

## Currency Fluctuations and Islamic Stock Indices in Emerging Markets

Faizul Mubarak

[faizul.mubarak@ecampus.ut.ac.id](mailto:faizul.mubarak@ecampus.ut.ac.id)

Universitas Terbuka, Jalan Cabe Raya, Pamulang, Tangerang Selatan, Banten, Indonesia

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### ABSTRACT

This research aims to explain why Islamic stock indexes tend to track the currency exchange rates of emerging countries. Granger causality is used in this analysis, and it is applied to daily data beginning with the day the index was first formed for each country. The Islamic stock indices of Malaysia, Indonesia, and India were employed as a research sample in this study. According to the findings of the research, there is only a correlation in one direction between the Islamic stock index and the currency exchange rate. Both the Islamic stock indexes in Malaysia and India have an effect on the currency exchange rate in that nation, whereas the currency exchange rate in India affects the Islamic stock index. This finding is helpful as a source of data in determining policies for the development of the Islamic financial system because it was discovered that.

**Keywords** : **Islamic Stock; Granger Causality; Exchange Rates; Developing Country**

### ABSTRAK

*Penelitian ini bertujuan untuk menjelaskan mengapa indeks saham syariah cenderung mengikuti nilai tukar mata uang atau sebaliknya pada negara-negara berkembang. Kausalitas Granger digunakan dalam analisis ini, dan diterapkan pada data harian yang dimulai dengan hari indeks pertama kali dibentuk untuk setiap negara. Indeks saham syariah Malaysia, Indonesia, dan India digunakan sebagai sampel dalam penelitian ini. Menurut temuan penelitian, hanya ada korelasi satu arah antara indeks saham syariah dan nilai tukar mata uang. Indeks saham syariah di Malaysia dan India berpengaruh terhadap nilai tukar mata uang di negara tersebut, sedangkan di Indonesia indeks saham syariah mempengaruhi nilai tukar mata uang. Temuan ini bermanfaat sebagai sumber data dalam menentukan kebijakan pengembangan sistem keuangan syariah karena ditemukan hal tersebut.*

**Kata Kunci** : **Saham Syariah; Kausalitas Granger; Nilai Tukar; Negara Berkembang**

## INTRODUCTION

The topic of the connection between fluctuating exchange rates and stock indices is unquestionably relevant to the body of academic research done in the field of finance because of the profound effect it has on a number of fundamental aspects, including asset pricing, risk management, portfolio diversification, and asset allocation (Caporale & Zekokh, 2019; Dahir et al., 2018; Hossain, 2016). Islamic finance, which uses a different form of financial intermediary than conventional banking, has become a prominent part of the global monetary system as a result of its remarkable success (Bhuiyan et al., 2018). The proportion of the world's overall financial system that is devoted to Islamic finance is gradually growing, and it already accounts for an annual value of more than \$2 trillion. Because of the expanding Islamic financial system and the rising number of people interested in Islamic finance, the slam stock market is becoming more robust and well-developed (El Alaoui et al. 2019). Investors now have access to a new investing space as a result of this. It is important to note that Islamic values alone are not sufficient to explain the increased interest of investors in Islamic finance. This is an essential point that must be made. One of the primary aspects that contribute to the allure of the Islamic banking system is the fact that it is trustworthy.

According to the prevailing school of thought in finance, exchange rates can have a number of different effects on the values of stocks (Law et al., 2020; Sui & Sun, 2016). To begin, shifts in currency exchange rates have a direct influence on the models used to value stocks, which then has a knock-on effect on the pricing of those stocks. The second way in which the value of the exchange rate can be affected is by the cost of capital for financial organizations, especially those with high debt loads. Because of this, the value of the company's anticipated future cash flows can be impacted, which in turn can have an effect on the value of the stock prices. Third, stock prices may be affected by changes in currency exchange rates due to their portfolio impacts. For instance, when the yield on fixed-income security goes down, the price of stocks goes up because they become more desirable. This allows investors to move their money away from bonds and into stocks in the hope of achieving higher yields, which in turn increases the demand for the stock and, as a result, the price of the stock.

