ISLAMIC STOCK MARKET PERFORMANCE PRE-COVID-19: EMPIRICAL EVIDENCE FROM JAKARTA ISLAMIC INDEX

Indri Supriani[a]
Sri Herianingrum[b]
Sri Yayu Ninglasari[c]
Ryan Setya Budi[d]

[a]Department of Economics, Faculty of Economics and Business, Universitas Brawijaya
[b]Islamic Economics Department, Faculty of Economics and Business, University of Airlangga
[c]Business Management Department, Faculty of Creative Design and Digital Business, Institut Teknologi Sepuluh Nopember (ITS)
[d]Department of Development Economics, Faculty of Economics of Business, Universitas Gadjah Mada
Email: indri.supriani@ub.ac.id[a]; sri.herianingrum@feb.unair.ac.id[b]; sri.yayu@its.ac.id[c]; ryansetya2019@mail.ugm.ac.id[d]

ABSTRACT

Islamic stock market has experienced massive growth globally, including in Indonesia. This study aims to investigate the predicting factors of the Indonesian Islamic stock market that presents by the stock price of the Jakarta Islamic Index (JII). Adopted the Augmented Distributed Lag (ARDL) approach, this study uses monthly data from January 2007 to February 2020. This study uses five macroeconomic variables, namely consumer price index, exchange rate, crude oil price, world gold price, and Dow Jones Islamic Index (DJIM), to determine the JII's stock price. As a result, the JII's price volatility is significantly driven by the macroeconomic variables simultaneously. Importantly, this study reports that world gold price and DJIM return to become the most crucial factors influencing the ' 'JII's stock price volatility in short and long-run investment periods. This study has passed robustness checks by conducting three out of sample periods, namely 25%, 50%, and 75% out of sample. The 75% and 50% out of sample data revealed an identical result. Thus, this study suggests that the investor evaluates the crude oil price and world gold price fluctuation to predict the price of JII. This study offers practical implications for policymakers and practitioners and recommendations for future research.

INTRODUCTION

Islamic finance offers a substantial role as an alternative to the financial instrument with remarkable performance in the global financial system (Erdoğan et al., 2020). Islamic finance, particularly the Islamic stock market, has certain principles and screening criteria that help the Islamic financial instrument maintain its stability during the crisis period. The Islamic stock market has portrayed a massive escalation, particularly after the global financial crisis in 2008, as various parties' awareness of Islamic finance increased (Ahmid & Ondes, 2019). Islamic Financial Service Board

(2019) reported that the total asset of the Islamic capital market is predicted to reach USD216 Billion in 2024, which is an increased 50% compared to 2018. Furthermore, Thomson Reuters (2018b) also stated that the Islamic stock market had gained public awareness globally, indicated by the numerous events, seminars, news, and conferences related to the Islamic capital market.

Iman et al. (2020) explained that the Islamic capital market does not have any significant differences from conventional counterparts in general activities. However, the screening criteria that should be following sharia rules become the critical distinction that differentiates companies listed on Islamic stock indexes. The presence of Islamic stock aims to facilitate Muslim investors who want to invest their funds into stock market instruments that comply with sharia principles (Suteja et al., 2019). In general, the stock market has a significant contribution to elevating economic growth, as it allows companies to obtain financial support to escalate their business activities, which in turn opens up job opportunities (Umam et al., 2019). Thus, the policymaker, including the Indonesian government, designed several policies to improve the stock market performance and create a conducive investment environment.

The Indonesia stock exchange (IDX) continually improve the Indonesian stock market performance by offering innovation of product and investment mechanism that can satisfy all parties in the market (Indonesian Stock Exchange, 2021). As the largest Muslim population country, Indonesia is expected to have an excellent development of the Islamic stock market. In the most recent publication, *Otoritas Jasa Keuangan* (2021) reported that before the COVID-19 crisis, the Islamic stock market in Indonesia had experienced unprecedented growth, which shows by the increasing market capitalization. Besides, Setya et al. (2020) also added that Indonesian Islamic stock demonstrated a significant expansion measured by the greater accumulation of company assets in sharia-compliant indexes.

