Analysis of Integration of the Indonesian Sharia Stock Index with Developing Countries

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Abstract

Globalization is rapidly causing an integration of economic and financial systems worldwide, resulting in shocks to the Islamic stock index and reducing the benefits of diversification for investors. Therefore, this study analyzes the integration, influence, response, and contribution of shocks to each developing country's Islamic stock index. Specifically, analyzing the effect of developing country sharia stock index shocks on Indonesia's sharia stock index. The study uses monthly time series data for 2011-2021 with samples from Indonesia, Turkey, Malaysia, Pakistan, Kuwait, and India using the Vector Error Correction Model (VECM) method. The results showed cointegration or a long-term relationship in the developing countries' sharia stock index. The Malaysian Islamic Stock Index and the Indian Islamic Stock Index influence the Indonesian Islamic Stock Index. Furthermore, the Indonesian Islamic Stock Index stabilized the fastest in response to the Turkish Islamic Stock Index shocks. However, the Malaysian Islamic Stock Index shock contributes the most to the Indonesian Islamic Stock Index. Developing countries could improve the infrastructure of the Islamic stock index and policy reforms. This would minimize the impact of international stock index shocks and accelerate integration. Investors should consider the dominant economic strength, geographical factors, and trade relations in determining portfolio diversification in global economic conditions.

Keywords: *Market Integration; Islamic Stock; Developing Country; VECM*

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INTRODUCTION

Economic globalization is determined by the prevailing conditions in other countries (Awdel *et al.,* 2020; Masteikiene & Venckuviene, 2015). The capital market is essential in funding and a forum for investment in various instruments (Coşkun *et al.,* 2017; Hornuf & Schwienbacher, 2018). The capital market describes the economic growth when countries implement policies supporting its growth (Surugiu & Surugiu, 2015; Yildirim & Gökalp, 2016). One of the efforts made is economic integration, providing an overview of the inter-country capital market activities (Miyazawa *et al.,* 2019; Rungcharoenkitkul, 2012). Moreover, the capital market has a considerable share in the Islamic finance industry (Husen *et al.,* 2021; Salman & Nawaz, 2018; Wahyudi & Sani, 2014).

Indonesia's Islamic economic growth has gained popularity because the system teaches values consistent with the wisdom of local people. The main Islamic finance principles stabilize the national financial system (Jalil, 2017). Islamic economics and finance focus on sustainable economic activities. However, speculative conventional economic activities in capital market transactions are a psychological barrier for Muslim investors (Habib, 2017; Mirakhor, 2013). The fundamental difference between the conventional and Islamic capital markets lies in the instruments and transaction mechanisms.

In contrast, the difference between the Islamic and conventional stock indices lies in the criteria for the issuer's shares that must fulfill the basic sharia principles (Alam *et al.,* 2013; Hassan & Mahlknecht, 2011). The Islamic capital market concept states that the shares traded must come from companies in sectors that fulfill sharia criteria. Also, the shares should be free from usury, and stocks should be transacted without speculation. Assets in a fully integrated market have the same expected returns because they carry the same risk.

Research related to market integration has been carried out by Nurrachmi (2019), who examined the market integration of Islamic stock indices during and after the 2007 crisis. The study analyzed the potential benefits to international investors when investing in these stock markets. Similarly, Suteja *et al.* (2019) examined the cointegration of the Islamic stock market in Indonesia, Malaysia, and Singapore before and during the crisis in Greece. Furthermore, Almohamad

et al. (2018) discussed the short-and long-term relationships between the Middle East and North African (MENA) and the Chinese, the United States, and the United Kingdom stock markets before and after the global financial crisis.

Adam *et al.* (2017) analyzed foreign interest rates and the Islamic stock market integration between Indonesia and Malaysia. Similarly, Majdoub *et al.* (2016) examined the short and long-term market integration between conventional and Islamic stock prices for France, Indonesia, the UK, and the United States. Saiti and Masih (2016) analyzed the causal relationship of daily returns between four conventional and three sharia indices in the Asian region. Furthermore, Puspitasari *et al.* (2015) analyzed the integration of Indonesia's, Malaysia's, Singapore's, Thailand's, and the Philippines' stock exchanges associated with world oil prices, including the decline in 2014. Arshad and Rizvi (2014) analyzed the correlation between sharia and conventional indices.

Capital market cooperation among developing countries aims to realize an increase in trade and the economy within the region's scope (Silvers, 2021). The integration of capital markets among developing countries will increase the role of capital markets in trade and the economy between countries (Coşkun *et al.*, 2017). The integration of trade and the economy will be even stronger if the capital market is integrated.

It is necessary to compare the Indonesian Islamic stock market with that in several other developing countries. Also, it is essential to examine the impact on the performance of the Indonesian Islamic capital market's international performance. Therefore, this study analyzes the integration of developing countries' Islamic stock index, Islamic stock market shocks, and impact on the Indonesian Islamic stock market.

This study has policy implications for international investors and market participants. Investors should determine capital diversification to reduce losses. They would be motivated to restructure their financial market portfolios by taking advantage of risk diversification. Also, investors would assess the weak correlation and the absence of shock transmission in the Islamic stock market. This study contributes to the limited empirical evidence regarding diversification in the Islamic stock market. The results are helpful to policymakers and stakeholders in integrating the Islamic stock market in developing countries. Moreover, market

participants could use these findings in risk management to design hedging mechanisms and preventive measures. Consequently, they would maintain the stability of the Islamic stock market during economic and financial uncertainty.

LITERATUR REVIEW

Globalization forces a country to improve and stabilize its economic conditions. A country with a fragile economic condition experiences a crisis that influences other countries, causing a domino effect during a shock (Medvedev, 2015; Naifar, 2016). Through globalization, the integration between countries triggers a domino effect due to problems in essential sectors (Masteikiene & Venckuviene, 2015; Surugiu & Surugiu, 2015). Therefore, economic integration in the stock market is closely related to portfolio diversification and market efficiency (Abbes & Trichilli, 2015; Balli *et al.,* 2019).

Insufficient information about a market is received by participants excessively because it is different. As a result, when the market experiences a shock, its correlation with markets of other countries increases (Dewandaru *et al.,* 2014; el Alaoui *et al.,* 2015; Li & Giles, 2015). Diversification between international stock markets is increasingly complex and risky of losing its benefits. When one market experiences a decline, other markets decline more than its average effect due to the increasing correlation. Therefore, diversification only applies in normal market conditions and is detrimental when a market experiences a significant decline.

The concept of an efficient market was first proposed and popularized by Fama *et al.* (1969), where the market refers to the capital and money markets. According to the efficient market hypothesis, adequate financial markets adapt to new information. It means that the market price reflects the available information. Similarly, inefficient financial market asset prices reflect the available information and are consistent with economic fundamentals (Dewandaru *et al.,* 2014; Ntim *et al.,* 2015). Information is divided into the past stock price, public, and available information, with each group reflecting market efficiency.

Nurrachmi (2019) examined the market integration of the Islamic stock index during and after the 2007 crisis and the benefits of stock markets to international

investors. The results showed cointegration in the Islamic stock market only after the crisis. Furthermore, investors gain portfolio returns in the other six countries in the long term.

Suteja *et al.* (2019) investigated the cointegration of the Islamic stock market in Indonesia, Malaysia, and Singapore before and during the crisis in Greece. Also, the study determined the countries influencing the volatility of Islamic stock prices in the Jakarta Islamic Index (JII). The results show no cointegration in the capital market in the sample countries used. However, there is a contagion effect on the movement of Islamic stock prices in the three countries. Furthermore, Singapore's Islamic stock market influences JII more than Malaysia.

Almohamad *et al.* (2018) discussed the short-and long-term relationships between MENA and the Chinese, the United States, and the United Kingdom stock markets before and after the global financial crisis. The study used data on weekly prices for 12 stock markets, including nine MENA markets. These were Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, the United Arab Emirates, the Chinese stock market, and the United States and the United Kingdom. The results showed that the long-term cointegration and short-term causal relationships between the MENA stock market increased after the crisis more than during the pre-crisis. Also, the integration between MENA and the Chinese stock market increased post-crisis more than before the crisis. The integration between MENA and stock markets of the United States and the United Kingdom increased in the post-crisis more than in the pre-crisis. Therefore, the increased links between these stock markets have important implications for portfolio investors and policymakers.

Adam *et al.* (2017) analyzed foreign interest rates and the integration of the Islamic stock market between Indonesia and Malaysia. The results showed a cointegration relationship between the Jakarta Islamic Index and the Hijrah Shariah Index. However, no cointegration relationship was found between the Jakarta Islamic Index, Hijrah Shariah Index, and The FED interest rate. Moreover, the results from the VAR model showed a long-term relationship between the Jakarta Islamic Index, the Hijrah Shariah Index, and integration between the Indonesian and Malaysian Islamic stock markets. Foreign interest rates only affected the Malaysian Islamic stock price index. Jiang *et al.* (2017) analyzed the

financial crisis and the joint movement of global stock markets in six economies. The results showed that the financial crisis strengthened the interdependence of global stock markets, but the general joint movement of global stock markets remained even after the crisis.

Majdoub *et al.* (2016) analyzed the short and long-term market integration between conventional and Islamic stock prices for France, Indonesia, the UK, and the United States. The results showed a long-term relationship for all countries, except the UK, where conventional and Islamic stock prices showed no cointegration. These findings suggest that the finance industry in the countries does not comply with Islamic law. Consequently, it prevents portfolio managers and market participants from benefiting from international diversification opportunities and hedging effectiveness. Moreover, there is a weak relationship between the Indonesian and developed country markets for conventional and Islamic stock prices. It suggests that investors could diversify their portfolios internationally to minimize risk. However, there is a strong relationship between developed country markets for conventional and Islamic indices.

Saiti and Masih (2016) analyzed the causal relationship of daily returns between four conventional and three sharia indices. The study was conducted on FTSE China Shariah Index, Asia Shariah Index, Malaysia EMAS Shariah Index, SSE China Composite Index, Hang Seng Index, Nikkei 225, and KOSPI. The results showed significant cointegration between conventional and Islamic stock indices. Also, the Chinese traditional SSE market and the Malaysian Islamic market drive all indices, including the China Shariah Index.

Puspitasari *et al.* (2015) analyzed the integration of Indonesia's, Malaysia's, Singapore's, Thailand's, and the Philippines' stock exchanges associated with world oil prices, including the decline in 2014. The results indicated a cointegration relationship among the ASEAN 5 stock exchanges during the study period, implying integration between the stock exchanges. Specifically, the Indonesian stock market is influenced by the stock exchanges of Thailand and Singapore in the long run. At the same time, world oil prices significantly affect the IHSG in the short term. Moreover, Arshad and Rizvi (2014) analyzed the correlation between Islamic and conventional indices. The result showed a low correlation between the two indices, implying a safer sharia index during

the crisis. This result shows Islamic investment as an untapped alternative to portfolio diversification.

H₁: Integration of developing countries' Islamic stock index
H₂: Islamic stock market shocks
H₃: Impact on the Indonesian Islamic stock market

RESEARCH METHOD

This study used monthly time series data for the 2011-2021 period, with data on the closing date of developing countries' daily sharia stock price index. Research data sourced from investing.com, finance.yahoo.com, and idx.com. The countries include Indonesia (ISSI), Turkey (DJIMTR), Malaysia (DJMY25D), Pakistan (KMI30), Kuwait (DJIMKW), and India (DJIMIN). The sample developing countries were selected based on the largest Muslim population worldwide. The market integration was analyzed using the Vector Autoregression/Vector Error Correction Model (VAR/VECM).