A considerable influence on currency markets might also come from the success of the stock market. For instance, a precipitous drop in stock prices could be taken as a signal of pessimism about future economic prospects, which could, in the end, lead to a drop in the exchange rate, and vice versa (Boateng et al., 2014; Pahlavani & Roshan, 2015). This is because pessimism tends to lead to a reduction in demand for a particular currency. The link between fluctuations in currency values and stock market performance has sparked a great deal of study. In one fascinating branch of this study, researchers have used Granger (1969) concept of the causal relationship between two variables to examine the correlation between currency exchange rates and stock market valuations. The static nature of causality, in which the causal relationship between variables may change over time due to changes in economic and financial conditions, is a feature that is shared by all of these studies that are based on the concept of causality; this is one of the characteristics that make these studies similar. Further, many of the economic factors that generate Granger causality between exchange rates and the stock market, especially during times of crisis, have not been accounted for in the previous studies. This is especially problematic given that time variations have been taken into account in these studies.

Liu & Wan (2012) investigated the relationship between stock market fluctuations in Shanghai and the value of the Chinese yuan through the lens of a study of stock prices and exchange rates. To examine the relationship between stock prices and currency rates in G7 countries over the short and long term, Nusair & Olson (2022) use linear and

nonlinear Autoregressive Distributed Lag (ARDL) models. In spite of the catastrophic repercussions of the ongoing global coronavirus epidemic, Theophilus et al. (2022) examine the behaviour of stock prices, oil prices, and currency rates across twelve countries' oil exports. Croux & Reusens (2013) used Granger causality analysis in the frequency domain to investigate whether or not stock prices in the United States can foretell the direction of the domestic economy in the future. As a result, we now have a better grasp of the factors that affect domestic stock values and thus the economy's potential for growth.

Guliyev (2022) uses daily closing stock price data to investigate the relationship between the ways in which the airline markets in the United States and Europe respond to local economic shocks and the ways in which the Turkish airline market responds to local economic shocks. Granger causality between firm-level variables and measures of systemic risk are investigated by Cincinelli et al. (2022) to provide light on the dynamics of China's ever-evolving financial system. The goal here is to have a deeper comprehension of the dynamic changes taking place in the Chinese economy. Karim et al. (2022) made an early effort to look at how Islamic stock returns react differently from traditional stock returns when implied volatility (market fear) rises. He did this by utilizing asymmetric quantile regression models, the Non-Linear Autoregressive Distributed Lag Model (NARDL), and Granger causality based on wavelets. Bitcoin (BTC) pricing, M2 (cash, demand, and deposit) market volatility, inflation, and economic policy uncertainty in the UK and Japan are all studied by Sarker & Wang (2022), who investigate correlations and Granger causality between these variables. This study by Suchodolska et al. (2022) delves into the connection between food sector company comments and major market indices, [H1] the exchange rate and Islamic stock index have a causal relationship.

The goal of this research is to determine if and how fluctuations in exchange rates affect the Islamic stock index in developing economies. This study is a continuation of research that was done in the past; however, the sample size and methods of data collection have been altered. The sample for this investigation makes use of Islamic currency rates and stock indexes, and it includes daily data that can approach thousands of observations. To the author's knowledge, no one has ever looked into these variables before. Several significant additions to the existing body of research can be attributed to this study. First, to the best of our knowledge, this is the first study that takes a sample of developing nations in order to investigate the causal relationship between shifts in interest rates and shifts in stock values. Second, the purpose of this research is to evaluate the extent of the causal connection that exists between varying exchange rates and stock values over the course of time. The microfinance variables that are taken into consideration by this model have the potential to fulfil two distinct functions. First, they can act as explanatory variables of dynamic Granger causality. Secondly, they can function as transition factors. Third, our study adds to the body of knowledge that has already been accumulated in this field by making use of a more precise set of microfinance variables. The variables pertaining to the stock price and the exchange rate are two examples of potential determinants that are taken into consideration.