In the last quarter of 2019, World Health Organization (WHO) announced that the first Coronavirus disease (COVID-19) outbreak was found in Wuhan City, Hubei Province of China, on December 31, 2019 (WHO, 2020). COVID-19 pandemic has impacted the economic downturn globally, including in Indonesia. Indonesian first COVID-19 case was announced by the Indonesian government in March 2020, followed by the restriction of public activities and lockdowns. The World Economic Forum (2020) reported that businesses globally face declining profitability and disrupted supply chains due to China's manufacturing closure. Moreover, COVID-19 also caused a decrease in labor productivity created by locking down tens of millions of people in several cities in China and dozens of countries, lengthening travel restrictions to hold down the virus deployment. Besides, Roache et al. (2020) explained that the COVID-19 shock would affect the decline of the global economy through four channels: people flow, supply chains, goods trade, and commodity

prices. In addition, they also explain that this shock hit the oil price through the decline of travel around the world. Therefore, this phenomenon has had the most significant and dangerous impact on the global economy since the financial crisis.

In the case of stock market performance during COVID-19, Hasan et al. (2021) declare that Islamic and conventional stock markets behave similarly, which shows the degrading performance of both markets. Thus, this study concludes that screening criteria do not offer immunity to the Islamic stock market's crisis. Moreover, another study by Hassan et al. (2021) proved that the Islamic stock market has better resilience and more remarkable performance in managing financial risk during COVID-19. Interestingly, Mirz et al. (2021) portrayed that COVID-19 does not have a significant impact on depressing Islamic stock market performance. This study underlined that the Islamic stock market outperformed its conventional counterparts. In addition, Hasan et al. (2021) compared the Islamic stock performance during the global financial crisis and COVID-19 crisis and revealed that Islamic stock offers a hedging investment tool for investors.

Empirical evidence from Indonesia, Nurhayati et al. (2021) found that during the COVID-19 outbreak, the Indonesian stock market's market capitalization has decreased significantly, resulting in the unperformed stock market's unperformed due to the economic impact of the pandemic. In the same vein, Ali et al. (2021) discovered that COVID-19 had triggered the Islamic and conventional stock returns, which also intensified the stock's indices volatility. This result is also aligned with the findings from Herwany et al. (2021), who described that COVID-19 pandemic negatively impacted the stock return of the Indonesian stock market. Besides, Permata et al. (2021) stated that the announcement of COVID-19 cases in Indonesia led to the overreaction of JII. In contrast, Ryandono et al. (2021) emphasized significant differences in Islamic stock returns due to the announcement of COVID-19 as the global pandemic, which indicates that Islamic stock has unique characteristics that prevent crisis impact.

The previous studies on the Islamic stock market and COVID-19 have come into inconclusive results. Several studies declare no significance of COVID-19's impact on Islamic stock performance, whereas various studies underlined that screening criteria applied by Islamic stock are not strong enough to prevent the economic impact of the COVID-19 outbreak. Hence, this study tries to examine the Islamic stock performance in Indonesia during the normal period, which is defined by the research data that excluded the financial crisis period due to COVID-19. The investor will be able to predict the wisest investment choices and maximize return by studying the performance of Islamic stocks in a stable market, which will provide information about the typical performance of the Indonesian market. As a result, given that Indonesia is one of the countries with a rapidly expanding stock market, it is anticipated that Indonesian Islamic stocks will get more interest from foreign investors.

This study uses several macroeconomic variables to determine the performance of Islamic stock. Moreover, this study would present a comprehensive understanding of Islamic stock performance as this study offers a robustness check to ensure that the finding has portrayed the actual condition of the Indonesian stock market. The analysis of this study contributes to three folds. First, it provides an additional guideline for the regulatory framework to evaluate the performance of the Islamic stock market, which is believed has rooted in economic growth, and create an effective policy in elevating the economic growth by optimizing the contribution of Islamic stock. Second, the result could be a reference for the businessperson in maintaining their company's and stock price performance by assessing the macroeconomic condition to avoid a depth rush in their business activities. Finally, this study will be benefited investors in designing investment strategies and obtaining an optimal return.