The VAR/VECM model starts with the stationarity test to ensure the data have constant mean and variance (Singh & Singh, 2016). The cointegration test is performed to determine the cointegration of the data's non-stationary variables. Furthermore, VAR stability is used to calculate the roots of the function polynomial (Firdaus, 2006). It ensures the validity of the Impulse analysis Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) results. The optimum lag test is conducted to determine the response time due to any action or decision. Furthermore, Impulse Response Function (IRF) determines the response of a variable to the shock of another variable (Jebran *et al.*, 2017). In contrast, the Forecast Error Variance Decomposition (FEVD) analyzes changes in a variable influenced by other variables, VECM is then applied when all variables are non-stationary and cointegrated. ΔV_t is the stock index vector at the difference, p is lag length, Γ is the short term matrix, Π is the long term matrix, and $\varepsilon\varepsilon$ is a residual vector.

$$\Delta V_t = \sum_{i=1}^{p-1} \Gamma_i V_{t-k} + \Pi V_{t-1} + \varepsilon_t$$

RESULT AND DISCUSSION

Stationarity test

Non-stationary data is converted into static data by increasing integration, resulting in spurious regression. The Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) tests were used to check data stationarity. The data is considered stationary when the ADF and PP tests result in a probability less than 0.05. The stationary test was carried out because this study used time-series data. Based on Table 1, the ADF and PP tests were performed and proceeded to the level difference for non-stationarity. At the level test, all data contains a unit root proven with a probability value greater than 0.05, implying non-stationarity. It was followed by increasing integration, indicating that all data have a probability value less than 0.05 with no unit root, implying stationarity. Therefore, the stock index of developing countries has a long-term relationship.

Table 1. Stationarity Test Result

Variable	ADF Test		PP Test	
	Level	Difference	Level	Difference
ISSI	0.1540	0.0000	0.1345	0.0000
DJIMTR	0.8284	0.0000	0.8681	0.0000
DJMY25D	0.3420	0.0000	0.3162	0.0000
KMI30	0.2876	0.0000	0.2483	0.0000
DJIMKW	0.2601	0.0000	0.2559	0.0000
DJIMIN	0.9846	0.0000	0.9883	0.0000

Lag Optimum Test

The optimal lag was determined to ensure the estimated VAR/VECM model obtained becomes valid and obtain a suitable estimation model. The optimum lag length in the VAR/VECM model was determined by the information displayed by Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz

Criterion (SC), and Hannan-Quinn (HQ). The resulting optimum lag has the smallest FPE, AIC, SC, and HQ values, as shown in Table 2. The asterisk is the recommended optimum lag length from testing with the e-views software.

Table 2. Lag Optimum Test Result

Lag	LogL	FPE	AIC	SC	HQ
0	429.9675	2.37e-11	-7.438026	-7.294016	-7.379580
1	1251.259	2.47e-17*	-21.21507*	-20.20699*	-20.80595*
2	1267.682	3.49e-17	-20.87162	-18.99948	-20.11182
3	1300.720	3.73e-17	-20.81965	-18.08345	-19.70918
4	1327.598	4.48e-17	-20.65961	-17.05935	-19.19847
5	1372.401	4.00e-17	-20.81405	-16.34973	-19.00223
6	1405.962	4.44e-17	-20.77126	-15.44287	-18.60876
7	1444.631	4.64e-17	-20.81809	-14.62564	-18.30492
8	1471.981	6.10e-17	-20.66633	-13.60982	-17.80249

*indicates lag order selected by the criterion

Stability Test

The VAR stability was tested by assessing the modulus values. A modulus value less than 1 (<1) means that the VAR model is stable. Also, stability is seen when VAR satisfies the stability condition. Table 3 shows the VAR stability test results at a predetermined lag.

Table 3. Stability VAR Test Result

Root	Modulus
0.996724	0.996724
0.944081	0.944081
0.934714	0.934714
0.907575 - 0.135846i	0.917686
0.907575 + 0.135846i	0.917686
0.728753	0.728753

No root lies outside the unit circle.

VAR satisfies the stability condition.

Cointegration Test

The VAR stability was tested by examining the value of the modulus. If the modulus value is less than 1 (<1), the VAR model is stable. Apart from the modulus value, the criteria for stability are determined from the information displayed during the VAR stability test. Table 3 shows that the modulus value is less than one, and VAR satisfies the stability condition, meaning the model is stable. Therefore, the Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) analyses are valid.

