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# ISLAMIC CAPITAL MARKET-GROWTH NEXUS PRE AND POST IFSA 2013: EMPIRICAL EVIDENCE FROM MALAYSIA



 Ainatul Aqilah Kamarudin <sup>(a)1</sup>  Jarita Duasa <sup>(b)</sup>  Salina Kassim <sup>(c)</sup>  Riasat Amin Imon <sup>(d)</sup>

<sup>(a)</sup> PhD Candidate, Department of Economics and Management Sciences, International Islamic University Malaysia, Malaysia; E-mail: [ainatul.aqilah2@gmail.com](mailto:ainatul.aqilah2@gmail.com)

<sup>(b)</sup> Professor, Department of Economics and Management Sciences, International Islamic University Malaysia, Malaysia; E-mail: [jarita@iiu.edu.my](mailto:jarita@iiu.edu.my)

<sup>(c)</sup> Professor, Institute of Islamic Banking and Finance, International Islamic University Malaysia, Malaysia; E-mail: [ksalina@iiu.edu.my](mailto:ksalina@iiu.edu.my)

<sup>(d)</sup> Assistant Professor, Department of Economics and Management Sciences, International Islamic University Malaysia, Malaysia; E-mail: [riasat@iiu.edu.my](mailto:riasat@iiu.edu.my)

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## ABSTRACT

*This study examines the relationship between Islamic capital market and Malaysian real economic growth pre and post IFSA 2013 from 2007 to 2019. This study adopts both quantitative and qualitative analysis, where Autoregressive Distributed Lag (ARDL) method of cointegration is adopted for the quantitative analysis, while interview session is adopted for the qualitative analysis. The findings found that the link between Shari'ah-compliant Securities (SCS) and the real economic growth is negatively significant, while the link between Shari'ah-compliant Market Capitalization (SCMC) and the real economic growth is positively significant in both short and long runs. It is also shown that IFSA 2013 does assist the Islamic capital market sector to improve the real economic growth in Malaysia via its rules and regulations, as the coefficients and significance of the real economic growth as proxied by the industrial production index (IPI) are improving with the implementation of IFSA 2013. Besides, the qualitative results of the study have shown that Islamic capital market does promote economic growth by ensuring stability in the market and significantly contributing to the environmental, social and governance (ESG) via the implementation of SRI Sukuk, Bond Grant Scheme, ESG Financing/Sukuk, and value-based judgement projects. The work gives some insights into the field of Islamic capital market-growth nexus from the perspective of a developing country, which is Malaysia. It also delves further into the Islamic capital market-growth nexus by considering the effect of IFSA 2013.*

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## INTRODUCTION

According to both the State of the Global Islamic Economy Report (2022) and the World Islamic Economic Forum Foundation (2020), Malaysia, a Muslim-majority nation with a slightly over 30 million a total population, is regarded as the world front-runner in the Islamic financial sector. It leads the rankings for the Global Islamic Economics Indicator (GIEI) for that industry, followed by the Saudi Arabia and United Arab Emirates (UAE). The Islamic finance sector is expanding robustly in line with the growing number of the world Muslim population, which is projected to reach \$128 billion by the end of the year 2025 (State of the Global Islamic Economy Report, 2022). Furthermore, the study adds that the Islamic financial assets' value grew by 8.0 percent in 2022 and is expected to reach \$4.9 trillion in 2025 at a 7.9 percent of annual growth rate (CAGR) for four consecutive years. The report adds that the Islamic finance market size contributes most to the overall Islamic economy market size. Currently, the sector's potential is recognized by both Muslim majority and minority nations.

"The expanding financial and capital market system, together with remarkable economic development, has drawn attention to investigate the nexus of finance and growth. In the field of economic development, the finance-growth nexus has been a significant topic for the last few years. This nexus can be traced back to Joseph Schumpeterian studies in the

<sup>1</sup>Corresponding author: ORCID ID: 0000-0002-3594-6264

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early 20<sup>th</sup> century and later to Robinson (1952), Goldsmith (1969), Shaw (1973), and McKinnon (1982), who showed the value of financial liberalization in boosting local investments and savings." The finance-growth nexus has been the subject of empirical study in the long run, with notable contributions from Roubini and Sala-I-Martin (1992) and King and Levine (1993), who have demonstrated that well-established financial sectors can lead to better allocation of financial resources towards creativity and productivity, which in turn positively contributes to economic growth.

This article is organized into five sections. The first section, the Introduction, explains the background of the study. Section 2, the Literature Review, appraises theoretical and empirical backgrounds on the mechanism of the financial sector that influences economic growth. Section 3, the Methodology, provides details of the data and its sources and explains the model and all variables employed in this study. Section 4, the Results and Discussions, presents empirical analyses and results of the study on the relevance of Islamic financial sector development on the real sectors of the economy, considering the implementation of IFSA 2013. Finally, Section 5, the Conclusion, summarizes and concludes the findings, explains the shortcomings and limitations of this study, and provides suggestions for future research.

## LITERATURE REVIEW

Theoretically, a well-developed stock market should stimulate economic growth by reducing transaction costs, promoting savings, and improving the allocation of resources. Additionally, increasing market liquidity through risk sharing is also important as it can lower capital costs. Several studies have analyzed the relationship between the stock market and economic growth, including Atje and Javanovic (1993), Obstfeld (1994), Levine and Zervos (1996), Bencivenga et al. (1996), Singh (1997), Levine and Zervos (1998), Rousseau and Wachtel (2000), Arestis et al. (2001), Henry (2003), and many others. While some of these studies support a positive link between the stock market and economic growth, others have rejected it.

For example, studies led by Bencivenga et al. (1996), Levine and Zervos (1996, 1998), and Rousseau and Wachtel (2000) have shown that a liquidity shortage is eased by stock markets, which in turn leads to growth. It is also concluded that an increase in private physical investment will lead to the liberalization of the stock market, which in turn leads to an increase in per-worker output (Henry, 2003). Additionally, it is argued that both stock markets and banks have a positive impact on growth, but compared to stock markets, banks lead to greater efficiency gains. Furthermore, Mun (2009), who explored the causal links between the stock market and the Malaysian economy, discovered that the stock market Granger-caused economic activity in Malaysia, with no observed reversal causality. The results also show that the longest significant lag length is two years.

In addition, Nurudeen (2009) suggested in his study that in Nigeria, stock market development, which is measured by the market capitalization-GDP ratio, increases economic growth. In Mauritius, Nowbutsing and Odit (2009) found that the nexus between the stock market and growth is positive in both the short and long run. Moreover, Cooray (2010) found that policy measures taken to increase the liquidity, size, and activity of the stock market will further enhance economic growth across 35 developing economies. It has also been found that stock markets positively affect the economic growth of some countries in which their stock markets are more liquid and active (Boubakari & Jin, 2010).

On the contrary, it has been found that stock markets have a greater growth effect compared to banks (Atje & Javanovic, 1993). Besides that, it has also been proven that global financial integration leads to increases in growth via increases in welfare gains (Obstfeld, 1994). However, there have been several studies that disagree with the notion that stock markets can stimulate growth. For instance, Devereux and Smith (1994) suggest that increases in stock market integration led to greater risk sharing, which in turn can lead to a fall in economic growth, while Singh (1997) contends that stock market volatility does not contribute to growth in developing countries because it can worsen macroeconomic instability. Furthermore, the results of a study led by Arestis et al. (2001) discovered that while both stock markets and banks can promote economic growth, the effects of banks are more powerful. They also found that the stock market's contribution to economic growth may have been exaggerated by studies that employed cross-country growth regression. Meanwhile, Levine and Zervos (1998) opine that the volatility, size, and international integration of stock markets are not strongly linked to growth. Therefore, in the empirical literature on economic growth, the stock market-growth nexus remains a subject of debate.