The remainder of this paper is organized as follows. The second explained the research literature review and previous significant studies. The third section presents the research method and data. The fourth section presents the statistical result, research step, and the discussion of findings. The last section presented the research conclusion and limitations.

LITERATURE REVIEW

Numerous previous studies have been conducted to examine the correlation between macroeconomic variables toward the stock market. Empirical evidence from Organization for Economic Co-operation and Development (OECD), Pradhan et al. (2015), described that the stock market had been significantly driven by macroeconomy conditions, such as inflation, both in the short-run long-run period. In addition, Rashid et al. (2014) explained that the consumer Price Index (CPI) has a strong relationship with the money supply. The higher money supply will lead to the depreciation of domestic local and inflation, followed by the reduction of consumer purchasing power parity. Thus, through this indirect effect, the CPI will affect the stock price by degrading the company's performance due to lower demand. In sum, this current study predicted that CPI plays a prominent role in driving the Islamic stock market price.

A prior study by Azhar et al. (2020) confirmed that the stock price movement in Indonesia had been shaped by several factors, namely the company's financial performance itself, which is presented by the profit and loss, the company's value, and the exchange rate. In detail, Tsen et al. (2018) described that the position of domestic currency against foreign currency significantly impacted the domestic stock market. The appreciation of domestic currency will degrade the total export of companies as the domestic product becomes more expensive from the foreign perspective. As a result, this phenomenon will degrade the trade balance and impact

the slowdown of economic activities due to the lower demand and depress the company's financial performance, followed by decreased stock market prices. In short, this current study is suggested that the exchange rate has become an important variable in evaluating Islamic stock performance.

Oil prices become the crucial factor influencing a company's performance as it becomes one of the primary inputs in producing an output or service. Moreover, crude oil price fluctuation is also predicted to substantially affect stock market performance, as it provides an alternative investment for the investor. Research by Angelidis et al. (2015) confirmed that the volatility of oil price returns could be used to predict the US stock market returns and volatility. Chang et al. (2020) assessed the relationship between oil prices and the stock market at the sectoral level in a broader context. This study described that oil price has a different correlation with each sectoral, primarily caused by the industry characteristics, whether weighted or unweighted on the oil price.

Similarly, Narayan et al. (2019), Ftiti and Hadhri (2019), Mezghani and Boujelbène (2018), Karim and Masih (2019), and Abdulkarim et al. (2019) stated that oil prices significantly affected the stock market in China in direct and indirect ways through the macroeconomic condition. Wei et al. (2019) mentioned that oil prices significantly affected the stock market in China directly and indirectly through macroeconomic conditions. Similarly, Mishra et al. (2019) ascertained that crude oil price fluctuation had affected the Islamic stock index in the short run. Moreover, this study stressed that crude oil prices become a significant energy source in manufacturing industries; thus, the volatility of oil prices will significantly impact the industry's profitability. Hence, in this current study, the oil price is expected to shape the Islamic stock price in Indonesia substantially.

Gold has been believed as a safe-haven investment instrument for decades. The existence of Islamic stock indices, which have certain principles based on sharia value, such as the limitation of the debt ratio, interest rate, and the avoidance of several business activities, has attracted considerable attention to become the new safe haven instrument. Hence, prior studies investigated the correlation between gold and Islamic stock, as conducted by Alkhazali and Zoubi (2020). This study compares the return ratio between Islamic stock-gold portfolios versus Islamic stock-only portfolios for eight DJIM covering 1996-2017. This study suggested that the combination of Islamic stock and gold in investor investment portfolios provides a higher return compared to non-gold investments. On the same note, Mensi et al. (2013) also suggested adding commodities to the investment portfolio to gain the expected return. The result of this study implies that the gold and Islamic stock market has negatively correlated. Empirical evidence from the Mexican stock market, Singhal et al. (2019) also reported that the international gold price significantly triggers a low stock price.

