must be negative (-3.29E-06) at the 1% level of significance for the study to be valid. The asymmetrical effects (γ≠0) are similarly well reflected by the EGARCH model.

Table 13: EGARCH-X Model Results for NGSE30 index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	-0.042524		-0.827596
Variance Equation			
α_0	-0.445023***		-5.318313
α_1	0.747392***		10.16061
Γ	0.188069***		3.625667
B	0.414588***		4.816823
Π	-3.29E-06***		-4.967580
R^2	0.095157	Akaike info criterion	2.375913
Adjusted R^2	0.069668	Schwarz criterion	2.540315
Durbin-Watson stat	1.988436	Hannan-Quinn criter.	2.439984

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 14: Conditional Standard Deviation of NGSE30 Index

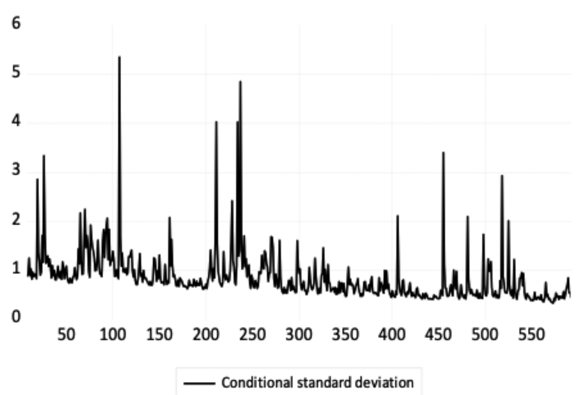
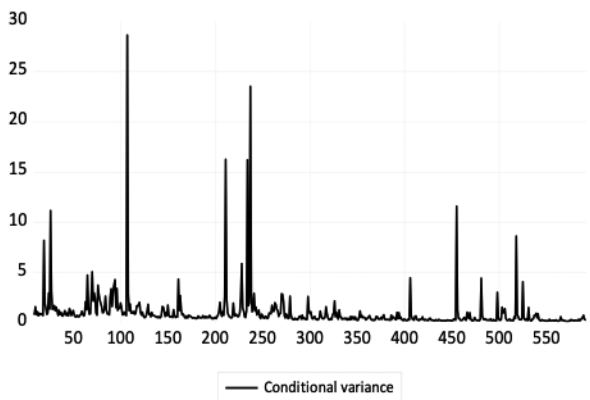


Figure 15: Variance of NGSE30 Index



Schwarz's information criterion was used to select the model to use with the mean equation, as indicated in Table 14 for the index NGSEINDEX. The variance equation was built using the ARIMA (9, 0, 5) model's error terms. It is favorable that the conditional variance has a low long-term volatility (β = 0.821182). For the study to be considered legitimate, the coefficient indicating the effect of COVID-19 on conditional variance, sometimes referred to as volatility, must be negative (-6.78E-07) at the 1% level of significance. The EGARCH model similarly captures the asymmetrical effects (γ≠0).

Table 14: EGARCH-X Model Results for NGSEINDEX index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	0.071910		1.432221
Variance Equation			
α_0	-0.315914***		-7.006150
α_1	0.423185***		8.595708
Γ	0.090884***		3.005153
Β	0.821182***		25.76668
Π	-6.78E-07***		-2.745497
R^2	0.102688	Akaike info criterion	2.280920
Adjusted R^2	0.080572	Schwarz criterion	2.430772
Durbin-Watson stat	1.897194	Hannan-Quinn criter.	2.339329

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 16: Conditional Standard Deviation of NGSEINDEX Index