On the other hand, due to the lack of data availability, there is still a lack of empirical studies on the link between the Islamic stock market or Islamic capital market in general and economic growth. Additionally, the studies in this area have mostly been theoretical (Mustafa et al., 2017). For instance, Ahmad and Alawode (2017) has notionally explained that Sukuk is important for economic development in terms of fiscal support, liquidity management, education, health, infrastructure, as well as the environment. He further explained that Islamic investment funds will enable pooling of resources to invest in a diverse range of Shariah-compliant securities and instruments, facilitate effective mobilization of funds to participate in various sectors and create more wealth in the economy, provide different fund structures to suit specific needs, requirements, and preferences, and create opportunities for cross-border linkages and businesses.

To empirically test the view that Islamic finance and economic growth are positively linked, Echhabi et al. (2018) examined the link between Sukuk issuance and economic growth, as proxied by three variables: Gross Capital Formation (GCF), Gross Domestic Product (GDP), and trade activities. The study used data that covered not only the Gulf Cooperation Council (GCC) but also other countries, including Indonesia, Malaysia, Pakistan, Turkey, China, Singapore, Kazakhstan, Brunei, the United Kingdom (UK), Germany, France, and Gambia. The data were gathered from the World Bank databases and the Islamic Finance Information Services (IFIS) and were analyzed using the Toda and Yamamoto Granger Causality test. The study's results indicated that Sukuk issuance positively influenced GCF and GDP only when all the countries were considered together; otherwise, no impact was found for the GCC and Saudi Arabia.

Furthermore, Al Fathan and Arundina (2019) have explored the causal link between Islamic finance and economic

growth in Indonesia. The Islamic finance is proxied by Islamic banking, Islamic stock market, and sukuk market, using quarterly data from 2002Q3 to 2017Q4. To analyze the causal link between Islamic finance and economic growth, as well as amongst the three main sub-sectors of Islamic finance, the study employed a vector autoregressive (VAR) model, granger causality, and impulse response function. The study found that the sukuk market development follows the supply-leading hypothesis, whereas both Islamic stock market and Islamic banking development support the neutrality hypothesis. Additionally, the study found a unidirectional causality from sukuk market development to Islamic stock market development and from sukuk market development to Islamic banking development.

In their studies, Nawaz et al. (2019) found a bidirectional relationship between Islamic asset financing and population, implying that the population reinforces Islamic finance and attracts Islamic financing. Additionally, a well-functioning Islamic financial system boosts economic growth. However, this study has a limitation as it ignores the fact that economic development is influenced by a range of variables beyond Islamic financing, such as gross fixed capital formation, foreign direct investments, and market capitalization. Current studies by Musa et al. (2020), Tan and Shafi (2021), Naz and Gulzar (2022), and Yani et al. (2022) have found that the Islamic capital market has a positive impact on Malaysian economic growth through equity-based financing.

This study aims to address a gap in the literature on the Malaysian Islamic capital market-growth nexus by considering the effect of IFSA 2013. The article offers a deeper analysis of the Islamic capital market-growth nexus for the period of 2007-2019 (quarterly), covering the most recent pre-Covid 19 data to ensure the findings are new and current without being distorted by the Covid-19 situation. This study has three objectives: 1) to examine the Islamic capital market-growth nexus in the absence of IFSA 2013, 2) to examine the Islamic capital market-growth nexus in the presence of IFSA 2013, and 3) to observe whether the Islamic capital market is fulfilling the goals of Islamic economics.

## MATERIALS AND METHODS

### Data Sources and Variables

This study uses the total SCMC to calculate the size of the Islamic capital market. The hypothesis behind this calculation is that the overall market size is positively associated with the capability to diversify risk and organize capital on an economy-wide basis. In addition, the total number of SCS is used to calculate market liquidity, complementing the market capitalization ratio. The hypothesis behind this calculation is that there may be little trading even though the market is large. PI, TB, and INF are included as controlled variables, and IPI is used as the dependent variable as a proxy for economic growth.

Table 2 in the Appendix shows the data used in the study. To ensure meaningful analysis, the data for all variables are transformed into natural logarithms, except for PI and INF, which are rates and contain negative values, and therefore cannot be logged because  $\ln(x)$  is mathematically undefined for  $x < 0$ ; it is defined only for  $x > 0$  (Osborne, 2010). The variables are chosen in accordance with previous research in this field, including Agarwal and Mohtadi (2011), Enisan and Olufisayo (2009), as well as Nowbutsing and Odit (2009). This analysis uses quarterly data from 2007 to 2019.

### Estimating Model

In terms of model construction for the first objective, the following equations (1) and (2) are developed and generally used for the analysis:

$$\ln(IPI)_t = \beta_0 + \beta_1 \ln(SCS)_t + \beta_2 \ln(TB)_t + \beta_3 (PI)_t + \beta_4 (INF)_t + \mu_t \quad (1)$$

$$\ln(IPI)_t = \beta_0 + \beta_1 \ln(SCMC)_t + \beta_2 \ln(TB)_t + \beta_3 (PI)_t + \beta_4 (INF)_t + \mu_t \quad (2)$$

The following models with the inclusion of a dummy variable will represent the second objective's model construction:

$$\ln(IPI)_t = \beta_0 + \beta_1 \ln(SCS)_t + \beta_2 (DUM)_t + \beta_3 \ln(TB)_t + \beta_4 (PI)_t + \beta_5 (INF)_t + \mu_t \quad (3)$$

$$\ln(IPI)_t = \beta_0 + \beta_1 \ln(SCMC)_t + \beta_2 (DUM)_t + \beta_3 \ln(TB)_t + \beta_4 (PI)_t + \beta_5 (INF)_t + \mu_t \quad (4)$$

Where,

$\ln(IPI)_t$  = Natural Logarithm of Industrial Production Index at time t.

$\ln(SCS)_t$  = Natural Logarithm of Total Shari'ah-Compliant Securities at time t.

$\ln(SCMC)_t$  = Natural Logarithm of Total Shari'ah-Compliant Market Capitalization at time t.

$\ln(TB)_t$  = Natural Logarithm of Trade Balance at time t.

$(PI)_t$  = Year on year changes of Private Investment at time t.

$(INF)_t$  = Inflation rate at time t.

$(DUM) = 1$  refers to variable that has been reclassified, 0 means otherwise.

$\mu_t$  = Residual of model over the time or error terms.

$\beta_0$  = constant or intercept.

$\beta_j$  = Coefficients of determinations.

t = denotes the time dimension

For objective 1 and 2, this study adopts the ARDL bounds testing method, couples with relevant diagnostic analyses, which include LM Auto-Correlation Test, Ramsey Reset, Cumulative Sum of Recursive Residuals (CUSUM) and the CUSUM of Squares (CUSUMSQ) stability evaluations, Autoregressive Conditional Heteroscedasticity (ARCH), and Multicollinearity Tests to ensure the regression model is valid as a predictor. The complete steps for the ARDL testing are exemplified as follows:

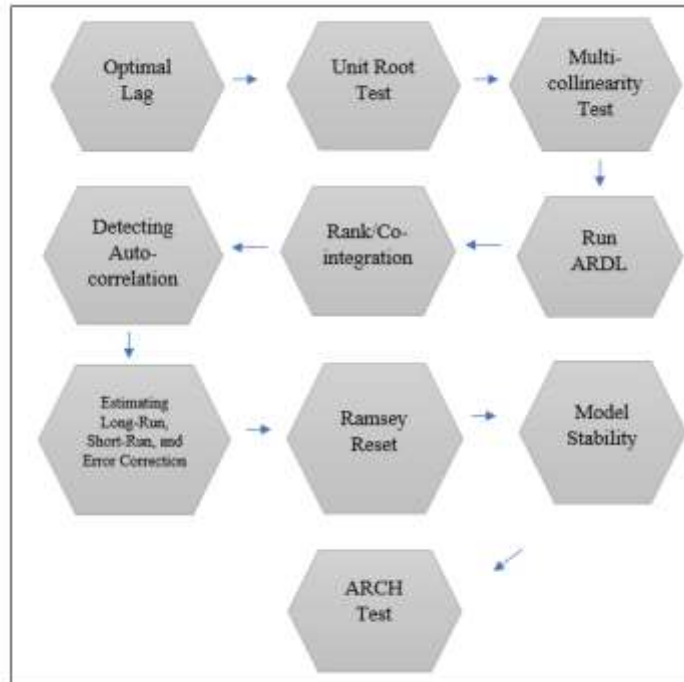


Figure 1. Steps for ARDL Analysis

For the third objective, a qualitative content analysis is being adopted, in which the interview texts are transcribed. In selecting suitable respondents for the interview, the study uses a judgmental sampling method, choosing individuals who possess exposure, knowledge, and expertise in the related field. For this research, three experts from various fields of academics and industries were selected, and their names are recorded in Table 3.