Existing studies, including Trabelsi (2019), Chowdhury et al. (2020), and Haddad et al. (2020), have demonstrated that there is strong connectedness between the stock market, particularly during the bearish market condition. Suteja et al. (2019) found that Dow Jones Islamic index Malaysia (DJIMY) and Singapore (SDS100) affected the JII's price volatility during the Greek crisis from May 2010 to January 2013. In addition, Bahloul and Khemakhem (2021) explained that the stock returns and volatility spillover show that the market's connectedness varies depending on the countries and market conditions. Hence, this current study is expected that DJIM would significantly impact JII's stock price.

RESEARCH METHODS

This study empirically assesses the contributing factors that impact Jakarta Islamic Index's stock price (JII) by utilizing monthly data from January 2007 to February 2020. The data selection assumed that the data is stable, especially without the effects of the Corona Virus Diseases 2019 (COVID-19), which first cases in Indonesia were announced in February 2020 (Indonesia Information Portal, 2020). The Economics Time Market (2020) stated that the coronavirus pandemic hammers equities and threatens the global stock market, including Indonesia. Moreover, 51% of traded activities in the Indonesian stock exchange are held by foreign investors (The Jakarta Post, 2020), which may lead to higher uncertainty in the Indonesian stock market. Thus, this study only obtained the data until February 2020.

Variable Measurement

This study uses several variables selected based on various empirical results, including inflation, exchange rate, crude oil price, world gold price, and Dow Jones Islamic Market World (DJIM) Index. Inflation reflected the rupiah stability against the products and services price (Bank Indonesia, 2013). Pradhan et al. (2015) explained that the stock market might affect economic growth, which is also impacted by inflation. Shakil et al. (2018) explained that inflation plays a significant role in shaping the commodity price, which is highly connected with the company's performance and the stock price. Thus, the inflation rate indirectly correlates with the stock market. Besides, inflation also impacted the company's earnings, adversely affecting the stock price. Inflation data was obtained from Bank Indonesia (2018) and presented a percentage (%). The data formula is calculated as follows:

$$\frac{CPI_t - CPI_{t-1}}{CPI_t} \, x \, 100 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

This study includes the exchange rate variable to represent the rupiah stability against foreign currency, which plays a vital role in achieving price and financial system stability (Bank Indonesia, 2013). Speculative transactions in the exchange rate may trigger the instability of actual economic activities (Tsen et al., 2018).

Consequently, impact the company's financial performance and stock price. The exchange rate also impacted the products and services prices through the company's production cost, which is related to the company stock price. Exchange rate data was sourced from the Ministry of Trade Republik Indonesia (2018). The formula for exchange rate data is presented in the following equation:

$$\text{Real Exchange Rate} = \text{Nominal Exchange Rate} \times \frac{\text{Domestic Price}}{\text{Foreign Price}} \dots\dots\dots\dots\dots\dots\dots\dots(2)$$

Crude oil price represents the price of imported crude oil (dollar per barrel). This study adopts crude oil prices referring to Narayan et al.'s (2019) study, which revealed that the changes in oil prices have an economic impact on the Islamic stock market both for consumer and producer oil countries. Oil price data is acquired from US Energy Information Administration (2018).

This study also uses world gold price data. Numerous investors have widely accepted gold as an investment diversification tool in the Islamic stock market (Alkhazali & Zoubi, 2020). This study collected gold fixing price data (US dollars per troy ounce) from (Fred Economic Data, 2020).

The last variable used in this study is the DJIM index. This variable indicates the returns that the investors generate out of the DJIM. Hengchao and Hamid (2015) explained that domestic economic conditions and the global situation influence Islamic stock returns on the JII. DJIM data was obtained from the Reuters website.

