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ANALYZING DETERMINANTS OF *ISLĀMIC* STOCK MARKET PERFORMANCE IN INDONESIA AND MALAYSIA

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ABSTRACT

Indonesia has higher volatility in *Islāmic* stock market compared to Malaysia. As volatility of each market is derived from its *Islāmic* stock performance, the goal of this paper is to analyze determinant factors of *Islāmic* stock market performance in Indonesia and Malaysia. Using inflation and exchange rate as monetary policy objectives (MPO) and VIX (investors fear and market volatility), and gold price as global indicators for independent variables, ARDL bound test is performed with monthly Indonesia and Malaysia data. Indonesia data are gathered from December 1994 to February 2023, whereas Malaysia data are from January 2010 to February 2023. The results show that inflation and exchange rate become the main driving force of *Islāmic* stock market performance in Indonesia in the long run, while the exchange rate is true for Malaysia. In the short run, inflation become the driving factor of *Islāmic* stock performance in Indonesia and Malaysia. This paper also finds that gold investment able to become safe-haven asset in Indonesia in short and long run, while in Malaysia gold investment can be a safe-haven asset in the short run only. This paper also finds that VIX do not have any significant result only in Indonesia in short run. Implication of these results are the essential role of Central bank of Indonesia to achieve its inflation targeting, and the important role to rise capital gain tax.

JEL Classification: G1, E5, G150

Keywords: *Islāmic* stock performance, Monetary policy objectives, Global indicators

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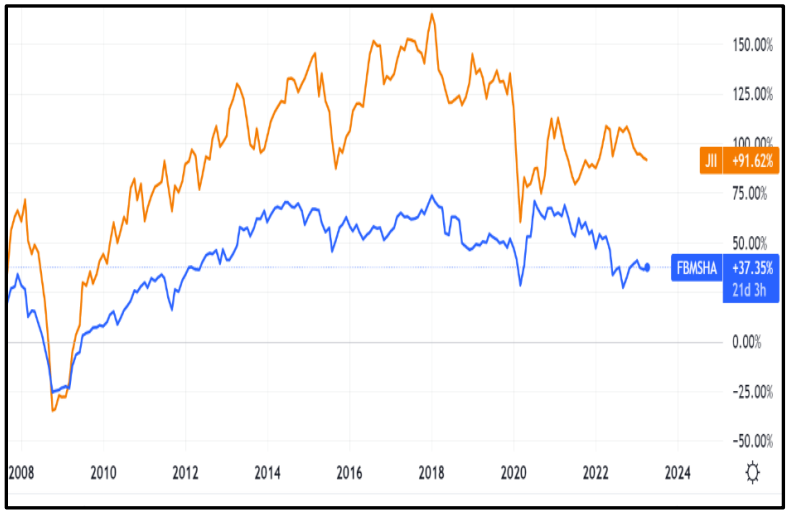
1. INTRODUCTION

Mohamed and Ahmed (2022) placed Malaysia and Indonesia as top countries in terms of *Islāmic* finance development indicators. As part of *Islāmic* finance, *Islāmic* capital market plays a crucial role for development of a country. However, based on national literacy and financial inclusion survey 2022 conducted by OJK (2022), Indonesia financial inclusion in capital market is only five, 19%, very low compared to financial inclusion in banking, insurance, and pension fund sectors. However, this drawback should be compensated by the opportunity that Indonesia is one country, among others, with the largest *Muslim* population in the world (Shikoh, 2022). Therefore, increasing financial inclusion with proper policy will lead to development of *Islāmic* capital market. Furthermore, Mishkin (2022) also explained that well-functioning capital market where long-term debt and equity instruments are traded is crucial to the health of an economy.

The development of financial investment has made investors globally to crave for higher investment returns, though with higher commensurate risks (Ayedh et al., 2021). Focusing on Jakarta *Islāmic* Index (JII) as the oldest *Islāmic* stock basis in Indonesia and also one of the benchmarks to measure performance in *Islāmic* stock investment (Masrizal, Al-Musthofa, and Herianingrum, 2021) and aggregate of the average price of the *Islāmic* stock, the following Figure 1 compares Monthly data on JII and FTSE Bursa Malaysia Emas *Sharīʿah* Index.

Figure 1 shows that the Indonesian Islamic Stock index performs better than that of Malaysia. However, focusing on the fluctuation of above *Islāmic* stock index, it is quite clear that Indonesia's *Islāmic* stock market moves quite volatile rather than Malaysia. Aziz, et al. (2020) shows that standard deviation that summarize the volatility of the movement in Indonesia stock market return is 5.01, more than Malaysia than only 2.92. As volatility shows risk of an asset, this paper argues that reduction in the stock market fluctuation will give positive signal about low risk of an asset for investors, then hopefully will increase financial inclusion especially in Indonesia's *Islāmic* stock market. Therefore, this paper tries to compare performance of *Islāmic* stock market both in Malaysia where volatility is low and Indonesia where level of volatility is high.

FIGURE 1
Stock Fluctuation of JII and Bursa Malaysia Emas *Sharīʿah* Index



Source: TradingView, 2023

Following Qoyum et al. (2022), others reason to compare Indonesia and Malaysia are: (1) *Sharīʿah*-compliant stocks encounter less risk in screening process, encouraging non-*Muslim* investors to Invest in *Sharīʿah*-compliant firms in both countries, (2) support in the promotion of *Islāmic* finance and *Islāmic* capital market in both countries are significant, (3) *Islāmic* finance as an industry is making rapid progress in these two countries, (4) effective regulatory framework for *sharīʿah*-compliant firms that is expected to increase the confidence of institutional and retail investors for both countries.

Studying stock performance, especially *Islāmic* stock market is important for two reasons. first, as stock market index is the calculation from the prices of many different stocks (Bursa Malaysia, n.d), and market capitalization can be measured by multiplying number of stock and the stock market price (Bacha and Mirakhor, 2013), the dynamic movement of *Islāmic* stock will depict average market capitalization of listed *sharīʿah*-compliant firms. Market capitalization is important for the firms. it shows, among other things, market value of a company and can help enhancie business volume (Farooq et al., 2022). More specifically,

when a company has high market capital, it can obtain funds more easily, which has positive spillover on engaging in physical projects (Farooq et al., 2022).