While the interviewees from Elzar Shari’ah Solution Sdn. Bhd. and HSBC Amanah Malaysia were interviewed verbally via an online platform (video call meeting), the interviewees from International Islamic Liquidity Management Corporation opted to provide a written interview due to their limited time for verbal interviews.

## RESULTS AND DISCUSSIONS

### Result from Optimal Lag order

According to Arshed and Abduqayumov (2016), the optimal lag order must be determined first before running the regression because it will be used in the unit root test and the ARDL estimation. The optimal lag order is determined via the Vector Auto Regressive (VAR) Specification Order Criterion.

### *Islamic Capital Market Sector in the Absence of IFSA 2013*

Table 4 depicts the results for the optimal lag length selected by several criteria, including sequential modified LR test statistic (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ), for the Islamic capital market sector in the absence of IFSA 2013. Each test is at a 5% significance level. For all models, which include SCS and SCMC models, 4 out of 5 criteria - LR, FPE, AIC, and HQ - select lag 6 as the optimal lag. Hence, lag 6 is chosen as the optimal lag length for all models for the Islamic capital market sector in the absence of IFSA 2013.

### *Islamic Capital Market Sector in the Presence of IFSA 2013*

Table 5 presents the results for the optimal lag length selected by several criteria, including LR, FPE, AIC, SC, and HQ, for the Islamic capital market sector in the presence of IFSA 2013. Each test is at a 5% significance level. For the SCS model, three out of the five criteria (FPE, AIC, and HQ) select lag 6 as the optimal lag. Meanwhile, for the SCMC model, four out of the five criteria (LR, FPE, AIC, and HQ) also select lag 6 as the optimal lag. Therefore, lag 6 is chosen as the optimal lag length for both models of the Islamic capital market sector in the presence of IFSA 2013.

### *Unit Root Test*

The first and most essential test in time-series analysis is assessing the unit-root or stationarity of variables. Stationarity of the variables is established using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit-root tests. The advantage of these tests is that they allow for a wide class of autocorrelated and mildly heterogeneous series. The test is



conducted in both the log level and first difference, and in both cases, it uses an intercept and trend and an intercept. To be consistent with the research objectives, the unit-root test is undertaken for three different periods.

Table 6 displays the results of the unit-root test analysis through ADF and PP methods for the Islamic capital market sector, which utilizes quarterly data from 2007 to 2019. The ADF test results exhibit that the null hypothesis of the existence of a unit-root is rejected at the level for only LN TB, PI, and INF, hence they are stationary at level or I (0). Meanwhile, for the rest of the variables, which include LN IPI, LN SCS, and LN SCMC, and DUM, they are stationary at first difference or I (1). The PP test produces results like those of the ADF test. This paper continues to examine whether long-run equilibrium exists amongst the variables by conducting the bound test.

These results show that some variables behave as random walks, which means that the historical data of these variables cannot be used to predict the future trends. Furthermore, given such outcome, it is valid for this analysis to employ ARDL method because of the combination of I (0) and I (1) variables. Confirming the data suitability by unit-root test for the ARDL analysis, this paper continues to examine whether long-run equilibrium exists amongst the variables by conducting the bound test.

### **Result from Multicollinearity Test**

#### ***Islamic Capital Market-Growth Nexus in the Absence of IFSA 2013***

Table 7 presents the results of the multicollinearity test for the Islamic capital market-growth nexus in the absence of IFSA 2013. As noted by Daoud (2017), multicollinearity occurs when the value of the centered VIF is greater than 10. If the value is less than 10, the variables are moderately correlated but within an acceptable range. Multicollinearity does not exist if the centered VIF value is equal to 1.

The results indicate that both SCS and SCMC models have centered VIF values within an acceptable range, which is less than 10 but slightly greater than 1, indicating that the variables are moderately correlated. Therefore, there is no issue of multicollinearity for both the Islamic banking and Islamic capital market sectors in the absence of IFSA 2013.

#### ***Islamic Capital Market-Growth Nexus in the Presence of IFSA 2013***

The results presented in Table 8 indicate that both SCS and SCMC models have a centered VIF value of less than 10, which is within the acceptable range of 1 to 8. This suggests that the variables are moderately correlated and, as a result, the problem of multicollinearity does not exist for both the Islamic banking and Islamic capital market sectors in the presence of IFSA 2013.

### **Result from the Bound Tests**

Following the unit root test results, this study employs the ARDL technique to analyse the cointegration between variables. The initial step in ARDL is to verify the existence of a long-run relationship between the dependent and independent variables using bound testing processes on conditional unrestricted error correction models (UECM). The bound test primarily sets  $k$  (lag-length), with trend and constant, as an automatic choice for all lag orders. Then, it applies the joint significance test (F-statistic) to check the long-run parameters.

This study uses two asymptotic critical-value bounds, where the lower critical value assumes that the regressors are I (0), and the upper critical value assumes that they are purely I (1). If the F-statistic exceeds the upper critical value, the null hypothesis can be rejected, and the applied variables are cointegrated. This also means that if the test result remains within the two bounds, the result is inconclusive, and further assessment of the integration order of variables is necessary to determine whether variables are I (0) or I (1).

The outcomes of bounds tests, computed F-statistics, are displayed in Table 9 with LN IPI as the dependent variable. Comparing the calculated F-statistics for the ICM model in the absence of IFSA 2013 with the critical bounds value suggested by Narayan (2004), the findings identify that the SCS model is cointegrated at the 10% level of significance. This is shown by the estimated F-statistics being higher than the 10% level of significance's upper critical bounds ( $3.152 > 3.09$ ). On the other hand, the SCMC model is found to be cointegrated at the 5% level of significance, as the estimated F-statistics are higher than the 5% level of significance's upper critical bounds ( $6.991 > 4.37$ ). This suggests that the variables are cointegrated, indicating a long-run relationship among the variables of the Islamic capital market in the absence of IFSA 2013. This suggests that there is a tendency for the variables to move together towards a long-run equilibrium. Meanwhile, the selection of lag length is based on statistical information criteria and diagnostic tests.

Similarly, in the presence of IFSA 2013 with the critical bounds value suggested by Narayan (2004), the findings show that the SCS model is cointegrated at the 5% level of significance. This is because the estimated F-statistics are higher than the upper critical bounds of the 5% level of significance ( $5.010 > 4.37$ ). On the other hand, the SCMC model is found to be cointegrated at the 10% level of significance, as the estimated F-statistics are higher than the upper critical bounds of the 10% level of significance ( $3.228 > 3.09$ ). This suggests that the variables are cointegrated, which implies the existence of a long-run relationship among the variables of the Islamic capital market in the presence of IFSA 2013. This indicates a tendency for the variables to move together towards a long-run equilibrium. Meanwhile, the selection of lag length is based on statistical information criteria and diagnostic tests.

The result of the bound test, as measured against Narayan's critical-value bounds, indicates evidence of cointegration for the observation period. Therefore, there is a long-run relationship among the variables in the aggregate system.