## RESEARCH METHOD

For this study, a selection of Islamic stock indices and exchange rates from developing nations were used. In the course of this research, samples were taken from the developing nations of Malaysia (DJIMD-MYR), Indonesia (JKISSI-IDR), and India (DJIMIND-INR). In this study, the method of sampling that was utilized was called purposive sampling, and the sample that was chosen was determined by taking a few factors into account. The research makes use of daily data from 2012 through 2022, taking into

consideration the availability of data for each index. Conduct research using the resources provided by investing.com, the Pacific Exchange Rate Service, and the Bank of Indonesia. Granger causality is utilized in this research procedure so that the research objectives can be answered.

$$X_t = \sum_{f=1}^k \alpha_{1f} X_{t-f} + \sum_{j=k+1}^{d_{max}} \alpha_{2j} Y_{t-j} + U_{1t} \quad (1)$$

$$Y_t = \sum_{f=1}^k \beta_{1f} X_{t-f} + \sum_{j=k+1}^{d_{max}} \beta_{2j} Y_{t-j} + U_{2t} \quad (2)$$

Source: Bae & Karolyi, 1994; Bollerslev, 1986; Fiordelisi et al., 2011

Where  $d_{max}$  is the maximum number of lagged observations that will be included in the model (the model order), the matrix A will contain the coefficients of the model (i.e., the contributions that each lagged observation will make to the predicted values of  $X_t$  and  $Y_t$ ), and  $U_{1t}$  and  $U_{2t}$  will be the residuals (prediction errors) for each time series.

## RESULTS AND DISCUSSION

The first step in this investigation is to carry out descriptive statistics, the purpose of which is to demonstrate the extent of the data's spread as well as their concentration. The most common observations of the JKISSI and IDR are the outcomes of the descriptive statistical test that was performed. The average value of each indicator as well as the exchange rate for each country can vary greatly from one another.

**Table 1. Descriptive Statistics**

Country	Variable	Obs	Mean	Std. Dev	Min	Max
Malaysia	DJIMD	2,340	838.78	124.41	556.15	1,124.9
	MYR	2,340	4.003	0.383	3.115	4.762
Indonesia	JKISSI	2,804	165.8	21.9	106.64	213.03
	IDR	2,804	12,891.6	1,875.63	8,504.4	16,646
India	DJIMIND	2,472	2563.14	746.99	1274.6	4523.1
	INR	2,472	67.833	6.15	53.014	83.006

Source: Processed data, 2022

However, the standard deviation, which is used to determine how far the distribution of the data deviates from the mean of each data set studied, typically has a value that is lower than the mean, which indicates that it varies less than the mean. This is because the standard deviation measures how closely the distribution of the data deviates from the mean. This suggests that the utilization of data is progressing toward more accurate results according to Table 1.

Table 1. shows the following phase, which comes after having an overall look at the data from each of the variables that were investigated, is to figure out how long the optimal lag should be. The length of the influence on an endogenous variable in the past and on other endogenous variables can be determined by determining the duration of the lag between the effect and the current state of the variable. Determination of the optimal lag for each variable by making use of the Schwarz Information Criterion (SIC) value with the least value. The ideal result for the lag test for Malaysia is 1, while the best result for Indonesia is 2, and the best result for India is 5 according to Table 2.

**Table 2. Optimum Lag**

Lag	Malaysia		Indonesia		India	
	DJIMD	MYR	JKISSI	IDR	DJIMIND	INR
0	11.72359		26.24303		21.60215	
1	1.621540*		15.39243		10.63813	
2	1.629134		15.36646*		10.56331	
3	1.636462		15.37497		10.56014	
4	1.647880		15.38274		10.53610	
5	1.659088		15.38999		10.48309*	
6	1.668784		15.39663		10.49402	
7	1.679894		15.40406		10.50289	
8	1.689794		15.41286		10.50652	

\*Lag optimum

Source: Processed data, 2022

Table 2. shows, after determining the best possible value for each variable in each nation, the following step is to examine the data using the optimal lag test to determine whether or not the data is stable. A condition stability check is performed in the form of roots of characteristic polynomials to determine whether or not the ideal lag has been attained. This check is used to determine whether or not the lag has been optimized.

The purpose of a stability test is to determine whether or not the model being utilized is stable. Stability is essential because, if the model that is being utilized is unstable, the outcomes of the estimation that is being performed with the model will not have a high level of validity. If a model's characteristic root inverse does not have a modulus that is greater than one, then the model is considered to have strong stability. According to the findings of the stability test, every variable that was used in the research had a value that was lower than one; consequently, it is possible to assert that the utilization of lag was stable.

The Granger causality test is the next step to take after determining the appropriate latency and first assessing the stability of the data. To provide an answer to the research objectives, the Granger causality test is utilized. The purpose of the test is to predict the nature of the relationship that exists between the two variables by using the time series data contained inside the estimate model according to Table 3.

**Table 3. Stability Optimum Lag**

Malaysia (1)		Indonesia (2)		India (5)	
Root	Modulus	Root	Modulus	Root	Modulus
0.999037	0.999037	0.998250	0.998250	0.999662	0.999662
0.985109	0.985109	0.994418	0.994418	0.995480	0.995480
		-0.190841	0.190841	-0.801344	0.801344
		0.011967	0.011967	-0.020701 - 0.732458i	0.732750
				-0.020701 + 0.732458i	0.732750
				0.563788	0.563788
				-0.013313 - 0.561509i	0.561667
				-0.013313 + 0.561509i	0.561667
				0.477582	0.477582
				-0.455989	0.455989

Source: Processed data, 2022

Table 3. shows that in the process of evaluating economic data using econometric methods, it is frequently discovered that there is a dependence condition between one variable and either one other variable or several other variables in the equation model that is being employed. You might also say that there is a probable causal relationship between the variables in the model. This is another way of putting it. Because of this dilemma, there is a pressing requirement to investigate the possibility of a causal connection between the

various variables in the model. According to the findings of the Granger causality test, each nation only exerts a single-directional influence on the global economy. The Islamic stock index affects the value of both the Malaysian ringgit and the Indian rupee. To be more specific, the Islamic stock index in Malaysia affects the value of the Malaysian ringgit, and the Islamic stock index in India affects the value of the Indian rupee. The local currency exchange rate has some influence on the Indonesian Sharia stock index, although only to a limited extent.

Stock market fluctuations may be linked to shifts in currency exchange rates, according to some data. According to macroeconomic theory, the value of a currency relative to another currency and the value of a stock both tend to rise together (if the exchange rate is expressed in units of domestic currency per unit of foreign currency) (Dahir *et al.*, 2018; Wajdi, 2019). The stock market value will rise in tandem with an increase in the value of the exchange rate, which is the number of domestic currency units that can be purchased with one foreign currency unit (Boateng *et al.*, 2014; Liu & Wan, 2012). This finding is supported by macroeconomic theory according to Table 4.

**Table 4. Granger Causality**

Country	Hypothesis	Obs	F-Statistic	Prob.
Malaysia	MYR ← DJIMD	2339	13.7670	0.0002*
	DJIMD → MYR		1.75036	0.1860
Indonesia	IDR ← JKISSI	2802	0.28789	0.7499
	JKISSI → IDR		7.25377	0.0007*
India	INR ← DJIMIND	2471	6.05815	0.0139*
	DJIMIND → INR		0.51152	0.4746