Second, better performance projects and also better market capitalization is expected to increase investor confidence, where study in China shows that investor (over)confidence is positively related to stock market participation (Cupak et al., 2022; Chu et al., 2017; Xia, Wang, and Li, 2014). Therefore, studying *Islāmic* capital market performance, especially in Indonesia and making comparation with Malaysia, is important to describe unique characteristics in both markets.

As economy is divided between financial market and goods market, and *Islāmic* capital market is in the financial market, this paper proposes that MPO play an important role in *Islāmic* stock market performance in both countries. Furthermore, as globalization has led to an increased number of countries gradually liberalizing their capital markets (Liu, Wang, and Dai, 2023) the effect of global indicator might significantly affect *Islāmic* stock market performance. Therefore, these two general variables might be important factors of *Islāmic* stock performance in both countries.

Very limited studies on *Islāmic* stock market performance exists, especially that focus on comparing Indonesia and Malaysia. Danila et al. (2021); Fatima, Rashid, and Khan (2018); and Kumar and Sahu (2017) for instance, each study *Islāmic* stock indices performance but not specific in Indonesia and Malaysia. Their study tries to catch the relation of shock and also macroeconomics factors on *Islāmic* stocks. Lai and Windawati (2017) study focuses on Indonesia and Malaysia however, they study stock market performance in general, not specific to *Islāmic* stock performance. Others study only compare *Islāmic* stock market performance and conventional one such as study conducted by Djedovic and Djedovic (2019), Jabeen and Kausar (2022), Qamar, Hassan, Nazir, and Haque (2022), AlKhazali, Lean, and Zoubi (2022), and Foglie and Panetta (2020). Others study focusses on integration in *Islāmic* capital market such as Majdoub, Mansour and Jouini (2016) and Qizam, Ardiansyah, and Qoyum (2020).

Some studies, such as Ahmadi and Soroushyar (2022), Dincer, Yuksel, and Adali (2019), Suriani et al. (2021), Yang and Hamori (2014), Tomar and Kesharwani (2022), Depren, Kartal, and Depren (2021), focus on monetary policies but not specifies its effect on *Islāmic* stock performance. Whereas study conducted

by Naifar (2016) and Lin and Su (2020) focus on *Islāmic* stock market that is affected by only global indicators but not with monetary policy. Therefore, this study tries to shed light on the *Islāmic* stock market performance in Indonesia and Malaysia which is affected by monetary policies and also global indicators.

After the introduction, this paper is organized as follows. Section 2 describes the theoretical framework that focuses mainly on Efficient Market Hypothesis (EMH) and some explanation about the relationship among independent and dependent variables. Section 3 explains the method used to investigate the research goal. Section 4 is about empirical results and discussion, and the last section is a conclusion based on the results of this study.

2. THEORETICAL FRAMEWORK

2.1 *ISLĀMIC* STOCK MARKET AND EFFICIENT MARKET HYPOTHESIS

Stock market has been considered as one indicator of a country's strength and development (Bialkowski in Chirwa and Odhiambo, 2020). Mishkin (2022) also explained that well-functioning financial market is crucial to economic health. Farid, Mohsan, and Jan (2022) also found that the development of the *Islāmic* capital market leads to an augmented level of real economic activity. As stock market is part of financial market, the change in stock market performance is important to be considered and can be used as an indicator, among others, of the development of countries and economic health.

In *Islāmic* stock market, different from conventional one, there are some steps in screening process to determine whether companies are *sharīʿah*-compliant or not. Bacha and Mirakhor (2013) explained that basically there are two screening process to determine a firm is *sharīʿah*-compliant. First to see the line of business or core business of underlying company. Company's core activities such as the sale of pork, alcohol, bar, casinos, conventional bank, and others prohibited activities in *Islām* will be excluded. The second one is company finance. The following Table 1 explains about the rulebook of whether company's finance performance is categorized as *sharīʿah*-compliant or not.

If a company's financial ratio is more than the limit, the company will be excluded from *sharīʿah*-compliant. Moreover,

Marzhab (2011) also explained that the different about above rulebook generally lies on the use of either total asset or market capitalization as a base to value a company and to be used as denominator for financial ratio. After the screening process, companies categorized as *sharīʿah*-compliant can issue stock and sell the stocks in the *Islāmic* stock market. Because stocks are assets whose price is determined by the buyer-seller interaction, one theoretical model that can explain such interaction is the Efficient Market Hypothesis (EMH) (Chirwa and Odhiambo, 2020).

TABLE 1
Rulebook for Determining *Sharīʿah*-Compliant Firm

Asset-based rulebook	Market-capitalization rulebook
1. Non-permissible income/total income, < 5%	1. Non-permissible income/total income, < 5%
2. Interest-bearing cash and Investment/Asset, < 33%	2. Interest-bearing cash and investment/12-month average market capitalization, < 33%
3. Receivables/Assets, < 33%	3. Receivables/12-month average market capitalization, < 33%
4. Interest-bearing debt/asset, < 33%	4. Interest-bearing debt/12-month average market capitalization, < 33%

Source: Marzhab (2011).

Bacha and Mirakhor (2013) explained that the EMH comes from the work of Eugene Fama in 1960's where it has rooted in the work of Louis Bacheleir, whose Theory of Speculation first showed the unpredictability of stock prices. According to EMH, the change of asset price in stock market in competitive market is expected to reflect all available information. Stock prices change when information changes (Mankiw, 2012). For example, Mankiw (2012) further explains that when good news about company's prospects becomes public, the value and stock price rise, in reverse when the company's prospect moves back then the value and stock price will decrease.