## Result of the Long-Run Relationship

### *ARDL Estimate of Long-Run Relationship in the Absence of IFSA 2013*

In Table 10 below presents the results for the ICM sector, which consists of both the SCS (as a proxy for Islamic capital market liquidity) and SCMC (as a proxy for Islamic capital market size) models. For the SCS model, a 1% increase in Shari'ah-compliant securities will decrease long-run real economic growth by 0.619%, and this link is significant at a 5% significance level. This result is consistent with the study of Chu and Chu (2020), who found that excessive liquidity can negatively affect economic growth, and the growth-enhancing effect of financial liquidity is more robust in high-income countries. This is supported by the studies of Acharya and Viswanathan (2011), He and Xiong (2012), and Ghenimi et al. (2017), which suggest that excessive credit supplied (liquidation) by financial intermediaries can lead to the deterioration of the balance sheet's quality and, hence, to the financial system's instability in the long run. On the other hand, for the SCMC model, a 1% increase in Shari'ah-compliant market capitalization will increase long-run real economic growth by 0.173%, and this link is significant at a 1% significance level. The overall results show that only the SCMC model adheres to the supply-leading hypothesis in the long run. This result is consistent with the studies of Musa et al. (2020) and Tan and Shafi (2021), which suggest that economic growth intensifies as the Islamic capital market size increases. Meanwhile, the link between trade balance, private investment, and inflation and real economic growth is found to be insignificant for both models, except for TB in the SCS model, where it is found that the link between trade balance and real economic growth is positive at a 10% significance level.

Meanwhile, the details of the diagnostic test run on the residuals of the long-run equation are presented in the Appendix. In general, no issues are detected. For serial autocorrelation, the Breusch-Godfrey Lagrange-Multiplier (LM) test indicates that the null hypothesis of no serial autocorrelation is accepted. The Breusch-Pagan-Godfrey test for heteroscedasticity shows that, in general, there is no evidence of heteroskedasticity. Meanwhile, the test for checking the model specification, i.e., the Ramsey RESET, specifies that the model has no evidence of any misspecification. Based on the CUSUM, as well as the CUSUM square, the cumulative sum of the recursive residuals is clearly within the boundaries, confirming the stability of the long-run coefficients of the regressors.

### *ARDL Estimate of Long-Run Relationship in the Presence of IFSA 2013*

IFSA 2013 does not repeal the Capital Markets and Services Act 2007 (CMSA) but instead further supports the act in governing the Islamic capital market in Malaysia by ensuring the stability and soundness of the Islamic foreign exchange market, Islamic money market, and Islamic financial institutions, as stated in Part X of IFSA 2013. The policy document for the Islamic capital market became effective on February 14, 2014. Like the previous section, this analysis investigates the long-run relationship of the aggregate system to provide detailed insight into the relationship between the dependent variable and independent variables. Specifically, the responses of LN IPI to other variables are analyzed, given evidence of cointegration between the variables, which is confirmed by the outcome of the bound test.

The results for ICM sector in the presence of IFSA 2013, which consists of both SCS and SCMC models are presented in Table 11. For SCS model, a 1% increase in Shari'ah-compliant securities will decrease the long-run real economic growth by 0.358%, and the link is significant at 1% significance level. Like Islamic capital market-nexus in the absence of IFSA 2013, this result is consistent with the study of Chu and Chu (2020), who found that excessive liquidity can negatively affect economic growth. Furthermore, the growth-enhancing effect of financial liquidity is more robust only in high-income countries, as supported by the studies of Acharya and Viswanathan (2011), He and Xiong (2012), and Ghenimi et al. (2017). These studies propose that excessive credit supplied (liquidation) by financial intermediaries can lead to the deterioration of balance sheet quality, and hence, lead to financial system instability in the long run. However, in the presence of IFSA 2013, the decrease in growth by a 1% increase in Shari'ah-compliant securities is lower compared to when IFSA 2013 is absent ( $-0.536 < -0.358$ ). The IFSA effect, depicted by the dummy variable, is significant at the 1% significance level. On the other hand, for the SCMC model, a 1% increase in Shari'ah-compliant market capitalization will increase the long-run real economic growth by 0.295%, compared to 0.256% in the absence of IFSA 2013 ( $0.295 > 0.256$ ). The link is significant at the 1% significance level, in which the dummy (IFSA effect) is significant at the 10% significance level. The overall results show that only the SCMC model adheres to the supply-leading hypothesis in the long run, and the Islamic capital market-growth nexus is enhanced by IFSA 2013. This result is consistent with the studies of Musa et al. (2020) and Tan and Shafi (2021), which suggest that economic growth intensifies as the Islamic capital market size increases. Meanwhile, the link between trade balance, private investment, and inflation and real economic growth is found to be insignificant for both models, except for TB in the SCS model, where it is found that the link between trade balance and real economic growth is positive at the 10% significance level.

Meanwhile, the details of the diagnostic test conducted on the residuals of the long-run equation are presented in the Appendix. In general, no issues were detected. For serial autocorrelation, the Breusch-Godfrey Lagrange-Multiplier (LM) test indicates that the null hypothesis of no serial autocorrelation is accepted. The Breusch-Pagan-Godfrey test for heteroscedasticity also shows that there is generally no evidence of heteroskedasticity. Meanwhile, the test for checking the model specification, which is the Ramsey RESET, specifies that the model has no evidence of misspecification. Based on CUSUM as well as CUSUM square, the cumulative sum of the recursive residuals is clearly within the boundaries, hence confirming the stability of the long-run coefficients of regressors.

## Result of the Short-Run Relationship

### *ARDL Estimate of Short-Run Relationship in the Absence of IFSA 2013*

To provide a detailed insight into the relationship between the dependent variable and independent variables in the short run, the aggregate system analysis is extended, and the short-run relationship of the aggregate system is investigated. In this

analysis, the responses of LN IPI to other variables are analysed.

Table 12 presents the results for the Islamic capital market-growth nexus in the absence of IFSA 2013. It shows that the association between SCS and short-run real economic growth is positively significant at a 5% significance level, where a 1% increase in Shari'ah compliant securities will increase real economic growth by 0.249%. On the other hand, the link between SCMC and short-run real economic growth is found to be positively significant at a 1% significance level, where a 1% increase in Shari'ah-compliant market capitalization will increase real economic growth by 0.068%. The overall results show that both SCS and SCMC models adhere to the supply-leading hypothesis in the short run.

Meanwhile, the link between trade balance, private investment, and inflation, and the real economic growth is found to be insignificant for all models. The ECT for SCS and SCMC models is found to be around -0.334 and -0.392, respectively, where they are both statistically significant at 1%, implying that around 34% and 39% of deviations are adjusted in one quarter from the equilibrium path, respectively. Furthermore, the R-squared values for SCS model are found to be around 0.64, which means that approximately 64% of the data fit the regression model, whereas for SCMC model, the R-squared value is found to be around 0.63, which means that approximately 63% of the data fit the regression model.

Meanwhile, the details on the diagnostic test run on the residuals of the short-run equation are presented in the Appendix. In general, no issues are detected. For serial autocorrelation, the Breusch-Godfrey Lagrange-Multiplier (LM) test indicates that the null hypothesis of no serial autocorrelation is accepted. The Breusch-Pagan-Godfrey test for heteroscedasticity shows that, in general, there is no evidence of heteroskedasticity. Meanwhile, the test for checking the model specification, which is the Ramsey RESET, specifies that the model has no evidence of misspecification. Based on CUSUM as well as CUSUM square, the cumulative sum of the recursive residuals is clearly within the boundaries and hence confirms the stability of the short-run coefficients of regressors.

### ***ARDL Estimate of Short-Run Relationship in the Presence of IFSA 2013***

In Table 13 below, the Islamic capital market-growth nexus in the presence of IFSA 2013's results for SCS and SCMC models in the short run is presented. It is shown that the associations between both models - SCS and SCMC models - and short-run economic growth are positively significant at the 1% significance level, respectively. In the presence of IFSA, for the SCS model, a 1% increase in Shari'ah compliant securities will increase real economic growth by 0.872%, compared to 0.833% in the absence of IFSA ( $0.872 > 0.833$ ). The effect of IFSA 2013 for the SCS model, represented by the dummy variable, is significant at the 5% level of significance. For the SCMC model, a 1% increase in Shari'ah compliant market capitalization will increase real economic growth by 0.171%, compared to 0.098% in the absence of IFSA ( $0.171 > 0.098$ ). The effect of IFSA 2013 for IBD, represented by the dummy variable, is significant at the 5% level of significance. Hence, it can be seen that the Islamic capital market-growth nexus is enhanced by IFSA 2013 in the short run.

