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The Vector Error Correction Model Analysis on the Dow Jones Islamic Market Index of Malaysia, Japan, China, and the Jakarta Islamic Index

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ABSTRACT

The development of the Islamic capital market in Indonesia cannot be separated from the influence of foreign capital markets, especially in the Asian region. Fluctuations occurring in the JII indicate the existence of a contagious effect caused by stock price movements in a country that can affect stock price movements in other countries or sectors. This study aims to determine the relationship between DJIMI Malaysia, Japan, China, and the JII. This research uses the Vector Error Correction Model (VECM) method using monthly data on the stock price index from January 2021 to December 2023. The results showed that in the long term, DJIJP has a positive significant relationship with the JII, DJICHK has a negative significant relationship with the JII, while DJIMY has no statistically significant relationship with the JII. While in the short term DJIMY, DJIJP, and DJICHK do not have a significant relationship with the JII. This research provides information for investors and academics to understand the dynamics of Islamic stock markets in Malaysia, Japan, China, and Indonesia.

Keywords: Capital Market Integration; Contagion Effect; Dow Jones Islamic Market Index (DJIMI); Jakarta Islamic Index (JII); Vector Error Correction Model (VECM)

JEL Classification: G10, G11, G15

INTRODUCTION

The importance of capital markets in today's global economy cannot be ignored due to globalization, which results from advances in information technology and the openness of the world economy (Azar & Chopurian, 2018). Amidst the development of financial markets as a developing country, Indonesia has made the capital market a crucial element in its economic structure. Indices serve as market indicators that depict active or sluggish market conditions (Robiyanto, 2018). Stock price indices reflect the simultaneous and complex influence of various variables that primarily affect economic events. The Dow Jones Islamic Market Index (DJIMI) is the leading Islamic stock index in the world and is often used as a reference by global investors who want to invest in Islamic stocks. DJIMI is spread across 34 countries, covering stocks from 18 market sectors, 51 industry groups, 10 economic sectors, and 89 industry subgroups (Novia et al., 2021). Some countries that have the DJIMI include the United States with the DJIMI United States (IMUS), Europe with the DJIMI Europe (DJIEU), Japan with the DJIMI Japan (DJIJP), Malaysia with the DJIMI Malaysia (DJIMY), and China/Hong Kong with the DJIMI China/Hong Kong (DJICHK). Shariah-compliant stocks from these countries have relatively high values compared to Islamic stocks from other countries (Prianto & Darwanto, 2021).

In Indonesia, Sharia-based stocks began with the establishment of the Jakarta Islamic Index (JII) in July 2000. The movement of the JII is always considered by Islamic stock investors when investing in the Indonesian capital market. Stock movements can be monitored through a country's stock index, which serves as a reference and indicator for investors in the stock market (Rahmawati & Maharani, 2023). This is because the JII is a benchmark for the performance of Islamic stocks on the Indonesia Stock Exchange. The performance of the JII is influenced by various factors, both internal and external. Internally, the JII is influenced by domestic macroeconomic variables, while externally, the economic conditions of foreign countries also affect the movement of the JII. Integration in the stock market refers to the relationship between global stock markets that occurs due to unlimited access for investors. This affects the achievement of global stock prices. In addition, market integration also reflects how market information is channeled throughout the marketing channel, allowing market participants to respond to price changes (Bakari et al., 2024). Stock prices reflect investors' expectations regarding potential losses. Therefore, international investors tend to invest in regions with economic conditions that favor liquidity, high shares, and low costs. This situation increases the level of integration of international stock markets as investors diversify their stocks (Budiandru & Nuryadin, 2022). Increased investment and increased capital goods can benefit the economy (Sasongko et al., 2022).

Stock price fluctuations, which reflect changes in the value of a company's shares or a market index, are a complex phenomenon in global financial markets. These dynamics are influenced by various factors, such as economic events, politics, market sentiment, and global interactions (Ahmed, 2017). In explaining stock price fluctuations, the contagion effect theory emerges as a concept that explains how changes in one market can spread to other markets. This phenomenon can be caused by a global financial crisis, changes in interest rates, or economic conditions in the relevant country.