Later in 1970, Bacha and Mirakhor (2013) explained that Fama refined the theory by explaining that the available information and its effect to the change of stock price in the market

has three versions, viz weak form EMH, semi-strong EMH, and strong form EMH. Following Chirwa and Odhiambo (2020)'s explanation, EMH is linked to random walk theory where in the absence of arbitrage, the change of stock price will be represented by a random walk and a drift, known as drift parameter. The model is as follows:

$$Y_t = \alpha + Y_{t-1} + u_t$$

In the equation, Y_t is the dependent variable, or stock price, α is drift parameter, and Y_{t-1} is the price of stock one period before. Rewriting above equation, then become (Chirwa and Odhiambo, 2020):

$$\Delta Y_t = Y_t - Y_{t-1} = a + u_t$$

Based on this equation, the upward and downward change of Y_t, (ΔY_t) will depend on the drift parameter, α. Furthermore, this drift parameter will be influenced by any available information. As explained before that information in EMH has three versions. Chirwa and Odhiambo (2020) propose using adjusted R-square to categorized that version. 0 to 0.5 representing weak-form EMH, 0.5 to 0.7 representing semi-strong EMH, and 0.7 to 1 is strong-form EMH. Furthermore, available information in drift parameter can be any form of information. Because stock market is a part of financial market, and now many countries have liberalized policy, the form of information can be monetary policy to intervene financial market, and also global indicators.

2.2 MONETARY POLICIES

Mankiw (2013) explained that monetary policy is made by the central bank and it refers, generally, to decisions about the national system of coin, currency, and banking. Furthermore, there are two forms of monetary policy, viz tightening monetary policy and expansionary monetary policy. Syarifuddin and Sakti (2021) explained that expansionary policy aims at boosting economic activities, whereas tight monetary policy aims at slowing down economic activities. Blanchard (2021) explained that these choices of monetary policy can be achieved through controlling money supply or directly setting the interest rate.

Furthermore, as price stability continues to be the monetary policy stance of major central banks, macroeconomics' new consensus treated monetary policy and price stability objective as synonyms (Nair and Anand, 2020). More specifically, price stability in the form of low and stable level of inflation is increasingly viewed as the most important goal of expansionary or tight monetary policy (Mishkin, 2022). Moreover, as exchange rate is defined as the price of one currency in terms of another currency (Mishkin 2022), this variable can be used also to see achieve price stability objective besides inflation.

As the main objective of monetary policy is to maintain price stability that is reflected by the rate of inflation and exchange rate, the way these variables can affect *Islāmic* stock price movement can be explained theoretically by the fundamental analysis. As defined by Bodie, Kane, and Marcus (2023), fundamental analysis is the analysis of how the determinants of value or specifically intrinsic value of a stock depends on the dividend and earnings to be expected from the firm. As the firm's prospect is better as reflected by the company's financial performance, then investors will expect to get more dividends and earnings. This will lead to higher stock price increase.

Bodie et al. (2023) associate inflation with "overheated" economies where demand for goods and services outstrip production capacity. The higher demand leads to Inflation and can affect stock price through the performance of company in a form of company's profit. Profit is determined by revenue minus total cost. Inflation will affect to the rise of total revenue because of higher demand on produced goods or services. If company products are produced mostly with fixed cost rather than variable cost, Bodie et al. (2023) explained that firms will get higher profit. Better profit will lead to better company performance and higher stock price.

Other explanation can be found in Omran and Pointon (2001). As common stock can be considered as capital goods, then the stock price should move with the general level of price. So as the general level of price increase (because of expansionary monetary policy), stock should also increase to compensate investors for the decrease in the value of money. Therefore, this paper argues that:

H1: Inflation has a positive relation with *Islāmic* stock performance. The exchange rate also is related to stock price as the price is valued by domestic currency.

Mankiw (2013) stated that increasing real exchange rate will make foreign goods relatively cheap and domestic goods relatively more expensive, vice versa. As capital market is now becoming more liberalized, stock market liberalization can provide foreign investors the opportunity to invest in domestic equity security (Ilhan, 2019). This condition allows investors to trade equity security like goods that depend on the exchange rate. As lower real exchange rate will make domestic price of goods become cheaper, this also happens to *Islāmic* stock price where lower real exchange rate will lower the price of domestic *Islāmic* stock price; furthermore, as demand from foreign investors increase, this condition will push the price of *Islāmic* stock price, making *Islāmic* stock performance increase. Erdogan, Gedikli, and Cevik (2020) also explain that the increase in exchange rate will increase input cost, leveling up borrowing cost, triggering financial crisis expectations, and therefore negatively affects consumption and investment expenditure. This making lower level of *Islāmic* stock performance. Therefore, this paper argues that:

H2: Real exchange rate has a negative relation on *Islāmic* stock performance

2.3 GLOBAL INDICATOR

The average *Islāmic* stock price performance that is reflected by the movement of *Islāmic* stock indices is not only affected by monetary policy and objectives, but also affected by other global indicators that must be considered. One of global indicator itself is the fear of economic actors and volatility in financial market, because these are very important in shaping investment preference (Depren et al., 2021) that will affect *Islāmic* stock price performance. As fear of economic actors can reflect investor's risk-aversion level, Kasih and Viverita (2021) use VIX as a proxy of market volatility and also level of investors' risk-aversion. Raza et al. (2019) explained that volatility index has a negative correlation to *Islāmic* stock indices because the market will lose money when

level of volatility is increasing. Therefore, following Raza et al. (2019), a negative relationship is expected between volatility and fear of economic actors in stock market and *Islāmic* stock performance.

H3: Volatility index and fear of economic actors in stock market have negative relation to *Islāmic* stock performance.

The last variable that might affect *Islāmic* stock market performance from global indicators is the price of gold. Important study conducted by Maghyereh, Abdoh, and Awartani (2019) found that gold plays stable role in hedging and diversifying *Islāmic* equities across all investment horizons. This implies that gold can be a safe haven from the risk which is brought by *Islāmic* stock market. Conceptually, safe haven instruments such as gold have a negative relation to economic condition. Froot in Tuna (2019) also explained that investors generally seek assets with suitable average returns and negative relationship with stock and bond. When the price of gold increases, this indicates economic condition is in a downturn situation, making *Islāmic* stock market underperform. Conversely, as the gold price decreases, this indicates better economic performance, and investors switch to owning *Islāmic* stocks, hence increasing the stock price. Therefore, this paper argues that

H4: Gold price has a negative relation to the *Islāmic* stock performance.

3. RESEARCH METHOD

This paper uses Autoregressive Distributed Lag (ARDL) bound test to test the effect of MPO and global indicators on *Islāmic* stock price performance in Indonesia and Malaysia. Following Aziz et al. (2020), this paper uses *Islāmic* stock market returns to reflect performance of the stock in Indonesia and Malaysia which is calculated by ($\frac{Ln\,P_t - Ln\,P_{t-1}}{Ln\,P}$) for Indonesia and Malaysia where Ln stands for natural log and P stands for Index of *Islāmic* stocks. This paper uses monthly data gathered from Bloomberg, and St Louis FED. Data for Indonesia are gathered from December 1994 to February 2023, whereas Malaysia is from January 2010 to

February 2023. Table 2 explains variables used in this paper both for Indonesia and Malaysia.

TABLE 2
Variable and Proxy for Indonesia and Malaysia

Group	Variable	Proxy	Notation	Source of Data
Dependent Variables	Indonesia Islamic Stock Index	Return on Jakarta Islamic Index (JII)	JII	Bloomberg
	Malaysia Islamic Stock Index	Return on FTSE EMAS Syariah	FES	Bloomberg
Monetary Policy Objectives	Indonesia and Malaysia Inflation	Consumer Price Index (CPI)	CPI	St. Louis FRED (for Indonesia) Bloomberg (for Malaysia)
	Indonesia and Malaysia Real Exchange Rate	Real Board Effective Exchange Rate	REER	Bloomberg
Global Indictors	Investor Fear and Market Volatility	CBOE Volatility Index (VIX)	VIX	Bloomberg
	Gold Price	XAU Currency Gold Ounce to USD	GP	Bloomberg

Source: Author, 2023

This paper tries to compare *Islāmic* stock performance in Indonesia and Malaysia using above variables. Therefore, ARDL bound test developed by Pesaran, Shin, and Smith (2021) is performed for each of both markets. To run ARDL bound test, several steps should be applied. The first step is unit root test to

ensure no one of these above variables are integrated in order 2 or *I*(2) (Singhania and Saini, 2020). This is because Akmal (2007) and also Bist and Bista (2018) explained that ARDL bound test cannot be applicable if series of *I*(2) exists in the model. Second step is to examine whether there is any cointegration in the model and to compute F-statistics if the data show no one has integrated of order 2, or *I(2)*. To test cointegration among variables, the ARDL bound test compares the H0 of no cointegration against the H1 of cointegration (Singhania and Saini, 2020). If computed F-statistics is above the upper bound, then H0 can be rejected, if lower than lower bound, then H0 cannot be rejected, if between the upper and lower bound, then result is inconclusive. Inspired by Yakubu, Manu, and Bala (2015) and Kaur (2019), ARDL bound test model to test existence of cointegration for Indonesia can be written as follows:

$$(1)\quad \begin{aligned}\Delta LNJII_t = {} & \alpha + \omega T + \gamma_1 D1_{jii} + \gamma_2 D2_{jii} + \\ & \beta_1\, LNJII_{t-1} + \beta_2\, LNCPI_{t-1} + \beta_3\, LNREER_{t-1} + \\ & \beta_4\, LNVIX_{t-1} + \beta_5\, LNGP_{t-1} + \textstyle\sum_{i=0}^{1} \delta_{1i}\, \Delta LNJII_{t-i} + \\ & \textstyle\sum_{i=0}^{1} \delta_{2i}\, \Delta LNCPI_{t-i} + \sum_{i=0}^{1} \delta_{3i}\, \Delta LNREER_{t-i} + \\ & \textstyle\sum_{i=0}^{1} \delta_{4i}\, \Delta LNVIX_{t-i} + \sum_{i=0}^{1} \delta_{5i}\, \Delta LNGP_{t-i} + U_t\end{aligned}$$

Equation 1 above using ARDL cointegration model with case 1 (no constant and no trend), therefore $\alpha = \omega = 0$. D1 and D2 stand for structural breaks for JII that is detected using Lee and Strazicich (2003). For Malaysia, model specification for cointegration test is written as follows:

$$(2)\quad \begin{aligned}\Delta FES_t = {} & \alpha + \omega T + \gamma_1 D1_{fes} + \beta_1\, LNFES_{t-1} + \\ & \beta_2\, LNCPI_{t-1} + \beta_3\, LNREER_{t-1} + \beta_4\, LNVIX_{t-1} + \\ & \beta_5\, LNGP_{t-1} + \textstyle\sum_{i=0}^{1} \delta_{1i}\, \Delta LNFES_{t-i} + \\ & \textstyle\sum_{i=0}^{1} \delta_{2i}\, \Delta LNCPI_{t-i} + \sum_{i=0}^{1} \delta_{3i}\, \Delta LNREER_{t-i} + \\ & \textstyle\sum_{i=0}^{1} \delta_{4i}\, \Delta LNVIX_{t-i} + \sum_{i=0}^{1} \delta_{5i}\, \Delta LNGP_{t-i} + U_t\end{aligned}$$

Where the cointegration model is the same as Indonesia (case 1). For dependent variable, JII stands for return on Indonesia Islamic stock market and FES stands for return on Malaysia FTSE EMAS Syariah. CPI is inflation and REER is the exchange rate. These two represent MPO. For global indicators, there are GP for gold price and VIX for volatility index. LN is log natural, Δ is difference operation, "t" is time series, γ , β and δ are coefficient

from independent variables and *U* is error term. In the *fourth step,* following the Acaravci, Acaravci, and Ozturk (2011) explanation, if there is co-integration exist after estimating equation 1 and 2 above one by one, then in *step three,* long and short run estimation can be estimated. The long run model can be written as follows:

(3) $$LNJII_t = \alpha + \omega T + \gamma_1 D1_{jii} + \gamma_2 D2_{jii} + \sum_{i=1}^{1} \delta_{1i}\ LNJII_{t-i} + \sum_{i=m}^{1} \delta_{2i}\ LNCPI_{t-i} + \sum_{i=m}^{1} \delta_{3i}\ LNREER_{t-i} + \sum_{i=m}^{1} \delta_{4i}\ LNVIX_{t-i} + \sum_{i=m}^{1} \delta_{5i}\ LNGP_{t-i} + U_t$$

(4) $$FES_t = \alpha + \omega T + \gamma_1 D1_{fes} + \sum_{i=1}^{1} \delta_{1i}\ LNFES_{t-i} + \sum_{i=m}^{1} \delta_{2i}\ LNCPI_{t-i} + \sum_{i=m}^{1} \delta_{3i}\ LNREER_{t-i} + \sum_{i=m}^{1} \delta_{4i}\ LNVIX_{t-i} + \sum_{i=m}^{1} \delta_{5i}\ LNGP_{t-i} + U_t$$

Equation 3 is the long run model for Indonesia whereas equation 4 is for Malaysia, with α = ω = 0. Furthermore, in the fourth step, short run model for Indonesia and Malaysia can be estimated from equation 5 and 6 respectively with the equation are written below:

(5) $$\Delta LNJII_t = \alpha + \omega T + \gamma_1 D1_{jii} + \gamma_2 D2_{jii} + \sum_{i=1}^{1} \delta_{1i}\ \Delta LNJII_{t-i} + \sum_{i=m}^{1} \delta_{2i}\ \Delta LNCPI_{t-i} + \sum_{i=m}^{1} \delta_{3i}\ \Delta LNREER_{t-i} + \sum_{i=m}^{1} \delta_{4i}\ \Delta LNVIX_{t-i} + \sum_{i=m}^{1} \delta_{5i}\ \Delta LNGP_{t-i} + \theta\ ECT_{t-1} + U_t$$

(6) $$\Delta FES_t = \alpha + \omega T + \gamma_1 D1_{fes} + \sum_{i=1}^{1} \delta_{1i}\ \Delta LNFES_{t-i} + \sum_{i=m}^{1} \delta_{2i}\ \Delta LNCPI_{t-i} + \sum_{i=m}^{1} \delta_{3i}\ \Delta LNREER_{t-i} + \sum_{i=m}^{1} \delta_{4i}\ \Delta LNVIX_{t-i} + \sum_{i=m}^{1} \delta_{5i}\ \Delta LNGP_{t-i} + \theta\ ECT_{t-1} + U_t$$

Symbol θ in equation 5 and 6, as explained by Deka and Dube (2021), shows speed of adjustment to achieve long run equilibrium from short run. Atri, Kouki, and Gallali (2021) explained that the coefficient of θ should be negative and statistically significant. This paper also uses some diagnostic tests such as Heteroscedasticity, Ramsey reset, autocorrelation, and multicollinearity. As this paper uses more than 100 observations (n)

that reasonably large, normality assumption can be relaxed as explained by Gujarati and Porter (2009). Lastly in the fifth step, CUSUM and CUSUM sq test are performed to check the stability of the long run and short run coefficient (Bahmani-Oskooee and Kanitpong, 2017; Shahbaz, Islam, and Rehman, 2016).

4. EMPIRICAL RESULTS AND DISCUSSION

4.1 RESULTS

The first pivotal step in using ARDL bound test is to check whether each variable in the study has integrated in order 2, or *I(2)* or not. As each variable is integrated in level, *I(0)* or in order 1, *I(1),* then ARDL bound test can be employed. Table 3 and Table 4 depict unit root test using Fisher-ADF to see level of integration for each variable in Indonesia and Malaysia. With 1% level of significance, JII, FES, VIX Indonesia and GP Malaysia have integrated in level, *I(0),* both in intercept and also in intercept and trend. Furthermore, all data also shows integration in the first difference, or *I(1),* making no one of the data are stationary in second order of *I(2).* Therefore, in this case ARDL bound test can be employed to analyze the gathered data.

TABLE 3
Unit Root Test for Indonesia Data

INDONESIA (Individual root – Fisher- ADF)			
Variables	Level/difference	Indiv. Intercept (Prob)	Indv Intercept and Trend (prob)
LnJII	Level	0,000	0,000
LnCPI	Level	0,999	0,925
LnREER	Level	0,046	0,155
LnVIX	Level	0,000	0,000
LnGP	Level	0,7837	0,911
ΔLnJII	First difference	0,000	0,000
ΔLnCPI	First difference	0,000	0,000
ΔLnREER	First difference	0,000	0,000
ΔLnVIX	First difference	0,000	0,000
ΔLnGP	First difference	0,000	0,000

Source: Researcher's own computation using Eviews 10 (2023).

TABLE 4
Unit Root Test for Malaysia Data

MALAYSIA (Individual root – Fisher-ADF)			
Variables	Level/difference	Indiv. Intercept (prob)	Indv Intercept and trend (Prob)
LnFES	Level	0,000	0,000
LnCPI	Level	0,808	0,580
LnREER	Level	0,497	0,123
LnVIX	Level	0,024	0,085
LnGP	Level	0,004	0,576
ΔLnJII	First difference	0,000	0,000
ΔLnCPI	First difference	0,000	0,000
ΔLnREER	First difference	0,000	0,000
ΔLnVIX	First difference	0,000	0,000
ΔLnGP	First difference	0,000	0,000

Source: Researcher's own computation using Eviews 10 (2023).

For the next step, as the data are time series with relatively large observation (more than 100 observations), the structural break is very important to be incorporated in the ARDL model. Method for detecting Structural break in Indonesia and Malaysia are from Lee and Strazicich (2003) method where following Bist and Bista (2018), the break is chosen in dependent variable. Two structural breaks are detected in Indonesia, which are February 2019 and November 2019, whereas Malaysia only one structural break which is in August 2011. Furthermore, in computing of F-statistics from equation 1 and 2, both uses 7 as maximum lag for ensuring no serial correlation in the regression result in Indonesia and Malaysia data; White method for correcting standard error in the presence of heteroscedasticity, trend specification using "none" that shows case one in ARDL model (no constant and no trend) and Akaike information criterion (IAC) for choosing lag length. The result is depicted in Table 5.

The computed F-statistics for Indonesia and also Malaysia shows more than upper bound value I(1) with 1% level of significance, which means that cointegration existed among variables. Lag length chosen by AIC is 4,7,7,2,5,0,0 for Indonesia and 1,1,4,5,3,0 for Malaysia. As cointegration exists among variables, the next step is to compute the long run and short run

model. The long run and short run estimation result for Indonesia and Malaysia are depicted in Table 6.

TABLE 5
Bound Test Cointegration

	Indonesia	Malaysia
Dependent Variable	JII	FES
Independent Variable	D1, D2, CPI, REER, VIX, GP	D1, CPI, REER, VIX, GP
Lag Length	4,7,7,2,5,0,0	1,1,4,5,3,0
Critical Bound Value (1%)	I(0) 2.66 – I(1) 4.05	I(0) 2.82 – I(1) 4.21
F-Statistics	11.2036	36.4934
Result	Co-integration	Co-integration

Source: Table created by author (2023).

Based on the Chirwa and Odhiambo (2020) explanation about level of information in EMH, adjusted R-square in Indonesia can be categorized as strong EMH, whereas Malaysia shows semi-strong EMH in explaining *Islāmic* stock performance. Furthermore, by keeping other variables constant and focusing only on four main variables (inflation (CPI), exchange rate (REER), investor fear and market volatility (VIX) and Gold Price (GP)), this analysis allows estimation of the average value of *Islāmic* stock market performance in Indonesia and Malaysia, which depicts the average results from volatility movement in both markets.

TABLE 6
Long Run, Short Run, and Error Correction.

Long run estimation		
Variable	Indonesia	Malaysia
D1	0,0369** (0,0167)	0,0023** (0,0011)
D2	-0,0571*** (0,0186)	
LNCPI	-0,0129* (0,0068)	0,0066 (0,0068)
LNREER	0,0123*** (0,0035)	-0,0146** (0,0072)
LNVIX	-0,009*** (0,0026)	0,0019* (0,0009)
LNGP	0,0042 (0,0041)	0,005*** (0,0012)
Short Run estimation		
Variable	Indonesia	Malaysia
ECT(-1)	-0,849*** (0,095)	-1,183*** (0,078)
ΔD1	0,0873*** (0,013)	-0,006* (0,003)
ΔD2	-0,0704*** (0,015)	

TABLE 6 *(continued)*

Short Run estimation		
Variable	Indonesia	Malaysia
ΔLNCPI (-1)	0,267*** (0,094)	-0,326*** (0,073)
ΔLNREER	-0,139*** (0,025)	-0,0548*** (0,021)
ΔLNVIX (-1)		-0,0037** (0,0017)
R-squared	0,757	0,679
Adjusted R-Squared	0,738	0,649
χ^2 SC	0,229	0,188
χ^2 HET	0,075	0,884
Multicol.	All variables less than 10	All variables are less than 10
Ramsey	0,000	0,000

Notes: Standard Error in parentheses, ***,**,* indicate statistical significance at 1, 5, and 10% respectively, χ^2 SC for Chi-Square Breusch-Godfrey Serial Correlation LM test, χ^2 HET for Chi-Square ARCH heteroskedasticity test, Ramsey for ramsey reset, and Multicol for multicollinearity test.

Source: Author computation (2023).

4.2 DISCUSSION

Table 6 shows that inflation and exchange rate as MPO is statistically significant and become the main driving factors for Indonesia's long run *Islāmic* stock performance, while inflation can become the main driving force of the performance in the short run. For Malaysia, exchange rate is statistically significant and has the highest sensitivity value to *Islāmic* stock performance in the long run, while in the short run, the main driving force of the performance is inflation. This different results from short run and long run will give different implication on how both countries will expect the performance of their stock in the market regarding their monetary policy stance. For instance, in inflation targeting, even though both countries apply inflation targeting (Based on Bank Indonesia (n.d) and Akalpler and Duhok (2018)), but central bank's target of inflation in Indonesia is more important rather than in Malaysia as this inflation targeting will affect *Islāmic* stock in short run and long run. Therefore, credibility of central bank in Indonesia to achieve its target is essential.

Furthermore, by assuming all significant independent variables increase, Malaysia can reduce its risk of loss from its *Islāmic* stock performance from -0.384 in the short run to -0.0077 in the long run, while Indonesia's performance reduces from positive return in the short run by 0.128 to negative return in the long run by -0.0096. In more detail, in the short run, performance of Indonesia *Islāmic* stock market is driven by inflation, followed by exchange rate only, whereas Malaysia's performance is characterized mainly by inflation followed by exchange rate and VIX which reflects investor fear and market volatility respectively. Assuming these significant independent variables to increase, performance of *Islāmic* stock market in Malaysia falls sharply by -0.384, while Indonesia performs better by 0.128. In addition, gold price does not have any significant effect on *Islāmic* stock in Indonesia (in short run and long run) and Malaysia (in short run) whereas inflation does not have significant effect in Malaysia in the long run, and VIX does not have significant effect in Indonesia only in the short run.

In the long run, performance of *Islāmic* stock market in Indonesia is driven mainly by inflation because of its highest impact, followed by exchange rate where the value is quite close to inflation and investor fear and market volatility (VIX), whereas the average performance of *Islāmic* stock in Malaysia is mainly driven by exchange rate, followed by investor fear and market volatility (VIX), and gold price. By assuming that inflation and exchange rate as MPO are increasing, at the same time with increasing market volatility and investor fear (VIX), the average performance value of Indonesia *Islāmic* stock will reduce by -0.0096, higher risk is reflected here compared to Malaysia which only reduces by -0.0077 because of the increase in exchange rate, VIX, and gold price. This result shows that in the long run, estimated Malaysia's *Islāmic* stock market performance has lower risk of loss rather than estimated performance of the Indonesian market.

Those different results of short run and long run sensitivity analysis show that investors of *Islāmic* stock market in Indonesia tend to maximize profit only in short period of time without any intention to invest in the long term, while in Malaysia many investors show the intention to invest in stock market for long term period. By this result, it is very imperative that policy makers in Indonesia ensure stability of economic condition be maintained,

and second to prevent investors from leaving in the short period; increasing capital gains tax might become a proper policy.

Coefficient of θ from equation 5 and 6 shows the speed of adjustment to equilibrium in the long run as explained by Deka and Dube (2021). This notation also shows how quickly or slowly variables return to equilibrium (Pahlavi, 2005). By following Nguyen and Ngoc (2020)'s interpretation, Indonesia needs 1.17 or at least 1 month for adjustment (=1/|θ|) whereas Malaysia needs only 0.84 or less than a month for the adjustment. This means that the speed for adjustment process from short run condition into long run condition in Indonesia is less than in Malaysia. This implies that, for instance, when shocks are coming (disequilibrium condition in the short run), then Malaysia will correct these shocks faster than Indonesia in the long run (equilibrium condition).

When discussing the sign of the regression result, in the long run, inflation and exchange rate in Indonesia shows different sign from what is hypothesized and in Malaysia is VIX and gold price. In the short run, only inflation in Malaysia that shows different sign from what is hypothesized. The negative relation between inflation and *Islāmic* stock performance that differ from what is hypothesized might happen because as increasing inflation reduces consumer's purchasing power, the lower demand leads to lower profit and performance of corporations go down. Therefore, *Islāmic* stock performance is lower. Negative relation between inflation and *Islāmic* stock performance aligns with research by Bahloul, Mroua, and Naifar (2017); Yurista and Ayuningtyas (2019) and Omar and Masih (2017).

Exchange rate in the long run in Indonesia has positive effect on *Islāmic* stock performance. This result is supported by Sanusi, Jihad, and Mawardi (2021); Menacer and Nurein (2018) and Rana and Akhter (2015). According to the official website of International Monetary Fund (n.d), the rise in real effective exchange rate implies that export is more expensive (a loss in trade competitiveness), on the other hand, imports become cheaper. In condition where countries lose in trade competitiveness, it might be reasonable for *sharīʿah* companies in Indonesia focusing to meet domestic demand. With cheap import price, the price of goods where the ingredients are from import, become competitive when sold domestically rather than exporting to other countries. This condition is supported by data such as Euromeat (2023) showing

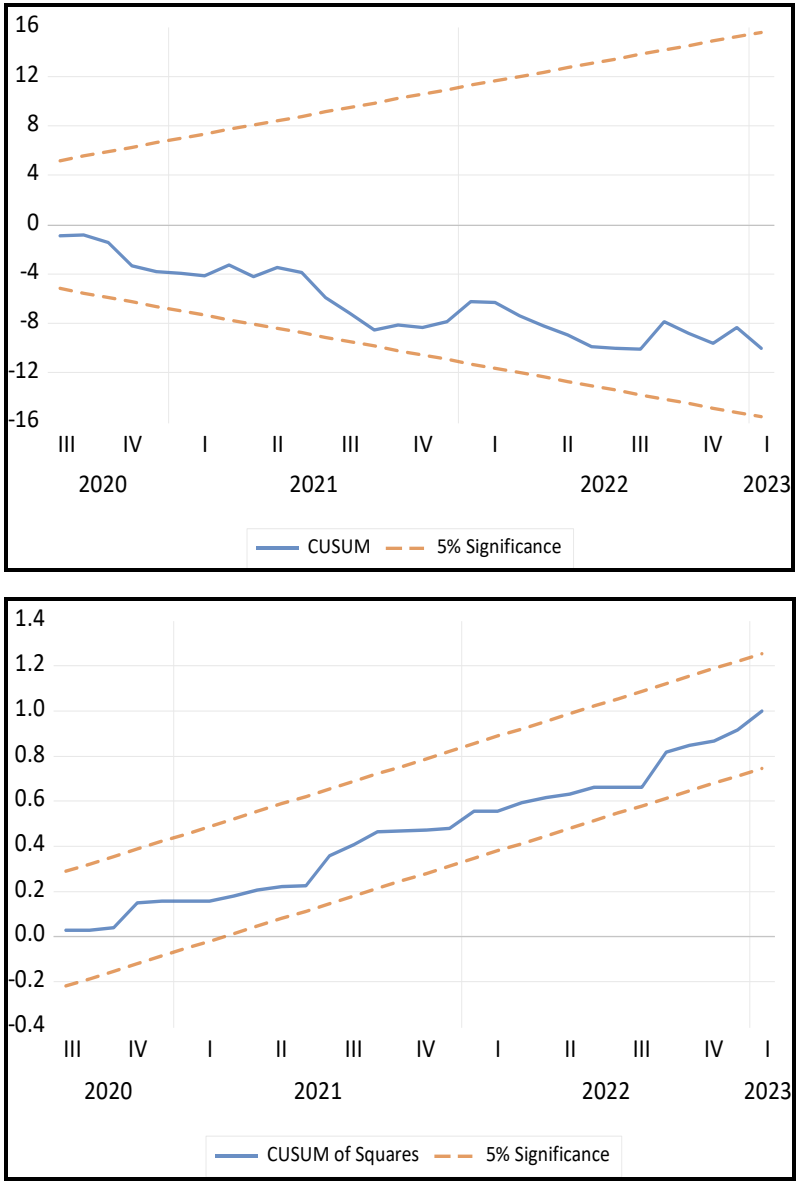
that Indonesia is not included as top 10 countries exporting halal foods, so then will make *sharīʿah* companies continuously show good performance even when trade competitiveness is decreasing. Therefore, this condition will lead to positive performance of their stock return.

As for VIX or investor fear and volatility, Mandaci and Cagli (2021) asserted that *Islāmic* stocks are safe-haven instrument from the global risk factors because of their own distinctive and conservative features. Increase of volatility in the market and also increasing fear of investors will make investors buy other safe haven assets or buy *Islāmic* stock. Buying behavior of investors in the present of increasing fear and volatility will push the price of *Islāmic* stock, making its performance rise. Therefore, this condition makes positive relation between VIX and *Islāmic* stock performance. This result is the same with study conducted by Arfaoui and Rejeb (2021) and Wahyudi and Sani (2014) but differs from Shear and Ashraf (2022) and Karim, Kawsar, and Ariff (2022).

Furthermore, based on Naeem, Qureshi, Arif, and Balli (2021) the diversification hypothesis states that asset is positively correlated with other assets in normal market condition, whereas safe-haven hypothesis asserts the negative or no relationship between assets under extreme market distress. By using this explanation, the positive relationship between gold price and *Islāmic* stock performance means that investors there in Malaysia trying to expand and diversify their portfolios. This positive and significant result is the same as Widjaja, Gaby, and Havidz (2023) in specific condition, and Godil, Sarwat, Sharif, and Jermsittiparsert (2020) butcontradicts findings by Chkili (2022), and Tuna (2019).

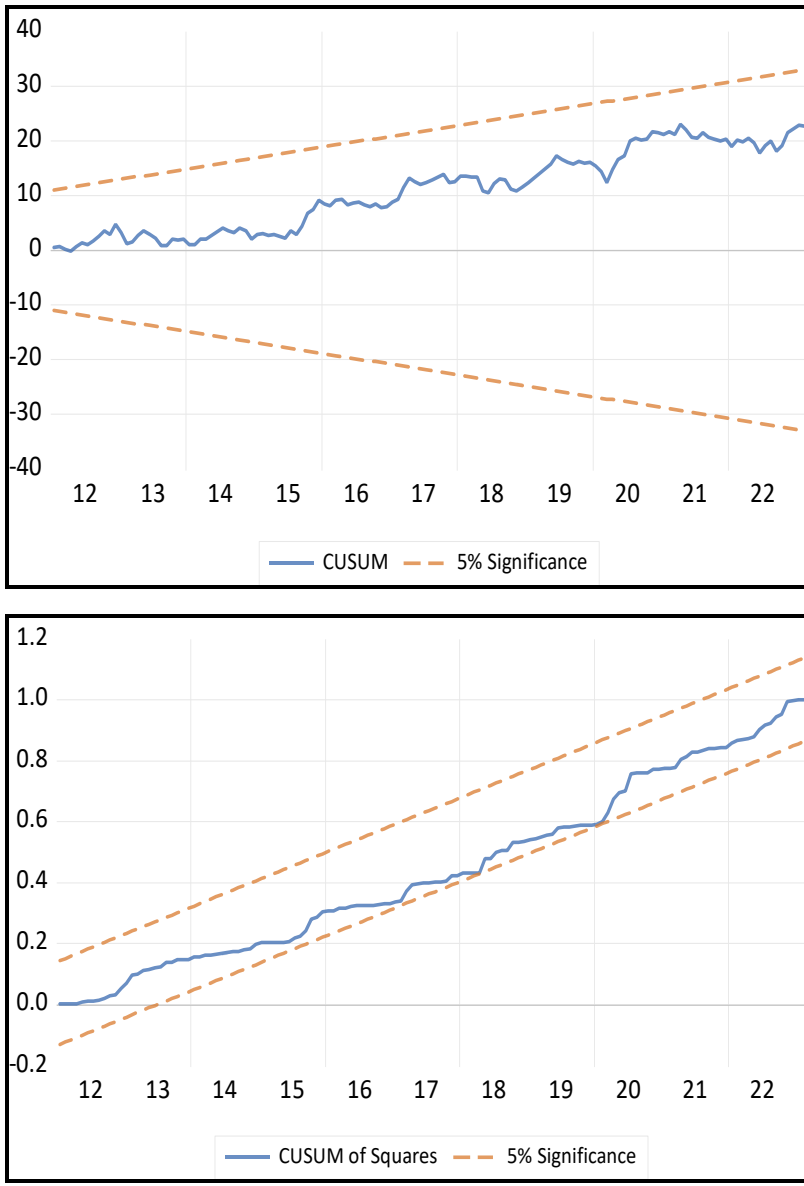
As shown in Table 6, the results pass several diagnostic tests such as autocorrelation, multicollinearity, and heteroscedasticity, but not for Ramsey reset. Furthermore, for stability in parameter as shown in Figure 2 and Figure 3, as there is no movement outside the critical line, this result indicates stability of regression parameters in Indonesia and also Malaysia.

FIGURE 2
Stability Parameter for Indonesia



CUSUM and CUSUM Sq for Indonesia

FIGURE 3
Stability Parameter for Malaysia



CUSUM and CUSUM Sq for Malaysia

5. CONCLUSION

This paper analyzes the determinant factors that cause different performance in *Islāmic* stock market in Indonesia and Malaysia, where Malaysia has lower volatility than Indonesia. As Indonesia financial inclusion in stock market is very low, this paper argues that low volatility means low risk, and lower risk hopefully will enhance financial inclusion in capital market especially in *Islāmic* stock market in Indonesia to boost economic growth and economic health. By using ARDL bound test, this paper finds different characteristics in determining performance of *Islāmic* stock market in both Indonesia and Malaysia. Indonesia's market performance is driven mainly by inflation and exchange rate in the long run and Inflation in the short run, while Malaysia's market performance is driven mainly by exchange rate in the long run and inflation in the short run. By assuming observed significant independent variables to increase, Indonesia's *Islāmic* stock performance reduces from positive return in the short run to negative return in the long run, while Malaysia can reduce its risk of loss from short run to long run. The results also suggest that policy makers in Indonesia should mainly focus on managing inflation if they will control the performance and volatility of *Islāmic* stock market in the short run and long run, while Malaysia can control inflation in the short run and exchange rate in the long run to maintain performance and reduce volatility of its *Islāmic* stock market. Gold price does not have any significant effects on *Islāmic* stock performance in Indonesia both in long and short run, making gold investment a safe-haven asset, while in Malaysia gold investment can be a safe-haven in the short run only. Lastly, VIX does not have any relationship to *Islāmic* stock performance only in Indonesia in the short run.

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