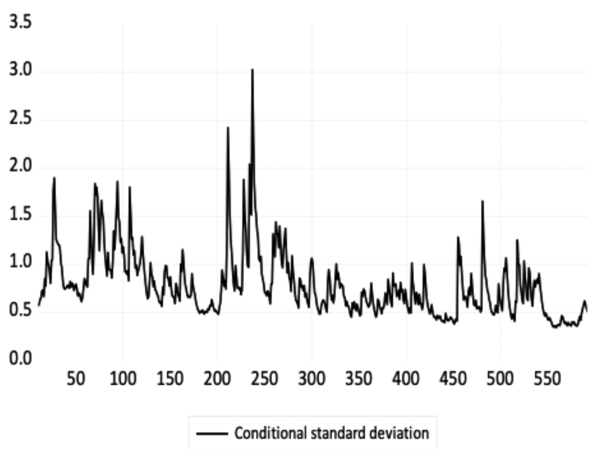
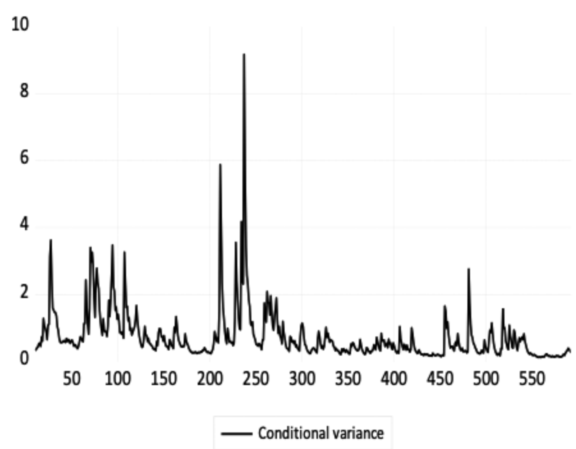


Figure 17: Variance of NGSEINDEX Index



As shown in Table 15 for the index NGSELOTUS, the model to employ with the mean equation was chosen using Schwarz's information criterion. The error terms of the ARIMA (9, 0, 5) model were used to construct the variance equation. It is advantageous that the conditional variance (β = 0.496643) has a low long-term volatility. The coefficient reflecting the effect of COVID-19 on conditional variance, often known as volatility, must be negative (-1.82E-06) at the 1% level of significance for the study to be deemed valid. The asymmetrical effects (γ≠0) are also captured by the EGARCH model.

Table 15: EGARCH-X Model Results for NGSELOTUS index

Variable	Coefficient	z-Statistic		
Mean Equation				
Constant	0.059852	1.364146		
Variance Equation				
α_0	-0.231234***	-4.177092		
α_1	0.509877***	7.487447		
Γ	0.166690***	3.054018		
B	0.496643***	6.598915		
Π	-1.82E-06***	-4.086065		
R^2	0.056147	Akaike info criterion		2.656399
Adjusted R^2	0.039760	Schwarz criterion		2.775650
Durbin-Watson stat	2.008520	Hannan-Quinn criter.		2.702867

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 18: Conditional Standard Deviation of NGSELOTUS Index

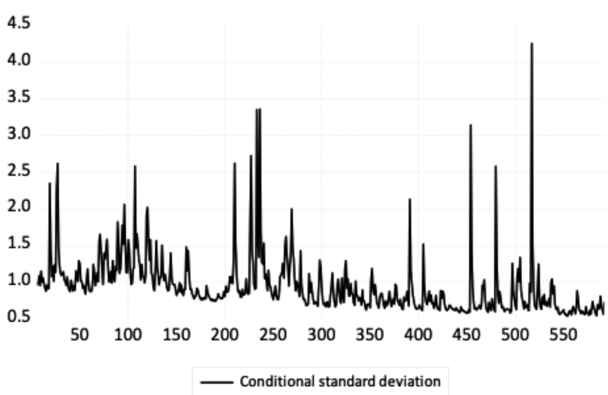
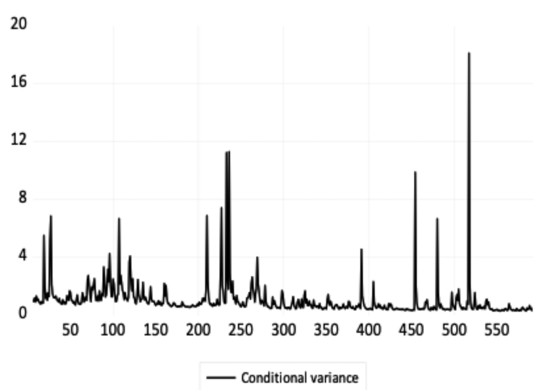


Figure 19: Variance of NGSELOTUS Index



The model to use with the mean equation was selected using Schwarz's information criterion, as shown in Table 16 for the index QS. The ARIMA (6, 0, 6) model's error terms were used to construct the variance equation. It is advantageous that the long-term volatility of the conditional variance (β = 0.971319) is minimal. Similarly, the EGARCH model adequately describes the asymmetrical effects (γ≠0) it is crucial for the study's goals that the coefficient indicating the impact of COVID-19 on conditional variance, also known as volatility, is positive (1.13E-07) at the 5% level of significance and it is just the index which is positive among all others.

Table 16: EGARCH-X Model Results for QSI index

Variable	Coefficient		z-Statistic
Mean Equation			
Constant	0.063036*		1.797547
Variance Equation			
α_0	-0.229527***		-5.454055
α_1	0.262795***		6.234832
Γ	-0.101947***		-4.992280
Β	0.971319***		73.81809
Π	1.13E-07*		1.700392
R^2	0.017180	Akaike info criterion	2.238736
Adjusted R^2	-0.003225	Schwarz criterion	2.372193
Durbin-Watson stat	1.998199	Hannan-Quinn criter.	2.290723

Note: IIn parenthesis are associative p-values. *, ** and *** are statistically significant at 10%, 5% and 1% respectively.

Figure 20: Conditional Standard Deviation of QSI Index

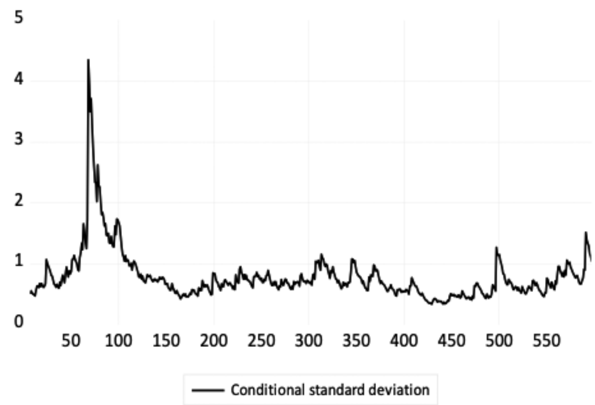


Figure 21: Variance of QSI Index

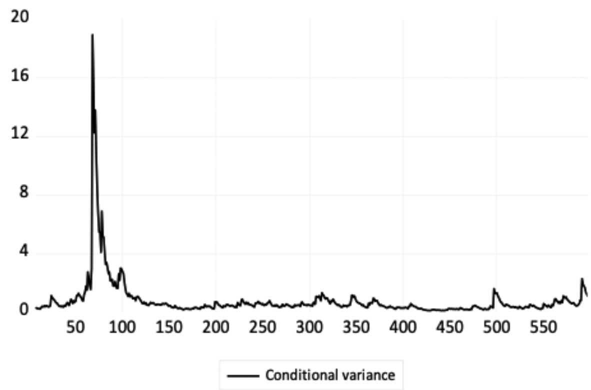


Table 17: The conclusion of EGARCH model

COUNTRY (INDEX)	EGARCH	PROB	SIGNIFI-CANT
INDONESIA	-	-	-
JAKARTA ISLAMIC (JKII)	-0.0000000139	0.0117	**
JAKARTA STOCK EXCHANGE COMPOSITE INDEX (JKSE)	-0.0000000225	0.0022	**
JAKARTA ISLAMIC 70 (JKII70)	-0.0000000124	0.0365	***
MALAYSIA	-	-	-
FTSE BURSA MALAYSIA HIJRAH SHARIAH (FTFBMHS)	-0.0000000125	0.0924	*
FTSE BURSA MALAYSIA EMAS SHARIAH (FTFBMS)	-0.0000000166	0.0442	**
FTSE MALAYSIA KLCI (KLSE)	-0.0000000165	0.1096	*
NIGERIA	-	-	-
NSE 30 (NGSE30)	-0.00000329	0	***
NSE ALL SHARE (NGSEINDEX)	-0.000000678	0.006	***
NSE LOTUS ISLAMIC (NGSELOTUS)	-0.00000182	0	***
PAKISTAN	-	-	-
ALL SHARES ISLAMIC INDEX OF PAKISTAN (KMIAS)	0.00E+00	1	-
KARACHI 100 (KSE)	0.00E+00	1	-
QATAR	-	-	-
QE AL RAYAN ISLAMIC (QERI)	-0.00000014	0.1418	-
QE GENERAL (QSI)	0.000000113	0.0891	*
USA	-	-	-
DOW JONES ISLAMIC MARKET INTERNATIONAL TITANS 100 (DJI100X)	0.00E+00	1	-
NASDAQ 100 (NDX)	0.00E+00	1	-
S&P 500 (SPX)	0.00E+00	1	-

After running the test for all indexes, we can say that the result statistically significant at 10%, 5% and 1% respectively for some of the indexes, however it was not significant for indexes in a country like, US, Pakistan, and one of the indexes in Qatar as it is shown in the table 17. The test shows us the uncertainty and volatility of each indexes. Moreover, all the result was negative except the QSI index which was positive. We can see that the most affected index in Indonesia was not one of the Islamic indexes as JKII was affected by (-0.0000000139) also the JKII70 index was affected by (-0.0000000124) which lower than JKSE index by (-0.0000000225) which represent the Convectional index. In addition to that, that was the case in Malaysia as the Islamic index FTFBMHS was the least affected one by (-0.0000000125) on the other hand one of the Islamic indexes and the representative of conventional index were affected almost the same, FTFBMS index by (-0.0000000166) and the index KLSE by (-0.0000000165). Nevertheless, that was not the case in Nigeria as it was one of the conational indexes affected less than the other two one of the was the Islamic one and the index NGSEINDEX (-0.000000678) and NGSELOTUS index which represent the Islamic one was less affected than NGSE30 which was affected by (-0.00000329). last but not least the uncertainty of QSI which the index in Qatar was (0.000000113) it was positive one which was just the one like this among others. By overall looking we can that Nigerian indexes were affected the most among others which include the Islamic and the conventional, moreover the least affected by the uncertainty was in Indonesia and Malaysia and the Islamic indexes in general were better. And maybe because of the Shariah standers of the Islamic indexes which in general agree with some points such as the cash on deposit in interest-bearing securities may not exceed thirty percent (30%) of the market value of the whole equity of the Company. Also, the usurious debt must not exceed 30% of the market value of the company. the total market value of illiquid assets must not exceed 30% of the total market value of assets which make the advantage among others.

6. Conclusion

The Covid-19 pandemic, which initially surfaced in January 2020, has had a significant negative influence on the financial sector globally. Of course, one the sectors were affected Islamic stock markets. The Islamic financial services market is witnessing rapid growth and increasing interest in all countries, especially after the mortgage financial crisis, which highlighted the importance of ethical and social investments as more system-enhancing means.

The objectives of this research are to study Islamic stock indexes during the time of Covid-19 extensively and compare it with conventional stock indexes. Our research aims to analyse how stock returns indexes of Islamic and conventional have been affected by COVID-19. So, in other word, the research objected to analyse the effect of COVID-19 on the returns and volatility of Islamic and conventional stocks indexes by using ARIMA-X and EGARCH-X models. In keeping with this objective, the Islamic and conventional stocks indexes were used to estimate the financial stock return, and the dummy variable as of number of everyday cases of each country was used to estimate the effect of COVID-19.

The study examined the uncertainty and volatility of both Islamic and conventional stock indexes before, during the Covid-19 crisis. In addition to comparing Islamic stock market with others and the impact of this pandemic on them. Is Islamic finance and banking the solution instead of the traditional system in such circumstances? As they said in some paper that The Islamic financial system is a safe haven during crises

We found that the result was statistically significant at 10%, 5% and 1% respectively for some of the indexes, however it was not significant for indexes in a country like, US, Pakistan, and one of the indexes in Qatar.

By overall looking we can that Nigerian indexes were affected the most among others which include the Islamic and the conventional, moreover the least affected by the uncertainty was in Indonesia and Malaysia and the Islamic indexes in general were better. And maybe because of the Shariah standers of the Islamic indexes which in general agree with some points such as the cash on deposit in interest-bearing securities may not exceed thirty percent (30%) of the market value of the whole equity of the Company. Also, the usurious debt must not exceed 30% of the market value of the company. the total market value of illiquid assets must not exceed 30% of the total market value of assets which make the advantage among others.

We can conclude that Islamic stock indexes were affected like others by the COVID-19, even thought it was better in some countries and that might be because of the general condition of the country itself or maybe because of the standers some indexes have more than others.

Although we believe that this research filling the academic gap and was helpful for the investors both of them Muslim and non-Muslim, however much search should be done in future for this area it is worth it to be study such as sectoral area for example Islamic and conventional banks or insurance companies like Takaful compare it with the conventional insurance companies.

The limitation of this research was that there was no data at the beginning of COVID-19 and the COVID-19 did not completely finish yet that is why the prediction of the future was hard. Also, the data for some countries were not equal as the opening of the stock indexes were not the same for all country such as the bank holidays, so the observations numbers were varied from one country to another one. Even though in some country two indexes were not the same with each other.

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Appendices

Table A: The selected Islamic and Conventional indexes

Country	Islamic index	Symbol	Conventional index	Symbol	Observations
Indonesia	Jakarta Islamic 70	JKII70	---	---	582
Indonesia	Jakarta Islamic	JKII	---	---	582
Indonesia	---	---	Jakarta Stock Exchange Composite Index	JKSE	582
Malaysia	FTSE Bursa Malaysia Hijrah Shariah	FTFBMHS	---	---	588
Malaysia	FTSE Bursa Malaysia EMAS Shariah	FTFBMS	---	---	588
Malaysia	---	---	FTSE Malaysia KLCI	KLSE	588
Nigeria	---	---	NSE 30	NGSE30	592
Nigeria	---	---	NSE All Share	NGSEINDEX	592
Nigeria	NSE Lotus Islamic	NGSELOTUS	---	---	592
Pakistan	All Shares Islamic Index of Pakistan	KMIAS	---	---	597
Pakistan	---		Karachi 100	KSE	597
Qatar	QE Al Rayan Islamic	QERI	---		597
Qatar			QE General	QSI	597
USA	Dow Jones Islamic Market International Titans 100	DJI100X	---	---	624
USA	---	---	S&P 500	SPX	624
USA	---	---	Nasdaq 100	NDX	624

AUTHORS' PERCENTAGE-BASED CONTRIBUTION

The contributions of each author to the study by percentages are as follows:

The percentage-based contributions of the 1st author and 2nd author are 75 %, and 25 %, respectively.

1st Author: Conceptualization, methodology, formal analysis, investigation, resources, writing-original draft, writing-review & editing, and visualization.

2nd Author: Conceptualization, and supervision.

DECLARATION OF CONFLICTING INTERESTS

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ETHICAL APPROVAL OF THE STUDY

All rules within the scope of "Instruction on Research and Publication Ethics for the Higher Education Institutions" were observed throughout the study. No actions mentioned in the Instruction's second chapter titled "Actions Against to Scientific Research and Publication Ethics" were taken in the study.