Research Model and Method

The study's objective is to investigate the stock price of the JII using the Augmented Distributed Lag (ARDL) bound approach. This method is used to estimate the cointegration and short-run relationship (Tursoy & Faisal, 2018). The method selection is based on the presence of different stationarity levels amongst variables that ARDL accommodates. Additionally, ARDL enables the researcher to examine both the short- and long-term effects of a determining variable. The researchers will thus be able to gain a thorough understanding of how the predicting factors behave both in the short and long terms. Furthermore, Mongi (2019) explained that the ARDL approach does not entail the same integration order for all variables; thus, the mixed integration of neither I(0) nor I(1) is allowed. Therefore, the research model of ARDL(p, q1, q2, q3, q4, q5) in this study is written in the following equation:

$$\phi(L)JII_t = c + \beta_1(L)Inf_t + \beta_2(L)ER_t + \beta_3(L)COP_t + \beta_4(L)WGP_t + \beta_5(L)DJIM_t + \mu_t\dots\dots(3)$$

Where: JII is the stock price of Jakarta Islamic Index; Inf is the inflation rate; ER is the returns of exchange rate; COP is the returns of the world oil price; WGP is the returns of the world gold price; DJIM is the price of Dow Jones Islamic Index, and μ is the disturbance term.

RESULT AND ANALYSIS

These results progress divided into fifth steps: first, the stationary status of the dependent and independent variables is checked through the unit root test.

Secondly, the Johansen cointegration test is applied. The third and fourth steps are the Bound test and LM test. Finally, the estimates of ARDL in the short-run and long-run were determined

Stationarity Test

Augmented Dickey-Fuller (ADF) is utilized to investigate the stationarity of dependent and independent variables. Based on Table 1, this study affirmed that JII, exchange rate, crude oil price, world gold price, and DJIM are stationary in level I(1). The probability value can show it was higher than α 1%. However, the inflation rate variable is stationary in level I(0); the probability value reflects this, which is lower than α 1% (0.000 > 0.01). This combination of I(0) and I(1) variables shows that the ARDL approach in this study is appropriate.

Table 1
Augmented Dickey-Fuller Test

Variable	Level I(0)		First Difference I(1)		Status
	ADF	PP	ADF	PP	
LnJII	0.1592	0.1771	0.0000***	0.0000***	I(1)
INF	0,0000***	0.0000***	0.0000***	0.0000***	I(0)
LnER	0.8084	0.7887	0.0000***	0.0000***	I(1)
LnCOP	0.1176	0.1708	0.0000***	0.0000***	I(1)
LnWGP	0.1543	0.1592	0.0000***	0.0000***	I(1)
LnDJIM	0.8749	0.8163	0.0000***	0.0000***	I(1)

Source: Data Processed (2021)

Note: The asterisks, ***, **, and * denote the two-tail statistical significance at 1%, 5%, and 10% respectively.

Cointegration Test

Secondly, the Johansen cointegration test result is represented in Table 2. Based on the table, the critical value of trace and Max-Eigen are higher than critical values (115.1604 > 95.75366 and 47.72186 > 40.07757). These results indicate that in the long run, there is cointegration in the equation model.

Table 2
Johansen Cointegration Test

Test Statistic	Coefficient	K
F-Statistic	5.654414	4
Critical Value Bounds		
Level of Sig	I0 Bound	I1 Bound
10%	2.2.6	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Data Processed (2021)

Bound Test Cointegration

The bound test result, described in Table 3, aims to identify a long-run relationship between the variables (Memdani & Shenoy, 2019). Table 3 explains that

F-statistic is higher than the upper critical bound at the 1% significance level (5.654414 > 4.68). Hence, this study confirms that there is a significant correlation in the long-run period between the Islamic stock market in Indonesia, which was presented by JII towards inflation, exchange rate, crude oil price, world gold price, and DJIM, particularly in the period before the COVID-19 crisis hit the stock market performance.