On the other hand, to analyze the long-run and short-run relationships among economic variables, the Vector Error Correction Model (VECM) approach is used. This approach allows modeling and measuring the extent to which changes in stock prices can return to long-term equilibrium levels after experiencing short-term disturbances. By combining the contagion effect theory and the VECM approach, research can provide an in-depth understanding of how stock price fluctuations in one market can propagate to other

markets, as well as how these markets can return to long-term equilibrium. This analysis provides a basis for investment decision-making, risk management, and strategic planning in the face of global financial market uncertainty.

Research on the impact of the current global crisis on stock market integration and co-movement between stock markets has important implications for the potential benefits of international portfolio diversification and a country's financial stability (Qizam et al., 2020). A portfolio is basically a combination of various assets, both real assets in the form of productive assets and financial assets, which can be invested in money markets, capital markets, or other financial markets (Kalebos, 2022). According to Sher et al. (2024), integration with developed markets provides an attractive opportunity to implement cross-border investment strategies.

Several studies that discuss the integration of the global Islamic stock market with the Indonesian Islamic stock market show diverse results. Research conducted by Novia et al. (2021) shows that in the long run, the Islamic capital market in Indonesia is integrated with several Islamic capital markets in the Asian region, namely the Islamic capital markets of China and India. However, in the short term, the Islamic capital market in Indonesia is only integrated with China and Japan. Fadhilah (2021) found that, based on the cointegration relationship, there is a long-term relationship between the Dow Jones Islamic Market Greater China Index and the Indonesian Sharia Stock Index. Sirullah (2023) found that FTFB-Malaysia, DJIMUS-America, DJIJP-Japan, DJIUK-UK, and STSWCHN-China have both long-term and short-term relationships with JII-Indonesia.

This study aims to determine the long-term and short-term relationships between DJIJP-Japan, DJIMY-Malaysia, DJICHK-China, and the JII. This study also examines how the JII responds to shocks that occur in DJIJP, DJIMY, and DJICHK and how much each index contributes to the fluctuations that occur in the JII. This paper is expected to provide insights for investors regarding economic conditions, particularly in the four countries mentioned, and can be used as a reference to enhance understanding and serve as a foundation for further research.

LITERATURE REVIEW

Indonesia, as one of the countries with the largest Muslim population in the world, has made the Islamic economy an important issue. With the largest Muslim community globally, Indonesia should have a thriving Islamic capital market. Various Islamic businesses are also being promoted to develop the Islamic economy in Indonesia, one of which is Islamic stock investment (Mubarok et al., 2020). Although Indonesia has great potential to develop the Islamic economy and Islamic capital market, global challenges, such as the contagion effect of the financial crisis, also need to be considered. According to Nareswari et al. (2024), uncertain global economic conditions encourage capital movements and suppress exchange rates and inflation, so Bank Indonesia needs to implement appropriate policies to maintain financial stability. When economic globalization occurs, it encourages countries to strengthen their economies to maintain stability (BenSaïda et al., 2018). Weak economies can be vulnerable to sudden changes, potentially triggering crises that cascade to other countries in similar conditions, like a domino effect (Cieslak & Schrimpf, 2019).

The contagion effect is a phenomenon where a financial crisis in one country triggers a financial or economic crisis in another. This happens because stock exchanges and stock index prices between countries are closely connected and influence each other (Aloui et al., 2011). It is agreed that a strong stock market, such as the US, will affect a weaker market, such as the Asian market, but not vice versa. Other factors that can

influence the contagion effect include geographical or regional linkages between countries or the strong global impact of a financial crisis that spills over to other markets. It is widely believed that the rapid spread of currency and stock market crises from one country in the region to another is due to systematic effects (Khalid et al., 2020). Overexposure to inaccurate market data is different from exposure to accurate data. If there is a downturn in one market, other markets will also decline due to their increasing interconnectedness (Budiandru & Nuryadin, 2022). In this context, capital market integration describes a situation where the value of stocks on various global stock exchanges is closely related.

Capital market integration is a situation where share prices in the world's various capital markets are so closely linked that these markets can set international prices for their shares. It also provides unlimited access for investors around the world to invest (Mailangkay, 2013). In a broad sense, integration shows that stock prices in various capital markets worldwide have an increasingly strong positive relationship (Darmawan, 2023). Integration between stock markets indicates efficiency, which means these markets do not benefit from diversification as their performance tends to be harmonized across different markets (Silvers, 2021). Financial integration has opened up pathways for market fluctuations, playing an important role in driving significant economic growth as a result of the transformative effects of globalization (Iheanacho et al., 2023). In the risk-return framework, investors can increase returns, reduce risk, or both by owning a combination of investments in stock markets whose returns are uncorrelated. Therefore, the degree of stock market integration reflects the potential portfolio diversification benefits that investors can obtain (Budiandru & Nuryadin, 2022).

Fabozzi (1995), cited in Sirullah (2023), defines diversification as a portfolio formation strategy that aims to reduce risk without sacrificing the potential return that can be obtained. Portfolio management implements a risk reduction strategy by adding various securities to the portfolio. The concept involves continuously adding different types of securities to a portfolio to significantly reduce risk. Research has shown that the more stocks included in the portfolio, the risk of loss from one stock can be offset by the gains from other stocks (Febriyanto, 2018). To reduce investment risk, investors need to diversify. This diversification will result in what is known as a portfolio (Setyawan et al., 2021). With diversification, it is expected that a decrease in the profit rate or risk of one type of security can be offset by an increase in the profit rate of other securities. Thus, if an investor manages to form a perfect portfolio, the portfolio risk will be equal to market risk or systematic risk.

Financial linkages between stock exchanges in ASEAN-5 member countries, as well as China (mainland and Hong Kong), Japan, and South Korea (ASEAN5+4) studied by Wu (2020), the results of his research show that the level of interconnectedness between ASEAN5+4 stock markets has fluctuated over time. This connectedness tends to increase significantly during crisis periods, given that all markets in the region are generally vulnerable to the spread of risk from global markets. Caporale et al. (2022) explain that there is a significant level of economic integration between the five ASEAN countries and the United States, but economic relations with China are relatively limited. The exception is Indonesia, which shows a higher level of dependence on China, particularly in the financial sector. Based on the explanation above, the hypotheses in this study are as follows:

H1: It is suspected that there is a relationship between DJIMI-Malaysia and the JII
H2: It is suspected that there is a relationship between DJIMI-Jepan and the JII
H3: It is suspected that there is a relationship between DJIMI-China and the JII.

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RESEARCH METHOD

This research approach is a quantitative approach, namely research that allows recording results in the form of numbers. This quantitative research uses descriptive methods, namely methods that present, analyze, and interpret data.

This study uses secondary data in the form of time series with monthly time series data taken from investing.com and yahoofinance.com website data sources. The analysis used in this research is the VECM using the Eviews 10 analysis tool to test the four variables, namely DJIMY, DJIJP, and DJICHK with the JII. VECM is often known as a specific form of VAR model for time series data that is not stationary at its level and has a cointegration relationship, so it is known as a restricted VAR (Prakoso in Pratiwi et al., 2022). In the restricted VAR analysis, the data is not stationary at its level and shows linear cointegration, so in the context of this study, the VAR model will be converted into a VECM model. The stages in analyzing using the VECM model in this study are Unit Root Test, Optimal Lag Test, Stability Test, Cointegration Test, VECM, Impulse Response Function (IRF) Test, and Variance Decomposition (VD) Test.

RESULTS

The data management technique in this study uses the VECM method using Evieaws 10 software. EViews (Econometric Views) is a statistical and econometric software specifically designed for economic and financial data analysis. VECM is a method in econometrics used to analyze short-term and long-term relationships between time variables in a model, as for the stock price data used from 2021-2023. There are several testing criteria required before using VECM as follows.

Unit Root Test

The unit root test is an important step in VECM analysis as it provides crucial information regarding data stationarity, variable cointegration, model specification, and proper interpretation of results. In this study, the testing approach used is the Augmented Dickey-Fuller (ADF) test with a significance level of five percent. If the value of the t-ADF statistic exceeds the critical value set by MacKinnon, it indicates that the data being analyzed does not have a unit root or can be called stationary.

Table 1. Level Unit Root Test Results

Variable	ADF	MacKinnon 5%	Probability	Conclusion
JII	-1.820297	-2.948404	0.3649	Non-stationary
DJIMY	-1.986597	-2.948404	0.2911	Non-stationary
DJIJP	-1.646944	-2.948404	0.4486	Non-stationary
DJICHK	-1.330823	-2.948404	0.6042	Non-stationary

Source: Eviews10 (2024)

The unit root test results at the level show that the four variables do not show stationarity at the 5% level. As seen in Table 1, all absolute t-ADF values are smaller than the MacKinnon Critical Value at the 5% level. Non-stationary data conditions in the study may result in spurious regression, so stationarity testing is continued at the first difference level.

Table 2. Difference Unit Root Test Results

Variable	ADF	MacKinnon 5%	Probability
JII	-5.740900	-2.951125	0.0000
DJIMY	-7.305943	-2.951125	0.0000
DJIJP	-6.354558	-2.951125	0.0000

DJICHK	-6.325912	-2.951125	0.0000

Source: Eviews10 (2024)

The results of data stationarity testing at the first difference level in Table 2 show that all variables have shown stationarity at the five percent significance level. This can be seen from the absolute value of t-ADF which is greater than the absolute value of MacKinnon Critical Value at the five percent significance level.

Optimal Lag Test

The optimal lag test is an important step in building an accurate and stable VAR to VECM model. Choosing the optimal lag helps improve model accuracy, estimation efficiency, and model stability. By using the optimal lag, it is expected that the autocorrelation problem can be eliminated. This study determines the optimal lag based on the Hannan-Quinn Information Criterion (HQ), by selecting the shortest lag. The analysis results show that the smallest value is at lag 1 HQ, which is marked with (*). Therefore, in the next step, the estimation process of the equation model will use lag 1.

Table 3. Optimal Lag Test Results

Lag	LogL	LR	FPE	AIC	SC
0	-1076.901	NA	3.31e+23	65.50916	65.69056
1	-997.5872	134.5933*	7.21e+21*	62.67195*	62.57893*
2	-984.6156	18.86787	9.08e+21	61.85549	63.48804
3	-977.8262	8.229528	1.80e+22	62.41371	64.77184

Source: Eviews10 (2024)

Choosing the optimal lag 1 based on HQ in Table 3 shows that the VAR model with lag 1 is the most efficient, accurate, and balanced model in capturing the dynamic relationship between variables.

Stability Test

The success of a VAR model can be measured by its stability, where stability is measured by ensuring that the modulus value is within the radius < 1, indicating stability, and beyond that indicating instability. If the largest modulus value is less than 1 and is at the optimal point, then the composition is considered optimal, indicating the stability of the VAR model (Gunawan & Cahyadi, 2019).

Table 4. Stability Test Results

Root	LR
0.934300	0.934300
0.698049-0.158982i	0.715924
0.6989049+015892i	0.715924
0.351077	0.351077

Source: Eviews10 (2024)

The stability test results in Table 4 show that the model has passed the stability test as the modulus value remains below one. This indicates that the model is in an optimal and stable position.

Cointegration Test

The Johansen cointegration test is an important step in VECM analysis as it provides information about, the number of cointegrating vectors, and the long-run relationship. The result of this test determines whether to use a VAR or VECM model. If the variables are mutually integrated, VECM is used; otherwise, VAR is used (Nugroho et al., 2021).

The cointegration test is conducted after making all variables stationary in the first difference. The test method used is Johansen cointegration.

Table 5. Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace	Hypothesized No. of CE(s)	Eigenvalue
None*	0.493995	60.15146	55.24578	0.0174
At most 1*	0.443707	36.99034	35.01090	0.0303
At most 2	0.340500	17.05067	18.39771	0.0764
At most 3	0.081688	2.897398	3.841466	0.0887

Based on the Johansen cointegration test data in Table 5, it is found that the probabilities in the None and At most 1 categories are 0.0174 and 0.0303. Both values are smaller than 0.05, indicating the existence of a cointegrating equation, which means it has a long-term equilibrium. For this rank sum information will be used as an error correction model (ECM) that will be incorporated into the VAR into VECM.

VECM Test

The results of the previous cointegration test indicate the presence of cointegration among each variable. Therefore, the approach used is the VECM. VECM estimation is done to analyze the correlation in both the short and long run. If the t-statistic value exceeds the value listed in the t table, it can be concluded that there is a significant relationship in both the long run and the short run (Gio, 2022). The t-table obtained from model processing in the t-table df = 35 for a critical value of 5% is 1.68957.

Table 6. VECM Test Results

Long-Term		
Variable	Coefficient	t-value
DJIMY	0.152269	[1.00103]
DJIJP	17.39885	*[4.67579]
DJICHK	-7.753738	*[-2.50579]
Short-Term		
Variable	Coefficient	t-value
DJIMY	0.051927	[0.43400]
DJIJP	2.353908	[0.68187]
DJICHK	-3.442880	[-1.59652]

Note: DJIMY (DJIMI Malaysia), DJIJP (DJIMI Japan), DJICHK (DJIMI China)
Source: Eviews10 (2024)

The VECM estimation test results in Table 6 show that there is an error correction of 0.333592 in the short term. this is interpreted to achieve long-term equilibrium requires error correction of 0.333592%. This value is seen from CointEq of -0.333592.

The VECM estimation results for the long-term relationship between DJIMY and JII show that the t-statistic value of 1.00103 is smaller than the critical t-table value of 1.68957. This indicates that there is no statistically significant long-term relationship between the DJIMY and the JII. The coefficient value of 0.152269 suggests that for every 1% increase in the DJIMY, the JII responds with a modest increase of 0.152269%. Therefore, the conclusion can be drawn that the long-term relationship between DJIMY and JII is weak and statistically insignificant.

In contrast, the VECM results for DJIJP show a t-statistic value of 4.67579, which is significantly greater than the t-table value of 1.68957, indicating a strong and significant long-term relationship between DJIJP and JII. The coefficient value of 17.39885 indicates

that for every 1% increase in DJIJP, the JII rises by a substantial 17.39885%. This confirms a positive and highly significant long-term relationship between the DJIJP and JII, suggesting that movements in DJIJP strongly influence the JII over the long run.

For DJICHK, the statistical analysis yields a t-statistic value of -2.50579, which exceeds the t-table value in magnitude, also suggesting a significant long-term relationship. However, the coefficient value of -7.753738 indicates a negative association, meaning that a 1% increase in DJICHK corresponds to a 7.753738% decrease in the JII. This suggests that DJICHK has an adverse impact on JII over the long term, establishing a significant but negative relationship between these two variables.

Turning to the short-term dynamics, the VECM results indicate that for DJIMY, the t-statistic value of 0.43400 is smaller than the t-table value of 1.68957, indicating no significant short-term relationship between DJIMY and JII. The coefficient value of 0.051927 implies that a 1% increase in DJIMY would lead to only a slight 0.051927% rise in the JII. Hence, it can be concluded that the short-term relationship between DJIMY and JII is minimal and not statistically significant.

Similarly, the short-term analysis for DJIJP reveals a t-statistic value of 0.68187, which is smaller than the t-table value, indicating the absence of a significant short-term relationship. However, the coefficient value of 2.353908 shows that a 1% increase in DJIJP could result in a 2.353908% increase in JII, though this effect is not statistically significant in the short term.

For DJICHK, the t-statistic value of -1.59652 is again smaller than the t-table value, indicating no significant short-term relationship between DJICHK and JII. The coefficient value of -3.442880 suggests that a 1% increase in DJICHK would result in a 3.442880% decrease in JII, though this result is not statistically significant in the short term.

The integration of Islamic capital markets across Asia has resulted in a high degree of correlation between exchanges, leading to more uniform movements in share prices. This increased synchronization means that risks and returns are becoming more similar across these markets, allowing investors the flexibility to diversify their portfolios without facing substantial differences between exchanges. As a result, these markets are becoming more efficient, offering investors greater opportunities to optimize their investments across different Islamic capital markets.

Impulse Response Function (IRF) Test

IRF describes the dynamic response of a variable to disturbances from other variables in the long run. IRF is used to understand the response of variables to disturbances as well as the impact of shocks on all variables in a certain period of time. Figure 1 shows how the JII responds to shocks from various independent variables in this study.

Figure 1. Impulse Response

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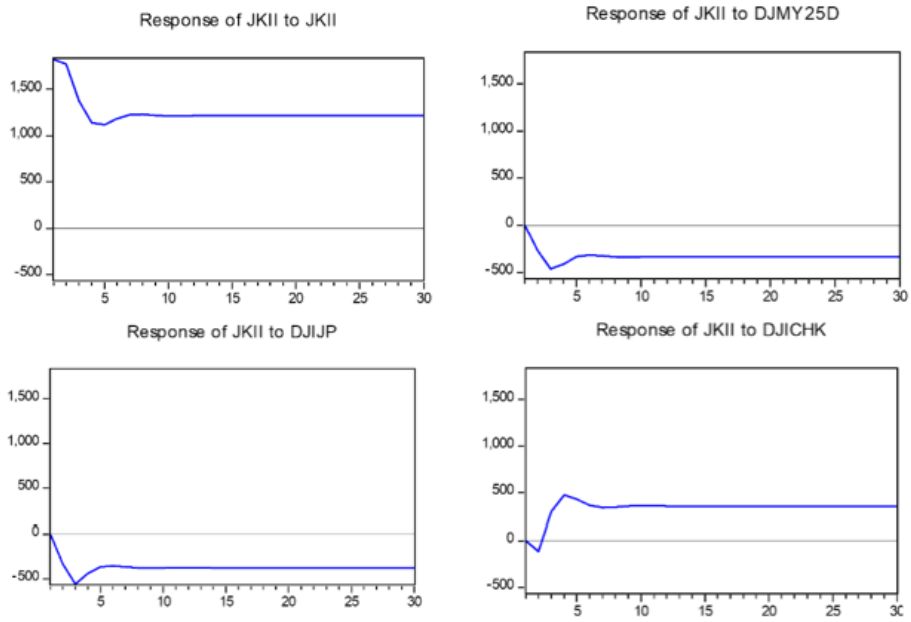


Note: DJIMY (DJIMI Malaysia), DJIJP (DJIMI Japan), DJICHK (DJIMI China)
Source: Eviews10 (2024)

The JII's response to a shock in the DJIMY variable began with a negative reaction of 2.66% in the second period. This negative impact deepened in the third period, with the JII declining by 4.65%. However, the trend reversed, and the JII began to recover in the fourth and fifth periods. Over time, the fluctuations leveled out, and the JII reached a point of stability in the eleventh period, registering a 3.35% increase. This indicates that while the initial shock from DJIMY was negative, the JII gradually adjusted and stabilized over the medium term.

In response to the DJIJP shock, the JII initially showed a negative reaction of 3.32% in the second period, which further worsened in the third period with a decrease of 5.57%. However, the index began to recover in the fourth period with a 4.41% increase, followed by a further 3.65% rise in the fifth period. Despite this recovery, the JII experienced another dip of 3.54% in the sixth period, reflecting continued volatility. The fluctuations persisted from the second period until the eighth period, as the JII struggled to absorb the shock from DJIJP. It was only by the eleventh period that the JII finally reached stability, settling at a 3.76% increase, indicating that the effects of the shock had evened out over the long run.

The JII's reaction to the shock from DJICHK initially involved a negative response of 1.15% in the second period. This was followed by a recovery, as the JII experienced a positive response of 2.99% in the third period and rose further to 4.76% in the fifth period. However, the positive trend was short-lived, as the JII declined by 4.29% in the sixth period. The fluctuations caused by the DJICHK shock continued from the second period up to the ninth period, after which the volatility began to subside. Stability was only achieved in the eighteenth period, when the JII stabilized at a 3.57% increase. This extended period of adjustment highlights the longer-lasting impact of the DJICHK shock on the JII compared to shocks from DJIMY and DJIJP.

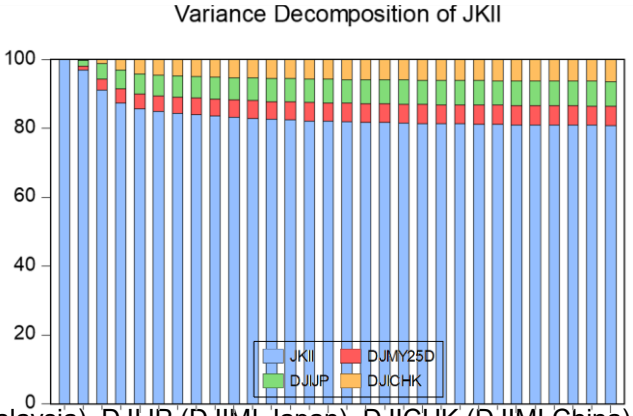
In summary, the JII's responses to shocks from DJIMY, DJIJP, and DJICHK exhibit notable fluctuations in the short to medium term, with each variable causing both positive and negative reactions over several periods. Stability is eventually reached, but the time it takes varies, with the JII stabilizing in the eleventh period following shocks from DJIMY and DJIJP, while the DJICHK shock takes longer, reaching equilibrium only in the

eighteenth period. These patterns suggest that external shocks from different indexes have varied short-term impacts on the JII, but the index ultimately adjusts and stabilizes over time.

Variance Decomposition (VD) Test

After assessing the impact of shocks through impulse response analysis, the next step is to forecast the contribution of each research variable, namely DJIMY, DJIJP, AND DJICHK to shocks or changes in the JII, by looking at the model through the VD method.

Figure 1. VD Test



Note: DJIMY (DJIMI Malaysia), DJIJP (DJIMI Japan), DJICHK (DJIMI China)
Source: Eviews10 (2024)

Figure 2 illustrates that in the 1st period, fluctuations in the JII were entirely caused by shocks to the JII itself, accounting for 100% of the movement. However, starting from the 2nd period, the influence of the JII's own shocks gradually declined, with the fluctuations continuing to decrease until the 10th period. From the 11th to the 15th period, the index stabilized briefly before experiencing another decline. The JII then stabilized again between the 16th and 27th periods, after which it entered a more consistent stabilization phase from the 28th period until the end of the observation window at the 30th period. This pattern suggests that as time progressed, shocks from external variables began to influence the JII more significantly, diminishing the role of its own shocks in explaining its fluctuations.

By the 3rd period, the dominance of the JII's own shocks had decreased to 91.18%. Although this percentage still represented the majority of the JII's fluctuations, other variables had started to exert a noticeable influence. Specifically, DJIMY contributed 3.11% to the fluctuations, DJIJP contributed 4.57%, and DJICHK contributed 1.11%. This shift indicates that external factors, represented by these indices, began to play a role in affecting the JII’s volatility as early as the 3rd period.

As the analysis progressed to the 22nd period, the proportion of JII shocks attributed to the JII itself had further decreased to 81.51%. During this period, the contribution of other variables had become more pronounced, with DJIMY contributing 5.55%, DJIJP contributing 7.07%, and DJICHK contributing 6.02%. This gradual increase in external influence suggests that the shocks from other indices increasingly shaped the fluctuations in the JII over time, signaling a broader integration of external market forces into the index's behavior.

In the final observation period, the 30th period, the contribution of the JII’s own shocks had decreased slightly to 80.87%. Although the JII still dominated its own movements, the influence of other variables had grown more significant. By this stage, DJIMY contributed 5.67%, DJIJP 7.20%, and DJICHK 6.24% to the fluctuations in the JII. This

final snapshot demonstrates that while the JII remains largely self-driven, external factors have increasingly shaped its movements, reflecting the influence of global market forces on the index.

Throughout the observed periods, the analysis shows a clear trend: as time progresses, the impact of external indices such as DJIMY, DJIJP, and DJICHK on the JII becomes more substantial, while the role of the JII's own shocks diminishes. This dynamic illustrates the growing interconnectedness of global markets and the influence of external factors on the JII's performance, especially in the later periods. The increasing contributions from DJIMY, DJIJP, and DJICHK highlight the role these variables play in shaping the JII's fluctuations, particularly as the index stabilizes in the long term.

DISCUSSION

The results of the VECM test for the DJIMY variable with the JII show that there is no significant relationship in both the long and short term. The results of this study are not in accordance with hypothesis one, indicating that although there is cointegration in the overall variable system, the two indices tend to move independently of each other, both in the long and short term.

The DJIJP in the VECM test shows that there is a significant relationship in the long run with the JII but in the short run it is found that the DJIJP variable does not have a significant relationship with the JII. The results of this study are in accordance with hypothesis two, this means that in the long run, the two indices tend to move together towards the long-run equilibrium determined by the cointegration equation. This supports the theory of capital market integration which states that capital markets between countries tend to be integrated in the long run. However, the short-term dynamic relationship between the two indices is not statistically significant which could be due to other factors such as market sentiment and economic conditions of each country.

DJICHK in the VECM test shows that there is a significant relationship in the long term with the JII but in the short term the results show that the DJICHK variable does not have a significant relationship with the JII. The results of this study are in accordance with hypothesis three. Although the coefficient value shows that this long-term relationship is negative, which means that in the long run, the two indices tend to move in opposite directions. The short-term dynamic relationship between the two indices is not statistically significant which can be caused by other factors such as market sentiment and economic conditions of each country.

The IRF test results show that the JII responds to shocks given by DJIMY, DJIJP and DJICHK. Where the JII responded negatively to shocks from DJIMY and DJIJP from the beginning of the period until the end of the observation period and responded negatively to shocks from DJICHK at the beginning of the period then responded positively in the third period until the end of the period, this could be influenced by other factors such as market sentiment. The results of the VD analysis show that in the first period, JII fluctuations are influenced by the JII itself then, in the next period are influenced by DJMIY, DJIJP, and DJICHK variables. Until the end of the observation, the largest contribution was given by DJIJP of 7.20% to the dynamics that occurred in the JII. This supports the contagion effect theory which states that shocks or surprises in one place can be contagious and affect price movements or market conditions in other places.

With the integration of capital markets, it will be easier for investors to invest their capital in different countries. Stock exchange integration allows diversification of investments across industries and countries and reduces unavoidable risks. The more risk that can

be eliminated through diversification, the more attractive international diversification is to investors (Hurlimann, 2016). With the reduced risk that must be borne by investors, the cost of capital will also decrease. This reduction in the cost of capital will certainly increase the attractiveness of investment. Thus, an integrated capital market has the potential to provide greater benefits.

CONCLUSION

The results of this study provide information for academics to understand the dynamics of the Islamic stock market in Malaysia, Japan, China, and Indonesia, as well as provide signals for investors and other market participants in setting investment strategies and managing risks that may occur due to investment activities undertaken. The interconnection of the capital market reveals the dynamic relationships of the variables.

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DECLARATION OF CONFLICTING INTERESTS
No applicable.

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