Table 4. Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.452895	222.2471	117.7082	0.0000
At most, 1 *	0.407199	154.0952	88.80380	0.0000
At most, 2 *	0.304882	95.00779	63.87610	0.0000
At most, 3 *	0.236673	53.91259	42.91525	0.0028
At most 4	0.110775	23.39482	25.87211	0.0986
At most 5	0.085729	10.12804	12.51798	0.1215

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The Johansen Cointegration test analyzed the long-term integration between developing country stock indices at lag 1. This test compared the trace statistic value with the critical value at the 5% level.

Table 4 shows four cointegration equations between ISSI and the stock index of developing countries at the 5% significance level. It proves a long-term balanced relationship and movement similarity. The results of this test confirm that the Indonesian sharia stock index is integrated with the developing country sharia stock index. Johansen's tests were used to determine the VAR or VECM model due to integration.

The pre-estimation test indicates that all variables were stationary and cointegrated at the difference, meaning the VECM model employed uses the optimum lag of 1. From Table 5, no developing country's Islamic stock index affects the Indonesian Islamic Stock Index (ISSI) in the short term. The ineffectiveness of developing country sharia stock indexes on Indonesian sharia stock indexes in the short term illustrates that developing country sharia stock indexes take time (el Alaoui *et al.,* 2015; Mubarok *et al.,* 2020). Generally, the reaction occurs in the long term (Godil *et al.,* 2020). However, the Malaysian Islamic Stock Index (DJMY25D) and the Indian Islamic Stock Index (DJIMIN) affect the Indonesian Islamic Stock Index (ISSI) in the long term, with a lag one month before. A 1% increase in the Malaysian Islamic Stock Index (DJMY25D) and the Indian Islamic Stock Index (DJIMIN) increases the Indonesian Islamic Stock Index (ISSI) by 2.14% and 1.5%, respectively.

Table 5. VECM Test Result

Variable	Coefficient	t-statistic
Short-term		
CointEq1	-0.016984	[-1.13281]
D(ISSI(-1))	0.126210	[1.07216]
D(DJIMTR(-1))	0.044832	[0.54317]
D(DJMY25D(-1))	0.009275	[0.09441]
D(KMI30(-1))	-0.024534	[-0.35231]
D(DJIMKW(-1))	0.021259	[0.19841]
D(DJIMIN(-1))	-0.036407	[-0.29637]
Long-term		
DJIMTR(-1)	0.048430	[0.07479]
DJMY25D(-1)	2.140713	[3.28264]*
KMI30(-1)	-0.134850	[-0.58484]
DJIMKW(-1)	-0.684873	[-1.29391]
DJIMIN(-1)	1.500166	[2.71457]*

*t-tabel 1.96

The Malaysian Islamic Stock Index affects the Indonesian Islamic Stock Index in the long term because the two countries are located in the same Southeast Asian region. This supports the theory by Janakiramanan and Lamba (1998) that

geographically close countries have similar investors that influence each other in their markets. Additionally, the enactment of the MEA in 2015 led to free trade among ASEAN countries.

India's Islamic stock index affects Indonesia's stock index in the long term because the two countries cooperate in the defense, manufacturing, mining, pharmaceutical, tourism, and infrastructure sectors. The Indonesian Ministry of Trade (2018) stated that India is the most significant export trading partner in South and Central Asia, with nearly USD 15 billion. Furthermore, Indian tourist visits to Indonesia are increasing with direct flights between the two countries. The high air connectivity has opened up more opportunities for cooperation and could be reconsidered by increasing transportation rights to reflect economic interaction.

Integrating Islamic stock indices in developing countries would make the stock markets relate and influence stock price movements on each exchange. This would result in the same magnitude of risk and return in all Islamic stock indices in developing countries, allowing investors to invest. An integrated stock index would be more efficient than a segmented stock index. This is because the incoming information would be directly reflected in the stock price index, causing a random walk mechanism. As a result, investors would obtain regular returns continuously based on technical analysis (Adebiyi *et al.,* 2014; Babu & Reddy, 2015; Caporale *et al.,* 2019; Dong *et al.,* 2020).

In the current global market, every investor could invest anywhere. Foreign investors channel their capital in exchanges worldwide, creating global linkages between exchanges (Almohamad *et al.,* 2018; el Alaoui *et al.,* 2015). Additionally, they often have the same investors for stock exchanges close to each other. The occurrence and dynamics of stock prices between exchanges affect each other, specifically between adjacent countries (Dahir *et al.,* 2018; Mensi *et al.,* 2019; Tuyon & Ahmad, 2016). Moreover, the linkage of the Indonesian stock market with several world stock markets is due to economic relations, such as exports and imports.
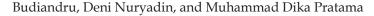
Impulse Response Function

Impulse Response Function (IRF) analysis showed a dynamic long-term response between variables during a shock. Figure 1 described the Indonesian Islamic Stock Index (ISSI) response over the next 60 months when shocks occurred in other developing country sharia stock indices. ISSI did not respond to shocks from any other Islamic stock index in the first month because this requires time. It began responding to shocks from every other Islamic stock index in the second month.

ISSI responded negatively to the Turkish Islamic Stock Index (DJIMTR) shocks from the second month to the end of the observation. However, from the fifteenth month to the end of the observation, the response was stable with a value of -0.001413. Moreover, it responded negatively to the Malaysian Islamic Stock Index (DJMY25D) from the second month to the end of the observation. It responded negatively by fluctuating from the second to the sixteenth month. From the seventeenth month until the end of the observation, the response was stable with a value of -0.015599.

ISSI responded negatively to the Pakistan Islamic Stock Index (KMI30) shocks from the second month to the end of the observation. The response fluctuated from the second to the nineteenth month, then stabilized with a value of -0.000711. Furthermore, ISSI responded positively and negatively to the Kuwait Islamic Stock Index (DJIMKW) from the second month to the end of the observation. Initially, the response was positive and negative until the third month, and only positive and fluctuated from the fourth to the sixteenth month. It stabilized from the seventeenth month until the end of the observation, with a value of 0.00185.

Moreover, ISSI responded positively and negatively to shocks in the Indian Islamic Stock Index (DJIMIN) from the second month to the end of the observation. Initially, the response was positive and negative until the third month, then fluctuated and became negative from the fourth month. It stabilized from the twentieth month until the end of the observation, with a value of -0.002878.
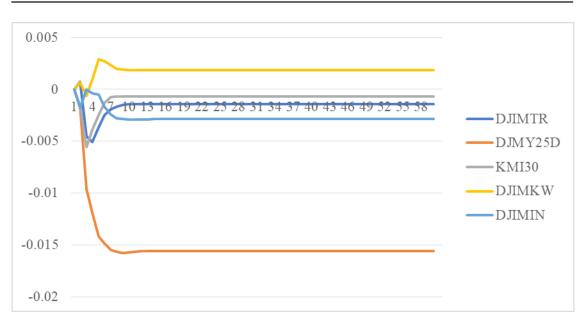
Figure 1. Impulse Response Function

The Indonesian Islamic Stock Index (ISSI) response to the shocks of each developing country's sharia index lowers and increases its volatility when responding negatively and positively, respectively. Furthermore, its long-term response to shocks in other developing country Islamic stock indexes (KMI30 and DJIMTR) moves towards equilibrium or close to zero (convergence), implying a temporary effect. However, its response to other developing countries' Islamic stock index shocks (DJIMKW, DJIMIN, and DJMY25D) moves away from the balance or zero (convergence), implying a permanent effect.

Forecast Error Variance Decomposition'

The dynamic structure between variables in VAR is seen through the Forecasting Error of Variance Decomposition (FEVD) analysis. The FEVD pattern indicates multivariate causality among the variables in the VAR model. Moreover, the variance decomposition forecasting shows the percentage of each shock's role on the variability of certain variables. Figure 2 explains the contribution of each variable in explaining the Indonesian Islamic Stock Index (ISSI) variability.

In the first month, 100% of the shocks were caused by the Indonesian Islamic Stock Index (ISSI). In contrast, the influence of JII declines until the 60th

month, with an average of only 89.61%. The decline in the Indonesian Islamic Stock Index (ISSI) influence is due to increasing Islamic stock indices in other developing countries. It starts from the largest to the minor influence over the next 60 months with an average of 9.56% for the Malaysian Islamic Stock Index (DJMY25D), 0.287% for the Indian Islamic Stock Index (DJIMIN), 0.227% for the Turkish Islamic Stock Index (DJIMTR), and 0.155% for the Pakistan Islamic stock index (KMI30) and the Kuwait Islamic Stock Index (DJIMKW).
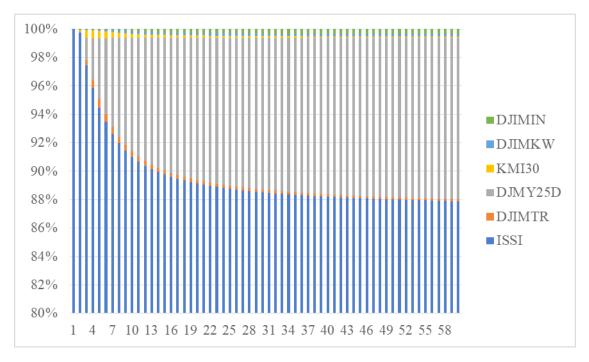

Figure 2. Forecasting Error of Variance Decomposition

The FEVD results indicate that investors are unconcerned about shocks from each variable because they invest based on trust in issuers. This condition could occur today, such as the Middle East investors' readiness to invest in Indonesia's bonds and stocks. Additionally, bilateral agreements between developing countries regarding the trading of several companies and sharia products have allowed Indonesian investors to trade shares in other developing countries. The increasing number of investors increases community welfare and prosperity expands investment transactions between countries, removes international trade barriers, and improves the quality of domestic products. Consequently, this attracts other countries to provide local products in an integrated area (Amidu & Wolfe, 2013; Ferris *et al.,* 2018; Sukmana & Ibrahim, 2017; Vithessonthi, 2016).

A country's benefits from the increasing integration of its financial sector into international markets could increase potential growth and ease the adjustment burden due to external shocks (Ahmed & Elsayed, 2019; Arribaat *et al.,* 2021; Bremus & Neugebauer, 2018; Caporale *et al.,* 2019). In an open economy, the financial system allows its citizens to diversify their assets into shares of foreign institutions to fund domestic projects (Lin *et al.,* 2018; Shen *et al.,* 2018). When the financial sector is integrated into international capital markets, these countries escape from external deficits and unemployment reflected in the internal imbalance of their financial position. Consequently, financial market integration would promote production specialization, improve financial industry efficiency, direct better economic policies, and signal a commitment to liberalization (Amaroh & Nasichah, 2021; Boukhatem & Moussa, 2018; Kavya & Shijin, 2020; Thampanya *et al.,* 2020).

CONCLUSION

This study showed that the Indonesian Islamic Stock Index (ISSI) was integrated into the developing countries' Islamic stock index. However, this integration did not have a short-term impact on ISSI. Only the Malaysian Islamic Stock Index (DJMY25D) and the Indian Islamic Stock Index (DJIMIN) affected the ISSI in the long term. The Malaysian Islamic Stock Index (DJMY25D) has a more significant long-term influence than the Indian Islamic Stock Index (DJIMIN). ISSI stabilized faster in response to shocks to the Turkish Islamic Stock Index (DJIMTR). Moreover, it is more vulnerable to shocks from the Pakistan Islamic Stock Index (KMI30) and the Indian Islamic Stock Index (DJIMIN) because they are the slowest to respond. The most significant contribution of developing country Islamic stock index shocks is ISSI, followed by the Malaysian (DJMY25D), the Indian (DJIMIN), Turkey (DJIMTR), Pakistan (KMI30), and Kuwait (DJIMKW).

Developing countries were sampled to help improve the quality of the Islamic stock index infrastructure. The policy reforms were improved by reducing or eliminating trade and investment barriers to minimize the impact of international stock index shocks. Moreover, they were used to accelerate stock index integration between developing countries. There is a need for coordination between developing countries in regulations and capital market readiness to achieve stock index integration. Therefore, investors should consider the dominant economic strength, geographical factors, and trade relations in determining portfolio diversification in global economic conditions.
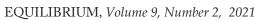
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