\*Significant at 5%

Source: Processed data, 2022

Table 4. shows that when the value of one currency relative to another fluctuates, it can affect a company's bottom line by increasing or decreasing its cost of funds. Using the efficient market hypothesis, we may infer that there is a correlation between the value of a country's currency relative to other currencies and the price of its stocks (Croux-Oskooee & Saha, 2016; Türsoy, 2017). The price per share of a company's stock will be impacted as a result of this. The cost of imported raw materials or items that are related to imported products will rise in price whenever there is a depreciation in the value of the currency exchange rate (Rana & Akhter, 2015; Sinyakov & Yudaeva, 2016). Because of this incidence, production costs have increased while corporate earnings have decreased, which means that the total amount of dividends that can be issued and the yield that can be offered have both decreased. When the return on an investment drops, fewer people will want to buy the stock, causing the stock's price to fall (Kuo, 2016; Mensi *et al.*, 2019). Conditions such as these will encourage investors to sell their shares, which will have an impact on the decrease in stock prices, which will then be reflected in the stock price index, and vice versa. If investors continue to sell their shares, the stock price index will continue to decline.

The amount of one nation's currency that may be purchased with another nation's currency is known as the exchange rate. If the value of a currency is expressed in terms of the currency of another country, then a rise in the value of the domestic currency compared to the value of the foreign currency would result in a smaller quantity of the domestic currency being needed to purchase a unit of the foreign currency (Lin *et al.*, 2018; Sonaglio *et al.*, 2016; Yildirim & Gökalp, 2016). This will result in a higher stock price. On the other hand, if the exchange rate against a foreign currency weakens, it indicates that the exchange rate that is required to acquire one foreign currency will be high, and the stock price will fall.

If there is a relative imbalance between the amount of currency that is demanded and the amount that is supplied, the exchange rate will move in the direction that corresponds to the negative trend (Engle *et al.*, 2016; Ghosh, 2017; Roy & Kemme, 2020). The deterioration of the value of the national currency relative to other currencies is a warning sign for financial market participants that the future of the economy is not looking bright (Machokoto *et al.*, 2020; Naifar, 2016). This is because currency depreciation might occur if a nation's economic fundamentals are weak, as stated in the previous sentence. If a person wishes to invest their money in the stock market, this unquestionably raises the level of risk that they are willing to accept. Investors will undoubtedly try to minimize their risk exposure, which means they will likely sell their holdings and hold off purchasing new ones until they perceive an improvement in the state of the economy. This selling activity on the part of investors will bring about a decrease in the stock price index. In addition to this, investments that are domestically rooted serve as an additional impetus for the expansion and development of an economy. It is hoped that the stock index, which is just one of the many investing tools available, would be able to play its part in having a significant impact on the expansion of the economy.

## **CONCLUSION**

The purpose of this research is to investigate whether or not there is a link between the performance of Islamic stock indices and the currency exchange rates in developing nations. According to the findings of the Granger Causality test, each nation only exerts a single-directional influence on the global economy. There are Islamic stock indexes that affect the exchange rates in Malaysia and India. The Malaysian Islamic stock index (DJIMD) affects the Malaysian exchange rate, and the Indian Islamic stock index (DJIMIND) affects the Indian exchange rate. Both of these Islamic stock indexes are found in Malaysia and India (INR). In the case of Indonesia, JKISSI is impacted by IDR.

## **RECOMMENDATION**

The findings of this research offer an overview to potential investors, who, when making decisions regarding investments, should take into consideration the economic conditions of the countries in which they intend to make those investments in the capital market. In addition, policymakers need to have a solid understanding of the significance of the relationship that exists between the stock price index and the exchange rate. This is because the relationship has an effect not only on monetary and fiscal policies but also on the overall development of a nation. For instance, to expand the export industry by lowering the exchange rate, the government must simultaneously assess whether or not the policy will have the effect of lowering the stock price index. Investors will benefit from improved economic downturn forecasting if they have a firmer grasp on how stock price indices relate to currency rates, and multinational corporations will see steady profit levels from better management of exchange rate risk if they have a firmer grasp on how to use this knowledge. Exchange rate and stock market index variables are all that can be used in this study. Future research should be able to include other variables, such as interest rates, to better understand the interplay between the financial market and macroeconomic factors.

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