Table 3
The Results of Bound F-test for the Long-Term Relationship

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized Number of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.267951	115.1604	95.75366	0.0012
At most 1	0.173110	67.43858	69.81889	0.0763
At most 2	0.116685	38.35576	47.85613	0.2867
At most 3	0.080725	19.37260	29.79707	0.4664
At most 4	0.040831	6.494663	15.49471	0.6370
At most 5	0.000760	0.116393	3.841466	0.7330
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized Number of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.267951	47.72186	40.07757	0.0057
At most 1	0.173110	29.08283	33.87687	0.1679
At most 2	0.116685	18.98315	27.58434	0.4158
At most 3	0.080725	12.87794	21.13162	0.4635
At most 4	0.040831	6.378270	14.26460	0.5652
At most 5	0.000760	0.116393	3.841466	0.7330

Source: Data Processed (2021)

LM Test

Table 4 informs the LM test result. This study conducted the LM test to verify the hypothesis of no residual series correlation against the variables (Ngong et al., 2021). Based on table 4, the chi-square probability is higher than α 1% (0.2082 > 0.01), which shows that it fails to reject the null hypothesis. Therefore, this study assures that there is no autocorrelation issue in this study's model.

Table 4
Breush-Godfrey Serial Correlation LM Test

F-Statistics	1.226029	Prob. F(6.127)	0.2973
Obs *R-Squared	8.431696	Prob. Chi-Square (6)	0.2082

Source: Data Processed (2021)

Short-run and Long-run Estimation Result

The correlation between the JII's and the predicting factors are reported in table 5. This study presented the long-run estimation utilizing the bound test and the short-run estimation based on error-correction coefficient (CointEq (1)) or Error Correction Term (ECT) (Supriani et al., 2021). Table 5 informs that in the short-run, world gold price and DJIM play significant roles in influencing the stock price on the JII. The exchange rate, world gold price, and DJIM have crucial roles in shaping JII's stock price fluctuation in the long run. Interestingly, this study found that inflation and crude oil price do not have a critical contribution in forming the stock price of JII.

Therefore, the result of this study implies that macroeconomic situations impact the Indonesian Islamic stock price on the JII. Moreover, in the long run, inflation and crude oil price have no significant impact on JII's price, whereas exchange rate, world gold price, and DJIM returns play substantial roles in forming the stock price of JII.

In the short and long run, JII and WGP tend to move in the exact directions. This result indicates the positive sign of WGP's coefficient. Consequently, the increase in the gold price will prompt the JII into a higher level of price. Thus, this study proved that gold and JII behave similarly, which signifies that gold does not provide a save heaven instrument for JII. This finding aligns with the study conducted by Godil et al. (2020), who revealed that the positive movement of gold prices significantly caused the increase of the DJIM under bullish and bearish markets. In the US stock market context, Han et al. (2020) discovered that the gold ratio has a strong impact on determining the market excess return. Besides, an interesting study by Chkili et al. (2021) stated that the effectiveness of gold as a safe haven tool has massively decreased over the past years, specifically with the existence of Bitcoin. Importantly, this study ascertained that gold had ceded its role as a hedger to new assets, including Bitcoin.

Empirical evidence from exporter gold country, Singhal et al. (2019), described that the increasing gold price globally resulted in an upward trend of Mexico's stock market condition. In detail, Aftab et al. (2019) explained that the higher demand for gold in Asian countries would naturally increase the gold price; this phenomenon will impact the appreciation of domestic currencies due to the export activities. The stronger position of domestic currency, especially the rupiah as one of the biggest gold-producer countries, will decrease the company's cost of production, particularly for imported input materials. Hence, the company's return and the stock price will simultaneously boost the higher level. In short, the increase in Indonesian Islamic stock price is significant and positively affected by the world gold price.

However, this current study does not support the prior studies' findings. On the contrary, the finding of Tursoy and Faisal (2018) and Naeem et al. (2021) revealed that stocks react negatively toward the gold price, which means that gold acts as an effective hedger for the stock market in Turkey, particularly during the economic downturn. Moreover, Alkhazali and Zoubi (2020) also suggested that the presence of gold in an investor's investment portfolio will increase the possibility of obtaining a higher return and degrade the loss. In addition, numerous existing studies, including Aftab et al. (2019), Vanitha and Saravanakumar (2019), Huang and Kilic (2019), Singhal et al. (2019), and Hachicha et al. (2021) corroborated that the risk-averse investors should incline to utilized gold as the hedging tools due to its stability during extreme volatility of exchange rate.

Furthermore, this study ensures that DJIM critically has a substantial part in affecting JII's stock price. This study proved that the increasing DJIM would escalate the JII's stock price, which is presented by the positive sign of the oil price's coefficient. This research agrees with the existing studies, including Rafiqoh et al. (2018), which stressed that the positive Dow Jones stock price movement would prompt the Indonesian Islamic stock market. Moreover, in the long-term equilibrium, Qizam et al. (2020) also revealed a unidirectional relationship between DJIM and JII, implying that the DJIM affects JII. This result indicated that the performance of the Indonesian market is cointegrated with the international stock market as the macroeconomic situation of the emerging country is influenced mainly by the global condition. Qizam et al. (2020) explained that the dynamic associations and causality among stock markets have significantly increased during the financial crisis, which presents a strong interconnection between the countries and the stock market.

Table 5
The Estimates of Long-term and Short-term Relationship

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long-Run Coefficients				
INFLATION	1.959095	1.480236	1.323501	0.1879
LNER	-0.489816	1.218855	-0.401866	0.6884
LNCOP	-0.678114	0.650142	-1.043024	0.2988
LNWGP	1.350438	0.773171	1.746623	0.0830*
LNDJIM	2.016299	1.139756	1.769061	0.0792*
C	-12.417840	13.177201	-0.942373	0.3477
Short-Run Coefficients				
D(INFLATION)	-0.005591	0.008326	-0.671492	0.5031
D(LNER)	-0.501022	0.157369	-3.183744	0.0018***
D(LNCOP)	-0.047905	0.045579	-1.051033	0.2951
D(LNWGP)	0.163071	0.073808	-2.209403	0.0289***
D(LNDJIM)	0.618705	0.098312	6.293301	0.0000
CointEq (-1)	-0.038448	0.031884	1.205869	0.2300
R-Squared			0.984110	
Adjusted R-Squared			0.981721	
Sum Squared Resid			0.214069	
Durbin Watson Resid			2.171984	
F-Statistic			411.8561	
Prob(F-Statistic)			0.0000	

Source: Data Processed (2021)

Note: the asterisk* denotes the two-tail statistical significance at 1%

This study also discovers that in the short run, the position of domestic currency against the international currency, in this case, the US dollar, has a significant and negative impact on JII's stock price movement. The appreciation of the rupiah will trigger a decrease in the price of JII. Aligning with this finding, Erdoğan et al. (2020) revealed that the foreign exchange market also drives Islamic stock volatility. Moreover, Irfan et al. (2021) also ascertained that the exchange rate has a positive and significant impact on Indonesian Islamic stock performance. In similar research, Tsen et al. (2018) found that the more robust real exchange rate decreases the actual stock price returns in the Malaysian stock market. The result of this study, due to the appreciation of the rupiah, caused the increase of the domestic product

price from a foreign perspective. Hence, the demand for the product from international customers will degrade, which will finally depress the stock price due to the lessened performance of the company.

Robustness check

This study also conducted out-of-sample forecasting by analyzing the role of the macroeconomic variables in driving the price of JII to check the robustness of the result. Referring to previous studies that suggested performing the robustness check, such as Phan et al. (2015) and Sharma (2016), this study divides the data into three phases out of sample periods.

The sample period for each out-of-sample is 25% (covering the period from 2007 to 2010), 50% (covering the period from 2007 to 2013), and 75% (covering the period from 2007 to 2016). Tables 6, 7, and 8 (see appendix) describe the robustness test of this study.

Finally, after passing several stages of ARDL testing, the tests show that the results are robust across the three different forecasting periods, which indicates that the volatility of world gold price and DJIM significantly play a significant role in influencing the stock price of JII.

CONCLUSION

The present study investigates the predicting factors of the Indonesian Islamic stock price presented by JII before the COVID-19 pandemic crisis hit the Indonesian market from January 2007 to February 2020. The result shows that the macroeconomics variable has simultaneously impacted the price of JII, including inflation, exchange rate, crude oil price, world gold price, and Dow Jones Islamic index price both in the long and short run period. Importantly, this study also ascertained that gold price and DJIM returns become the most significant factors that drive the JII's price during the observation period, which is stated as a normal condition and is not affected by the unstable economic condition. Moreover, the price of JII is found to move in the opposite direction towards the exchange rate in the short run, whereas it does not play a crucial role in forming the price of JII in the long run. Importantly, the finding of this study has passed several tests of robustness check. Hence, the result is strongly presented the actual condition of the Indonesian stock market. Based on the robustness check, this study confirms that gold price and DJIM become the most crucial factors shaping JII's price.

The economic significance of this study is that risk-averse investors and traders can be considered gold and DJIM returns historical patterns as the factors in predicting the JII's price. Moreover, this study also underlined that oil and DJIM are not suggested to be utilized as the hedger of JII due to the similarity of behavior between the instruments. Furthermore, the investor should pay more attention to

the country's position, whether it is a gold-exporter or gold-importer country because it shapes the stock market performance differently. Hence, the finding of this study is expected to provide a comprehensive perspective for investors in designing their investment decision. Besides, this study also offers several important suggestions for companies, particularly those included in Islamic stock indexed, to consider the indirect impact of oil and DJIM returns towards their stock price performance due to changing investor sensitivity. The findings of this study suggest that investors should pay more attention to fluctuations in gold and DJIM, which are the two most important variables influencing the volatility of Islamic stocks in Indonesia.

This study is also subject to some limitations. First, this study only adopted the JII stock price to present the Islamic stock market in Indonesia. Therefore, future research should be conducted by utilizing cross-countries data to present the differences between oil-exporter and oil-importer or gold-exporter and gold-important behavior against Islamic stock prices. Second, this study focuses on Islamic stock market conditions during the normal market condition and avoiding the massive crisis due to the COVID-19 pandemic. Hence, comparing the market performance pre and during the crisis will provide insightful knowledge for investors and practitioners.

ACKNOWLEDGEMENT

REFERENCES

Abdulkarim, F. M., Akinlaso, M. I., Hamid, B. A., & Ali, H. S. (2019). The nexus between oil price and islamic stock markets in Africa: A wavelet and Multivariate-GARCH approach. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2019.11.001

Aftab, M., Shah, S. Z. A., & Ismail, I. (2019). Does Gold Act as a Hedge or a Safe Haven against Equity and Currency in Asia? *Global Business Review*, *20*(1), 105–118. https://doi.org/10.1177/0972150918803993

Ahmid, A., & Ondes, T. (2019). Bibliometric Analysis of PHD Dissertations Written in Islamic Bank and Finance in the United Kingdom. *Journal of Islamic Economics and Finance*, *5*(1), 63–91.

Ali, M., Anwar, U., & Haseeb, M. (2021). The impact of COVID-19 on Islamic and conventional stocks in Indonesia: A wavelet-based study. *Buletin Ekonomi Moneter Dan Perbankan Perbankan*, *24*, 15–32. https://doi.org/10.21098/BEMP.V24I0.1480

Alkhazali, O. M., & Zoubi, T. A. (2020). Gold and portfolio diversification: A stochastic dominance analysis of the Dow Jones Islamic indices. *Pacific Basin Finance Journal*, *60*(November 2019), 101264. https://doi.org/10.1016/j.pacfin.2020.101264

Angelidis, T., