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Returns and Investors' Risk Perception as the Determinants of Sharia Index Integration During Covid-19

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ABSTRACT: Capital market liberalization provides international diversification opportunities for investors in the capital market. However, developments in information technology that lead to the speed of information dissemination encourage capital market integration, in which a country's capital market will relate to other countries' capital markets. This study uses a quantitative approach and determines the Jakarta Islamic Index (JII) and the Dow Jones Islamic Market Index (DJIMI) as research samples. The method used is GARCH and Sobel test. The study results show that Indonesia's Islamic stock index is integrated with the global Islamic stock index. The index integration relationship is influenced by investors' risk perceptions, where investors' risk perceptions have an asymmetric negative relationship with stock index returns indicating a leverage effect. Meanwhile, investors' perceptions of risk cannot mediate the effect of returns on the integration of Islamic stock indices.

KEYWORDS: Capital Market Integration, Investor Perception of Return, Leverage effect, Drivers of Capital Market Integration

I. INTRODUCTION

Developments in information technology and capital market liberalization provide investors with better portfolio diversification opportunities. Easier access for investors to be able to transact in the capital markets of other countries that have liberalized can expand the opportunities for these investors to carry out international diversification as a strategy to reduce the systematic risk that will be obtained if the portfolio composition only consists of assets originating from the capital market in one country. Indications of market integration can be seen from a comparison of the percentage of equity ownership in the Indonesian capital market owned by foreign investors and local investors, where from 2017 to 2021, more than 50% of equity ownership in the Indonesian capital market was owned by foreign investors. According to Amizuar et al. (2017), the more significant the proportion of foreign capital in the domestic capital market, the more integrated the capital market is with international markets. Market integration in the long term has positive implications for the country's economy, where foreign investors invest in the capital market will provide benefits to companies, such as increased business capital and productivity, which will contribute to the country's economic growth. For investors, market integration has negative implications because the unity relationship causes certain information and events that occur in one market to affect other markets, and prices tend to move in the same direction so that the initial goal of international portfolio diversification will decrease.

International diversification which is mostly carried out by investors from developed countries encourages the assumption that capital markets that fall into the category of developed country markets affect markets with smaller sizes. Indonesia, which is classified by Morgan Stanley Capital International (MSCI) in the group of countries with developing capital markets integrated with developed market countries, such as Japan, South Korea, Singapore, European countries and the United States (Saiti and Masih, 2016; Rahman, et al. 2017; Mohti, et al. 2019; and Widowati, 2019).

One alternative for portfolio diversification is to invest in Islamic financial instruments. Investing in Islamic stocks in recent years has been more profitable than investing in conventional stocks. Nomran and Haron (2021) found that the performance of Islamic stock indices is better than that of conventional indices, especially during a crisis. The crisis will harm all capital market members, but the impact will weaken the Islamic stock index. Hassan research et al. (2020) also support this statement and find that the volatility in the conventional index is higher than the Sharia index, which is caused by the company's funding sources.

When the Covid-19 pandemic occurred and caused a health crisis that claimed millions of lives, the impact was not only on the health sector but also on the social and economic fields, including fluctuations in stock prices due to the uncertainty of an unprecedented situation. OJK reported that the impact of this outbreak on the Indonesian capital market was the decline in the value of the Jakarta Composite Index (IHSG) from 6,300 to 3,900. That was influenced by three factors: government policies, news related to Covid-19, and the government's response to the situation (Primary, 2022). In the event of a crisis, the government will establish policies that can affect systematic risk so that investors' risk expectations and returns to investment intentions are also affected, which encourages stronger integration relations (Chen et al., 2014; Narayan et al., 2014; and Abuzayed, et al. 2021). In a crisis, investors will consider their investments based on beliefs related to the possibility of risk and its impact, known as the investor's risk perception (K.P. & Kumar, 2014). Thus the behavior of investors in responding to the crisis indirectly affects market integration. Risk in investment cannot be separated from returns, where both have a close, linear relationship (Tandelilin, 2010). Meanwhile, volatility, which is an indicator of investors' risk perception, tends to have a negative relationship with returns, which means that when the market is volatile and volatility increases, returns will decrease and vice versa (Mo et al., 2015; Shaikh & Padhi, 2016; Kayral et al. 2020, and Abdelmalek, 2022).

Research on capital market integration has been carried out quite a lot, but it is still rare to study the factors driving integration, especially factors related to investor behavior. That motivates us to research the effect of returns on stock index integration mediated by investors' risk perceptions and is a novelty or update offered in this study.

II. LITERATUR RIVIEW

1. Integration of the global sharia index and the sharia index in Indonesia

Capital markets that are mutually integrated cause the information received by all market participants to be symmetrical so that certain events that occur in one market will affect other markets, and prices tend to move in the same direction. As a result of these same market movements, the original objective of international portfolio diversification would be to reduce market integration. Other research proves that the Indonesian capital market is still segmented among these countries (Majdoub & Mansour, 2014; Oktaviani, 2017; Thomas et al., 2017). Another alternative for portfolio diversification is to invest in Islamic financial instruments. In recent years, investing in Islamic stocks has been more profitable than conventional ones (Nomran & Haron, 2021). That encouraged Muslim and non-Muslim investors to choose Islamic stocks as an investment alternative and diversification, forming market integration, including in the Indonesian capital market (Widowati, 2018; Kurniawan et al., 2019).

H1: The Islamic stock index in Indonesia is integrated with the global Islamic stock index

2. The influence of investors' risk perceptions on stock index integration

K.P. and Kumar (2014) state that in a crisis, investors will consider their investment based on beliefs related to the possibility of risk and its impact, which is the investor's risk perception. This risk perception will affect investors' interest in investing, so demand and supply in the capital market during a crisis will also affect market integration (Marfatia, 2020; Listiana & Robiyanto, 2021; Balli et al., 2021). Perceived risks to the crisis have different effects on integration in different regions. Investor risk perception during the global financial crisis was positively related to integrating the United States capital market and capital markets in European and Latin American countries (Marfatia, 2020). Meanwhile, investor risk perception was negatively related to capital market integration between countries in Asia and the United States (Marfatia, 2020; Listiana & Robiyanto, 2021).

H2: Investors' perceptions of risk have a significant effect on the integration between Islamic stock indices in Indonesia and global Islamic stock indices

3. The relationship between stock returns and investors' perceptions of risk

Investment decisions always consider risk and return, where both have a linear relationship (Tandelilin, 2010). Risk can affect the psychological and emotional aspects of investors, so when a crisis occurs, investors tend to consider their investments based on beliefs related to the possibility of risk and its impact, which is referred to as the investor's risk perception (K.P. & Kumar, 2014). The volatility index can measure investors' perception of risk, and its relationship with returns based on empirical evidence from previous research is asymmetrically negative. An asymmetric negative relationship means that if returns are negative and volatility is positive, it will have a more significant effect than positive and negative returns. That is because investors respond more to negative and considered risky information than positive information. The asymmetric negative relationship between returns and volatility causes a leverage effect, as the findings of research by Mo et al. (2015), Shaikh and Padhi (2016), Kumar (2018), Kayral et al. (2020), and Abdelmalek (2022). Returns and volatility can also be positively and symmetrically related, where investors respond to negative returns and volatility the same as positive returns and volatility (Kumar, 2018).

H3: Stock returns have an asymmetric negative relationship with investors' risk perception resulting in a leverage effect

4. The effect of returns on stock index integration is mediated by investors' risk perceptions

Measurement of financial integration, according to Baele et al. (2004), can be assessed from three perspectives, namely measurement based on price, news, and quantity. The news will influence investor behavior in response to market conditions, including investors' risk perceptions of an event. Investors' perception of risk or volatility has a relationship, both with returns and with the integration of stock indexes, so it is expected to mediate the relationship between returns and stock indexes. Returns obtained from price changes are an indicator that is widely used to identify relationships between stock indices, such as research conducted by Kumar (2017), Habibi and Mohammadi (2022), and Stuart (2023). Return itself can affect the interest of investors to invest in a market, including foreign investors to invest their assets in foreign markets, which encourages market integration.

H4: Investors' perceptions of risk can mediate returns on integration between Islamic stock indices in Indonesia and global Islamic stock indices

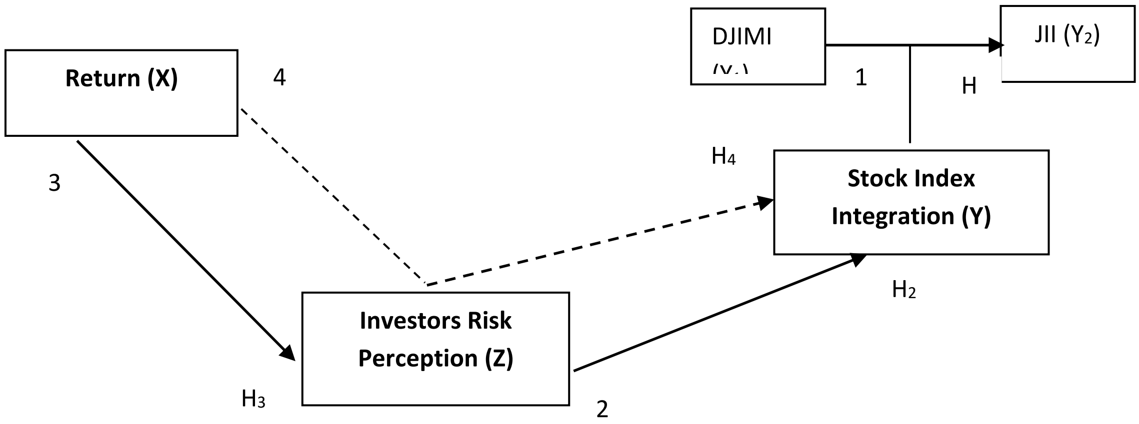

Figure 2. Research Model
Source: Authors, 2023.

III. RESEARCH METHODS

This study examines the effect of decision-making on stock index integration through investors' risk perception. This study will analyze the data using statistical tests using the Eviews application program. Integration testing uses the Gregory-Hansen cointegration test method, the causality test of the effect of returns on investors' risk perceptions, and the effect of investors' risk perceptions on the integration of stock indexes with the GARCH method, as well as the Sobel test to analyze the ability of investors' risk perceptions in mediating the effect of returns on the integration of stock indexes..

Population and Sample

The population of the global Sharia index consists of four leading Sharia indices, including Dow Jones Islamic Market World Index (DJIMI), S&P 500 Sharia, FTSE Sharia Global Equity Index, and MSCI Islamic Index. At the same time, the population of the Sharia index in Indonesia is ISSI, JII, JII 70. The samples used in this study are the Jakarta Islamic Index (JII) and the Dow Jones Islamic Market Index (DJIMI).

IV. RESULT AND DISCUSSION

A. RESULT

1. Unit Root Test

Table 1. Unit Root Test Results

Data Name	*t-statistic*	*Probability*	*Break Time*	Informatuon
DJIMI	-3.16113	0.000056	2020M01	Stasioner
DJIMI returns	-7.84749	0.011084	2020M04	Stasioner
JII	-5.44987	0.0000025	2020M01	Stasioner
JII returns	-9.09561	0.004398	2020M04	Stasioner
VIX	-5.68143	0.001787	2020M02	Stasioner

Source: Authors, 2023.

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The unit root test results show that all data from stationary research variables comply with the acceptance criteria of Ha, i.e., if the probability value is significant (<0.05). The ZA test also shows when structural breaks occur in data due to economic shocks or changes in economic policy. Based on the ZA unit root test results, break times were found in 2020 and occurred in January, February, and April, which was the initial period of the Covid-19 pandemic.

2. Integration Test

Table 2. Unit Root Test Results

Variable	*t-statistic*	*Probability*	*Lag Length*
DJIMI	-6.273577	0.0000	0
JII	-9.138437	0.0000	0
Critical value:	1%	-3.548208	
	5%	-2.912631	
	10%	-2.594037	

The results of the integration test show that the t-statistic values from DJIMI and JII are more significant than the critical values at each level, and the probability values are smaller than 0.05 or 5%, which is 0.0000. That can be interpreted that H0 is rejected and Ha is accepted, which means that there is integration between stock indices which are the variables of the Gregory-Hansen cointegration test, namely the DJIMI and JII indexes.

3. Causality Test

a. DCC-GARCH

Table 3. DCC-GARCH Test Results

Variabel Y	*Mean Equation*			*Variance Equation*		
	Variabel Z	z-statistic	Probabilitas	Variabel Z	z-statistic	Probabilitas
DJIMI	VIX	1.159	0.246	RESID GARCH	1.461 -0.734	0.144 0.463
JII	VIX	-6.542	0.000***	RESID GARCH	1.822 -1.180	0.068 0.238

Source: Authors, 2023.

The data processing results with DCC-GARCH show a significant probability value on the VIX on the integration of the DJIMI and JII indices with a significance level of 0.01. It can be concluded that H0 is rejected. Ha is accepted, which means that investors' risk perceptions significantly affect the integration between Islamic stock indices in Indonesia and global Islamic stock indices.

b. GJR-GARCH

Table 4. GJR-GARCH Test Results

X variable	GARCH Coefficient	Probability
DJIMI returns	0.057285	0.0000
JII returns	0.079805	0.0000

Source: Author, 2023.

The results of the GJR-GARCH test show that the GARCH coefficient of the DJIMI and JII return variables is positive and significant at the level of 0.10 or 10%. Thus H0 is rejected, and Ha is accepted. It is concluded that stock index returns, both the DJIMI index and the JII index have an asymmetric negative relationship with investors' perceptions of risk resulting in a leverage effect.

4. Mediation Test

Table 5. Sobel test results

X variable	S_a	S_b	S_{ab}	z-count
DJIMI returns	0.181505	16.72853	20.37005	-0.69079
JII returns	0.213228	0.906268	1.439687	1.046752

Source: Author, 2023.

The results of testing the data show that the calculated z value of the DJIMI return variable and JII return is smaller than the absolute z of 1.96, which indicates that H0 is accepted. Ha is rejected, meaning that investors' risk perceptions cannot mediate returns on the integration of the stock index.

B. DISCUSSION

1. Integration of the global sharia index and the sharia index in Indonesia

The study results show that Indonesia's Islamic stock index is integrated with the global Islamic stock index. Capital markets that are mutually integrated cause the information received by all market participants to be symmetrical so that certain events that occur in one market will affect other markets, and prices tend to move in the same direction. One indication of market integration is the movement of the index in the same direction, as evidenced by the timing of structural breaks due to policy changes or specific events. JII and DJIMI experienced a structural break in January 2020, which reflected the market response to the occurrence of Covid-19 in Wuhan, China, at the end of 2019. The results of this study follow the results of previous studies by Saiti and Masih (2016), Rahman et al. (2017), and Mohti et al. (2019), who identified the integration of the Indonesian capital market with global markets, which also includes the integration of Islamic capital markets by Widowati (2018) and Kurniawan, et al. (2019).Pengaruh Persepsi Risiko Investor Terhadap Integrasi Indeks Saham

2. The Influence of Investors' Perceptions of Risk on Stock Index Integration

The study results show that investors' perceptions of risk significantly affect the integration between Islamic stock indices in Indonesia and global Islamic stock indices. Following the theory of Baele et al. (2004) that integration has the same principles as the "Law of One Price," which states that in market integration, all investors are exposed to the same risks, the risk due to the Covid-19 pandemic that occurs globally affects the integration of stock indexes, as well as investors' perceptions of risk of a crisis on the integration of stock indexes. This study's results follow the results of previous research by Marfatia (2020), which also found that investors' perceptions of risk during the global financial crisis were positively related to integration between capital markets.

3. The results of the study show that there is a relationship between stock returns and investors' perceptions of risk

Stock returns have an asymmetric negative relationship with investors' perceived risk resulting in a leverage effect. These results are consistent with Black's theory (1976) which defines the leverage effect as an event in which the impact of a negative shock on the volatility of stock returns is more significant than that of a positive shock. The Covid-19 pandemic caused a negative shock which resulted in a decrease in share prices so that stock returns also decreased; it also impacted increasing investors' concerns about the level of risk investors as indicated by increased volatility. The results of this study follow the results of previous studies by Mo et al. (2015), Shaikh and Padhi (2016), Kumar (2018), Kayral et al. (2020), and Abdelmalek (2022), whose research results show that the asymmetric negative relationship of returns and volatility causes a leverage effect.

4. Effect of Return on Stock Index Integration Mediated by Investors' Perceptions of Risk

The results of this study indicate that investors' risk perceptions cannot mediate returns on integration between Islamic stock indices in Indonesia and global Islamic stock indices. Investors' perception of risk has a significant relationship with returns and the integration of stock indexes but cannot mediate the effect of returns on the integration of stock indexes. Returns can affect investors' interest in investing in a market, including foreign investors investing their assets in foreign markets that encourage the formation of market integration, but investor sentiment or concern about the risk of not being able to mediate the relationship between the two.

V. CONCLUSIONS

Based on the results and discussion, the conclusions of this study are as follows:

1. The Islamic stock index in Indonesia is integrated with the global Islamic stock index.
2. Investors' perception of risk significantly affects the integration of Islamic stock indexes.

3. Returns on Islamic stock indexes have an asymmetric negative relationship with investors' perceptions of risk resulting in a leverage effect.
4. Perceived risk of investors not being able to mediate returns and integration of Islamic stock indexes

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