The overall results show that most of the models adhere to the supply-leading hypothesis in the short run. Meanwhile, the link between private investment and inflation and the real economic growth is found to be insignificant. However, the link between trade balance and real economic growth is found to be positively significant at the 10% significance level for the SCMC model only, where a 1% increase in trade balance will increase real economic growth by 0.034%. Moreover, the ECT for SCS and SCMC models is found to be around -0.065 and -0.384, respectively. They are all statistically significant at the 10% and 1% levels, respectively, which implies that 65% and 38.4% of deviations are adjusted in one quarter from the equilibrium path correspondingly. Furthermore, the R-squared values for the SCS model are found to be around 0.935, which means that approximately 93.5% of the data fit the regression models, and the R-squared for the SCMC model is found to be around 0.84, which means that approximately 84% of the data fit the regression model.

In addition, diagnostic tests were conducted, and the results are presented in the lower section of Table 13. The findings demonstrate that both models are normally distributed, homoscedastic, and exhibit no serial correlation. Moreover, the models are correctly specified, indicating that they are efficient, unbiased, and stable, and thus suitable for policy recommendations. Further details of the diagnostic tests can be found in the Appendix.

### **Summary of the Output (IFSA Effect)**

Table 1 presents a summary of the output. The coefficients of IPI are shown to indicate the degree to which the variables affect the IPI. The short-run results without IFSA 2013 indicate that both the SCS and SCMC models have a positive and significant association with short-run economic growth at the 1% significance level. Specifically, a 1% increase in the SCS and SCMC models will increase the IPI by 0.833% and 0.098%, respectively. In contrast, the long-run results without IFSA 2013 indicate that the SCS model has a negative and significant association with long-run economic growth at the 1% significance level. On the other hand, the SCMC model has a positive and significant association with long-run economic growth at the 1% significance level. Specifically, an increase of 1% in the Shari'ah compliant market capitalization will increase the real economic growth by 0.256%, while an increase of 1% in the Shari'ah compliant securities will decrease the real economic growth by -0.358%.

In the presence of IFSA 2013, the results show that both the SCS and SCMC models have a positive and significant association with short-run economic growth at the 1% significance level. Specifically, a 1% increase in the SCS and SCMC models will increase the IPI by 0.872% and 0.171%, respectively. Additionally, the effect of IFSA 2013, represented by a dummy variable, is significant at the 5% significance level. The results also indicate that the SCS model has a negative and significant association with long-run economic growth at the 1% significance level, where a 1% increase in the variables will decrease the IPI by -0.536%. Conversely, the SCMC model has a positive and significant association with long-run economic growth at the 1% significance level, where a 1% increase in the variables will increase the IPI by 0.295%. The effect of IFSA 2013, represented by a dummy variable, is significant at the 1% and 10% significance levels for the SCS and

SCMC models, respectively. Overall, the results indicate that IFSA 2013 has improved the Islamic capital market-growth nexus in both the short- and long-runs, as shown in Table 1.

Table 1. Summary of the Output (IFSA Effect)

| Sectors                | Indicators | In the Absence of IFSA 2013                         | In the Presence of IFSA 2013                        | IFSA 2013 Effect                                |
|------------------------|------------|---|---|---|
| Islamic Capital Market | SCS        | Positively significant at 1% (Short-run) (0.833)*** | Positively significant at 1% (Short-run) (0.872)*** | Dummy is significant at 5% (0.872 > 0.833)**    |
|                        |            | Negatively significant at 1% (Long-run) (-0.358)*** | Negatively significant at 1% (Long-run) (-0.536)*** | Dummy is significant at 1% (-0.536 < -0.358)*** |
|                        | SCMC       | Positively significant at 1% (Short-run) (0.098)*** | Positively significant at 1% (Short-run) (0.171)*** | Dummy is significant at 5% (0.171 > 0.098)**    |
|                        |            | Positively significant at 1% (Long-run) (0.256)***  | Positively significant at 1% (Long-run) (0.295)***  | Dummy is significant at 10% (0.295 > 0.256)*    |

Notes: (\*\*\*) is significant at 1%, (\*\*) is significant at 5%, and (\*) is significant at 10%.

### Interview: Information on the Islamic Capital Market-Growth Nexus

The third objective is to observe whether the Islamic capital market is fulfilling the goals of Islamic economics. It explores whether the Islamic capital market is contributing to economic growth and how IFSA 2013 impacts this nexus. There are five questions for this part; 1) Do you think IFSA 2013 has enabled the Islamic capital market sector to contribute more to economic growth and development? 2) Does Islamic capital market (ICM) positively and significantly contribute to environmental, social and governance (ESG) impact? 3) Do you think ICM has moved more towards finance or economics? 4) In your opinion, which sector is better achieving Islamic economic values and objectives: is it the Islamic capital market or the Islamic banking sector? 5) Do you think the Islamic capital market is now changing to include more social narratives? Three experts in the industry, including the CEO of IILM, the Managing Director of Elzar Shariah Solution Sdn. Bhd., and the Head of Shari'ah Department of HSBC Amanah Malaysia, are interviewed for this part. Meanwhile, the Partner of Raja, Darryl & Loh has given his opinion on the first question only.

The results show that while IFSA 2013 is not meant to regulate the Islamic capital market in Malaysia, it does promote economic growth by ensuring stability in the market. In addition, the experts agree that the ICM is significantly contributing to ESG via the implementation of SRI Sukuk, Bond Grant Scheme, ESG Financing/Sukuk, and value-based judgment projects. They also opine that finance and economics are two different things, and the ICM is a bit of both, where it is contributing to both. The funds raised are meant to finance the economy. They also agree that both Islamic banking and Islamic capital market sectors are significant and complementing each other as they play different roles in promoting Islamic economics. Lastly, all experts agree that the current ICM is changing to include more social narratives as its products are becoming more socially adapted, such as green sukuk and SRI sukuk that promote ESG objectives. The outputs of the interviews under this theme (Islamic Capital Market and Economic Development) are outlined in Table 14.

## CONCLUSIONS

The vast number of reserves in Islamic banking, as well as their growing influence and importance in the Malaysian financial market, have prompted a review of the sector's role in boosting the country's economic growth. This research employs the ARDL method of cointegration for the monthly period of 2007-2019 to empirically study the Islamic capital market-growth nexus pre and post IFSA 2013. The results of this supply-leading association between Islamic finance and real economic growth confirm that Malaysia is on the right path to developing its Islamic financial system. Furthermore, the results show that the development of the Malaysian Islamic financial system is well-supported by a well-developed regulatory framework that boosts the economy, as evidenced by the improvement of the Islamic finance-growth nexus from the pre-IFSA period to the post-IFSA period. Additionally, experts believe that the Islamic capital market sector is progressing remarkably according to Maqasid Shari'ah, with the emphasis on SRI Sukuk, Bond Grant Scheme, ESG Financing/Sukuk, and value-based judgment projects.

Given the considerable contribution of the Islamic finance industry to the economy of Malaysia, ongoing efforts to expand the industry are necessary. One such effort is strengthening the legal and regulatory system to promote the development of Malaysia's Islamic financial sector into an international industry, thus bolstering the country's status as an outstanding role model and global pioneer in fostering Islamic finance (Kassim, 2016). Furthermore, the contribution of the Islamic financial sector to economic growth is weak, and future research should include Islamic capital markets and zakat funds, which play an important role, especially in rural areas (Hakim & Uddin, 2016). The study done by Al Fathan and Arundina (2019) also suggests a need to explore the Islamic finance-growth nexus in many sub-sectors, as most studies have been done on the banking sector.



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## APPENDICES

### Appendix A. Table 2. Data and Data Sources

| Variables              | Indicators                                  | Measurement | Data Sources  |
|------------------------|---|-------------|---|
| Growth of Real Economy | Malaysian Industrial Production Index (IPI) | %           | Utilized from various issues of BNM Monthly Highlights and Statistics (previously known as BNM Monthly Statistical Bulletin)<br><br>(Quarterly data from January 2007 to December 2019) |

|                               | Total number of Shari'ah-compliant securities (SCS)   | Number of SCS | Utilized from Securities Commission   |
|-------------------------------|---|---------------|---|
| Islamic Capital Market        | Total Shari'ah-compliant market capitalization (SCMC) | RM million    |   |
| Other Macroeconomic Variables | Private Investment (PI)                               | %             | Utilized from BNM Monthly Highlights and Statistics   |
|                               | Trade Balance (TB)                                    | RM million    |   |
|                               | Inflation Rate (INF)                                  | %             | Utilized from Trading Economic Website  |
| List of Dummy Variables       |   |               | Remarks   |
| DUM                           |   | Dummy         | Dummy variable represents the reclassification of variables under IFSA 2013 within the period of June 2013 until June 2015.<br><br>Value assigned to dummy variable is either 0 or 1. 1 refers to variable that has been reclassified, 0 means otherwise. |

**Appendix B. Table 3. Interviewees' Description**

| Interviewee   | Background of Interviewee  |
|---|--|
| <b>Interviewee 1</b><br><b>Dr. Zaharuddin Abd Rahman</b>          | Managing Director of Elzar Shari'ah Solution Sdn. Bhd.<br>Area of expertise:<br>- Islamic Finance<br>- Islamic Capital Markets<br>- Risk Management<br>- Economics<br>- Islamic Studies<br>- Financial Institutions  |
| <b>Interviewee 2</b><br><b>Associate Professor Dr. Umar Oseni</b> | Chief Executive Officer (CEO) of International Islamic Liquidity Management Corporation.<br>Area of expertise;<br>- Islamic Banking and Finance<br>- Law and Legal Studies<br>- Human Rights and Democracy<br>- Conflict Resolution<br>- Legal Theory and Analysis |
| <b>Interviewee 3</b><br><b>Dr. Ahmed Firas</b>                    | Head of Shari'ah Advisor and <i>Sukuk</i> Financing at HSBC Amanah Malaysia.<br>Area of expertise;<br>- Islamic Finance<br>- <i>Sukuk</i><br>- Islamic Law and Legal Advice<br>- Islamic Studies   |

**Appendix C. Table 4. Optimal Lags for Islamic Capital Market Sector in the Absence of IFSA 2013**

| VAR Lag Order Selection Criteria |          |                 |                  |                  |                  |                 |                  |
|----------------------------------|----------|-----------------|------------------|------------------|------------------|-----------------|------------------|
|                                  | Lag      | LogL            | LR               | FPE              | AIC              | SC              | HQ               |
| <b>SCS model</b>                 | 1        | -84.67824       | 171.3838         | 0.000101         | 4.986011         | 6.178603*       | 5.432763         |
|                                  | 2        | -59.29828       | 38.62168         | 0.000104         | 4.969491         | 7.155910        | 5.788536         |
|                                  | 3        | -23.96504       | 46.08684         | 7.35e-05         | 4.520219         | 7.700465        | 5.711558         |
|                                  | 4        | 12.78503        | 39.94572         | 5.46e-05         | 4.009347         | 8.183419        | 5.572979         |
|                                  | 5        | 67.86227        | 47.89326         | 2.18E-05         | 2.70164          | 7.86954         | 4.637567         |
|                                  | <b>6</b> | <b>126.5704</b> | <b>38.28789*</b> | <b>9.99e-06*</b> | <b>1.236071*</b> | <b>7.397797</b> | <b>3.544290*</b> |
| <b>SCMC model</b>                | 1        | -104.7316       | 197.8611         | 0.000243         | 5.857894         | 7.050486*       | 6.304646         |
|                                  | 2        | -81.04436       | 36.04574         | 0.000267         | 5.914972         | 8.101391        | 6.734018         |

|          |                 |                  |                  |                  |                |                  |
|----------|-----------------|------------------|------------------|------------------|----------------|------------------|
| 3        | -55.54666       | 33.25787         | 0.00029          | 5.893333         | 9.073579       | 7.084672         |
| 4        | -28.17265       | 29.75436         | 0.000324         | 5.790115         | 9.964188       | 7.353748         |
| 5        | 6.977257        | 30.56513         | 0.000307         | 5.348815         | 10.51671       | 7.284741         |
| <b>6</b> | <b>72.58608</b> | <b>42.78836*</b> | <b>0.000104*</b> | <b>3.583214*</b> | <b>9.74494</b> | <b>5.891434*</b> |

\*Indicates lag order selected by the criterion

Where,

LR = sequential modified LR test statistic (each test at 5% level)  
 FPE = Final prediction error  
 AIC = Akaike information criterion  
 SC = Schwarz information criterion  
 HQ = Hannan-Quinn information criterion

**Appendix D. Table 5. Optimal Lags for Islamic Capital Market Sector in the Presence of IFSA 2013**

|                   |          | VAR Lag Order Selection Criteria |                  |                  |                  |                 |                  |
|-------------------|----------|----------------------------------|------------------|------------------|------------------|-----------------|------------------|
|                   | Lag      | LogL                             | LR               | FPE              | AIC              | SC              | HQ               |
| <b>SCS model</b>  | 1        | -70.50297                        | 115.877          | 6.84E-05         | 4.587086         | 5.978443*       | 5.108297         |
|                   | 2        | -42.07592                        | 42.02259         | 6.19E-05         | 4.438084         | 6.823268        | 5.331588         |
|                   | 3        | -10.09839                        | 40.31949         | 5.16E-05         | 4.134713         | 7.513724        | 5.400511         |
|                   | 4        | 28.09855                         | 39.85768         | 3.70E-05         | 3.560933         | 7.933771        | 5.199024         |
|                   | 5        | 82.15116                         | 44.65216*        | 1.62E-05         | 2.297776         | 7.664441        | 4.308161         |
|                   | <b>6</b> | <b>143.456</b>                   | <b>37.31601</b>  | <b>7.22e-06*</b> | <b>0.719303*</b> | <b>7.079795</b> | <b>3.101981*</b> |
| <b>SCMC model</b> | 1        | -99.63681                        | 167.9464         | 0.000243         | 5.853775         | 7.245132*       | 6.374985         |
|                   | 2        | -78.60421                        | 31.09167         | 0.000303         | 6.02627          | 8.411455        | 6.919774         |
|                   | 3        | -53.42478                        | 31.74798         | 0.00034          | 6.018469         | 9.39748         | 7.284267         |
|                   | 4        | -24.82049                        | 29.84795         | 0.00037          | 5.861761         | 10.2346         | 7.499852         |
|                   | 5        | 13.9659                          | 32.04093         | 0.000314         | 5.262352         | 10.62902        | 7.272737         |
|                   | <b>6</b> | <b>84.73583</b>                  | <b>43.07735*</b> | <b>9.28e-05*</b> | <b>3.272355*</b> | <b>9.632847</b> | <b>5.655034*</b> |

\*Indicates lag order selected by the criterion

Where,

LR = sequential modified LR test statistic (each test at 5% level)  
 FPE = Final prediction error  
 AIC = Akaike information criterion  
 SC = Schwarz information criterion  
 HQ = Hannan-Quinn information criterion

**Appendix E. Table 6. Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Tests for Islamic Capital Market**

| January 2007 to December 2019 (quarterly)   |                               |                               |                               |                               |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Intercept   |                               |                               |                               |                               |
| (Trend and intercept for LN IPI, LN SCS, LN SCMC, PI and DUM, intercept only for LN TB and INF) |                               |                               |                               |                               |
|   | ADF                           |                               | PP                            |                               |
| Variables   | Level                         | 1 <sup>st</sup> diff          | Level                         | 1 <sup>st</sup> diff          |
| <b>LN IPI</b>   | -3.063033<br>(0.1261)         | -7.787585 ***<br>(0.0000) *** | -3.118261<br>(0.1131)         | -8.481797 ***<br>(0.0000) *** |
| <b>LN SCS</b>   | -1.449363<br>(0.8338)         | -6.952515 ***<br>(0.0000) *** | -1.504267<br>(0.8153)         | -6.952448 ***<br>(0.0000) *** |
| <b>LN SCMC</b>  | -2.140450<br>(0.5112)         | -6.515355 ***<br>(0.0000) *** | -2.007110<br>(0.5835)         | -6.550425 ***<br>(0.0000) *** |
| <b>LN TB</b>  | -6.172239 ***<br>(0.0000) *** | -6.289670 ***<br>(0.0000) *** | -6.340267 ***<br>(0.0000) *** | -32.97825 ***<br>(0.0001) *** |
| <b>PI</b>   | -4.231890 ***<br>(0.0083) *** | -4.743160 ***<br>(0.0021) *** | -6.822166 ***<br>(0.0000) *** | -16.71438 ***<br>(0.0000) *** |
| <b>INF</b>  | -5.011818 ***<br>(0.0002) *** | -5.937543 ***<br>(0.0000) *** | -3.398613 **<br>(0.0155) **   | -6.337630 ***<br>(0.0000) *** |
| <b>DUM</b>  | -2.064707<br>(0.5525)         | -6.998312 ***<br>(0.0000) *** | -2.105005<br>(0.5306)         | -6.998286 ***<br>(0.0000) *** |

**Appendix F. Table 7. Multicollinearity Test for Islamic Capital Market-Growth Nexus in the Absence of IFSA 2013**

| Centered VIF   |           |            |
|----------------|-----------|------------|
|                | SCS MODEL | SCMC MODEL |
| <b>LN IPI</b>  | 1.278313  | 1.424653   |
| <b>LN SCS</b>  | 1.300716  | -          |
| <b>LN SCMC</b> | -         | 1.517008   |



|              |          |          |
|--------------|----------|----------|
| <b>LN TB</b> | 1.369695 | 1.397237 |
| <b>PI</b>    | 1.507110 | 1.473661 |
| <b>INF</b>   | 1.194573 | 1.266597 |

**Appendix G. Table 8. Multicollinearity Test for Islamic Capital Market-Growth Nexus in the Presence of IFSA 2013**

|           | Centered VIF |            |
|-----------|--------------|------------|
|           | SCS MODEL    | SCMC MODEL |
| LN IPI    | 1.286061     | 1.428381   |
| LN SCS    | 7.596006     | -          |
| LN SCMC   | -            | 2.991478   |
| LN TB     | 1.400699     | 1.408458   |
| PI        | 1.509284     | 1.553768   |
| INF       | 1.224055     | 1.291076   |
| DUM (IB)  | -            | -          |
| DUM (ICM) | 7.498607     | 2.532070   |

**Appendix H. Table 9. Results from Bound Test**

|                                     | Computed F-statistic | SCS model, F = 3.152068 *<br>SCMC model, F = 6.991005 ***<br>Critical bounds (k = 4) |       |
|-------------------------------------|----------------------|--|-------|
|                                     |                      | I (0)  | I (1) |
| <b>In the Absence of IFSA 2013</b>  | Significance Level   |  |       |
|                                     | 1%                   | 3.29   | 4.37  |
|                                     | 5%                   | 2.56   | 3.49  |
|                                     | 10%                  | 2.20   | 3.09  |
| <b>In the Presence of IFSA 2013</b> | Computed F-statistic | SCS model, F = 9.009568 ***<br>SCMC model, F = 3.227531 *<br>Critical bounds (k = 4) |       |
|                                     | Significance Level   | I (0)  | I (1) |
|                                     | 1%                   | 3.29   | 4.37  |
|                                     | 5%                   | 2.56   | 3.49  |
|                                     | 10%                  | 2.20   | 3.09  |

**Appendix I. Table 10. ICM’s ARDL Estimate of Long-Run Relationship in the Absence of IFSA 2013**

| Regressors       | Model with SCS |              |         | Model with SCMC |              |           |
|------------------|----------------|--------------|---------|-----------------|--------------|-----------|
|                  | Coefficients   | t-Statistics | P-value | Coefficients    | t-Statistics | P-value   |
| <b>LIPI (-1)</b> | -0.334         | -2.727       | 0.011** | -0.392          | -3.557       | 0.0009*** |
| <b>LSCS</b>      | -0.619         | -2.437       | 0.022** | -               | -            | -         |
| <b>LSCMC</b>     | -              | -            | -       | 0.173           | 3.26         | 0.0022*** |
| <b>LTB</b>       | 0.319          | 1.677        | 0.105   | 0.082           | 1.497        | 0.142     |
| <b>PI</b>        | 0.004          | 1.306        | 0.203   | 0.0003          | 0.358        | 0.722     |
| <b>INF</b>       | -0.020         | -1.217       | 0.234   | 0.001           | 0.064        | 0.949     |
| <b>C</b>         | 1.966          | 2.352        | 0.026** | 1.087           | 2.166        | 0.036**   |

Diagnostic test statistics:  
 Serial Correlation: No Serial Correlation  
 Ramsey Reset Test: There is no issue of misspecification.  
 CUSUM and CUSUM Square Test: the model is stable.  
 Heteroscedasticity: No Heteroscedasticity  
 Multicollinearity Test: There is no issue of multicollinearity.

**Appendix J. Table 11. ICM’s ARDL Estimate of Long-Run Relationship in the Presence of IFSA 2013**

| Regressors        | Model with SCS |              |          | Model with SCMC |              |          |
|-------------------|----------------|--------------|----------|-----------------|--------------|----------|
|                   | Coefficients   | t-Statistics | P-value  | Coefficients    | t-Statistics | P-value  |
| <b>LIPI (-1)</b>  | 0.065          | 0.458        | 0.652    | -0.384          | -3.517       | 0.001*** |
| <b>LSCS</b>       | -0.358         | -3.215       | 0.005*** | -               | -            | -        |
| <b>LSCMC</b>      | -              | -            | -        | 0.256           | 2.845        | 0.007*** |
| <b>LTB</b>        | -0.163         | -0.252       | 0.804    | 0.089           | 1.586        | 0.119    |
| <b>PI</b>         | -0.006         | -0.616       | 0.545    | 3.50E-05        | 0.044        | 0.965    |
| <b>INF</b>        | 0.026          | 0.335        | 0.742    | 0.002           | 0.259        | 0.797    |
| <b>DUM (SCS)</b>  | -0.178         | -6.479       | 0.000*** | -               | -            | -        |
| <b>DUM (SCMC)</b> | -              | -            | -        | 0.039           | 2.068        | 0.051*   |

|  |        |        |       |       |       |       |
|--|--------|--------|-------|-------|-------|-------|
| C  | -1.429 | -0.674 | 0.509 | 0.830 | 1.566 | 0.124 |
| Diagnostic test statistics:                                    |        |        |       |       |       |       |
| Serial Correlation: No Serial Correlation                      |        |        |       |       |       |       |
| Ramsey Reset Test: There is no issue of misspecification.      |        |        |       |       |       |       |
| CUSUM and CUSUM Square Test: The model is stable.              |        |        |       |       |       |       |
| Heteroscedasticity: No Heteroscedasticity                      |        |        |       |       |       |       |
| Multicollinearity Test: There is no issue of multicollinearity |        |        |       |       |       |       |

**Appendix K. Table 12. ICM's ARDL Estimate of Short-Run Relationship in the Absence of IFSA 2013**

| Regressors            | Model with SCS |              |           | Model with SCMC |              |           |
|-----------------------|----------------|--------------|-----------|-----------------|--------------|-----------|
|                       | Coefficients   | t-Statistics | P-value   | Coefficients    | t-Statistics | P-value   |
| ΔLIPI (-1)            | 0.272          | 1.952        | 0.061*    | 0.608           | 5.517        | 0.000***  |
| ΔLSCS                 | 0.249          | 2.661        | 0.015**   | -               | -            | -         |
| ΔLSCMC                | -              | -            | -         | 0.068           | 2.973        | 0.005***  |
| ΔLTB                  | 0.013          | 1.709        | 0.103     | 0.032           | 1.662        | 0.103     |
| ΔPI                   | 0.0002         | 1.049        | 0.306     | 0.0001          | 0.365        | 0.717     |
| ΔINF                  | 0.0003         | 0.113        | 0.911     | 0.0002          | 0.064        | 0.949     |
| C                     | -              | -            | -         | -               | -            | -         |
| ECM (-1)              | -0.334         | -4.734       | 0.0001*** | -0.392          | -4.358       | 0.0001*** |
| R-squared             | 0.644681       |              |           | 0.633244        |              |           |
| Adjusted R-squared    | 0.478125       |              |           | 0.592493        |              |           |
| SE Regression         | 0.028847       |              |           | 0.035827        |              |           |
| Sum squared residual  | 0.026630       |              |           | 0.057761        |              |           |
| Akaike info criterion | -3.992387      |              |           | -3.710094       |              |           |
| DW-statistic          | 2.339939       |              |           | 1.978203        |              |           |
| F-statistic           | 6.408500       |              |           | 15.53944        |              |           |
| Prob (F-statistics)   | 0.000007       |              |           | 0.000000        |              |           |

**Appendix L. Table 13. ICM's ARDL Estimate of Short-Run Relationship in the Presence of IFSA 2013**

| Regressors            | Model with SCS |               |               | Model with SCMC |               |                 |
|-----------------------|----------------|---------------|---------------|-----------------|---------------|-----------------|
|                       | Coefficients   | t-Statistics  | P-value       | Coefficients    | t-Statistics  | P-value         |
| ΔLIPI (-1)            | -0.036         | -0.414        | 0.683         | 0.616           | 5.636         | 0.000***        |
| ΔLSCS                 | 0.833          | 10.835        | 0.000***      | -               | -             | -               |
| ΔLSCMC                | -              | -             | -             | 0.098           | 3.113         | 0.003***        |
| ΔLTB                  | 0.009          | 0.881         | 0.389         | 0.034           | 1.796         | 0.079*          |
| ΔPI                   | -0.0002        | -0.727        | 0.476         | 1.35E-05        | 0.044         | 0.965           |
| ΔINF                  | 0.004          | 1.495         | 0.151         | 0.0008          | 0.255         | 0.799           |
| ΔDUM (SCS)            | 0.039          | 2.256         | 0.036**       | -               | -             | -               |
| ΔDUM (SCMC)           | -              | -             | -             | 0.073           | 2.664         | 0.015**         |
| C                     | -1.429         | -0.674        | 0.509         | -               | -             | -               |
| ECM (-1)              | <b>-0.065</b>  | <b>-1.777</b> | <b>0.092*</b> | <b>-0.384</b>   | <b>-4.643</b> | <b>0.000***</b> |
| R-squared             | 0.935425       |               |               | 0.840335        |               |                 |
| Adjusted R-squared    | 0.878922       |               |               | 0.743396        |               |                 |
| SE Regression         | 0.014005       |               |               | 0.029440        |               |                 |
| Sum squared residual  | 0.004707       |               |               | 0.024268        |               |                 |
| Akaike info criterion | -5.392881      |               |               | -3.926768       |               |                 |
| DW-statistic          | 1.976667       |               |               | 1.873768        |               |                 |
| F-statistic           | 22.86454       |               |               | 8.668673        |               |                 |
| Prob (F-statistics)   | 0.000000       |               |               | 0.000000        |               |                 |

## Appendix M. Table 14. Output of Interviewees on Islamic Capital Market and Economic Development

| Questions   | Description   |
|---|---|
| Do you think IFSA 2013 has enabled the Islamic capital market sector to contribute more to economic growth and development? Why or why not?   | <p>While IFSA 2013 is not meant to regulate the Islamic capital market in Malaysia, it does promote economic growth by ensuring stability in the market.</p> <p><i>“Yes, from the financial sector and the specific roles of Islamic banks. However, IFSA is not meant to regulate the Islamic capital market in Malaysia. The laws that regulate the Islamic capital market in Malaysia are the Capital Markets and Services Act 2007 and the Securities Commission Malaysia Act 1993 as well as numerous regulations issued pursuant to these laws.”</i> (CEO, IILM)</p> <p><i>“Yes, as in ICM, those who have money are helping those who are in need of fund (win-win situation). Those who are in need of fund are able to expand their businesses because of the availability of the funds via sukuk, Islamic microfinancing, Islamic crowdfunding, digital assets, P2P, and so on.”</i> (Managing Director, Elzar Shariah Solution Sdn. Bhd.)</p> <p><i>“Yes, as mentioned before, IFSA 2013 ensures stability, which is good for economic growth.”</i> (Head of Shari’ah Department, HSBC Amanah Malaysia)</p> <p><i>“IFSA regulates banking and takaful industry. Can’t think of any example how IFSA has enabled ICM sector to contribute more to economic growth and development.”</i> (Partner, Raja, Darryl &amp; Loh)</p> |
| Does Islamic capital market (ICM) positively and significantly contribute to environmental, social and governance (ESG) impact? Why or why not? What about the trends of ICM in Malaysia towards ESG? | <p>Experts agree that ICM is significantly contributing to the ESG via the implementation of SRI Sukuk, Bond Grant Scheme, ESG Financing/Sukuk, and value-based judgement projects.</p> <p><i>“Yes, through the numerous interventions from the Securities Commission of Malaysia. For instance, the Securities Commission has introduced the SRI Sukuk and Bond Grant Scheme with the objective of incentivizing and encouraging more issuers to finance green, social and sustainability projects through the issuing of sukuk under its unique SRI Sukuk Framework. Such pioneering regulatory efforts will spur significant ESG-enabled growth in the Islamic capital market.”</i> (CEO, IILM)</p> <p><i>“Yes, Islamic finance in the west is being promoted as ESG financing or ESG sukuk.”</i> (Managing Director, Elzar Shariah Solution Sdn. Bhd.)</p> <p><i>“Just like Islamic banking sector, ICM also have started to move towards value-based judgement with frameworks such as Sustainable and Responsible Investment (SRI) sukuk.”</i> (Head of Shari’ah Department, HSBC Amanah Malaysia)</p>  |
| Do you think ICM has moved more towards finance or economics?   | <p>Finance and economics are two different things, and ICM is a bit of both, where it is contributing to both. The funds raised are meant to finance the economy.</p> <p><i>“It is a bit of both, as the ICM sits within the ambit of the financial market, but the funds raised are meant to finance the real economy in most cases.”</i> (CEO, IILM)</p> <p><i>“Finance is a subset of economics. Finance is contributing to both.”</i> (Managing Director, Elzar Shariah Solution Sdn. Bhd.)</p> <p><i>“Finance and economics are two different things.”</i> (Head of Shari’ah Department, HSBC Amanah Malaysia)</p>   |
| In your opinion, which sector is better achieving Islamic economic values and objectives: is it the Islamic capital market or the Islamic banking sector? Please provide reasons for your opinions.   | <p>Experts believe that both sectors are significant and complementing each other as they play different roles in promoting Islamic economics.</p> <p><i>“One may not ordinarily conclude that one sector is better than the other. Both sectors have their potentials as they both contribute to the promotion of Islamic economic values. Both sectors could be regarded as complementary in their efforts toward achieving Islamic economic values.”</i> (CEO, IILM)</p> <p><i>“Both play different roles in achieving Islamic economic values and objectives.”</i> (Managing Director, Elzar Shariah Solution Sdn. Bhd.)</p> <p><i>“The two sectors are needed are they achieve different goals.”</i> (Head of Shari’ah Department, HSBC Amanah Malaysia)</p>   |
| Do you think the Islamic capital market is now changing to include more social narratives?  | <p>Experts agree that the current ICM is changing to include more social narratives as its products are becoming more socially adapted such as green sukuk and SRI sukuk that promote ESG objectives.</p> <p><i>“Yes, as explained above through numerous frameworks introduced to promote ESG in sukuk issuances.”</i> (CEO, IILM)</p> <p><i>“Yes, they are finding tunings on their products to become more socially adapted.”</i> (Managing Director, Elzar Shariah Solution Sdn. Bhd.)</p> <p><i>“Yes, the implementation of green sukuk and SRI sukuk has shown that the sector is now changing to include more social narratives.”</i> (Head of Shari’ah Department, HSBC Amanah Malaysia)</p>  |

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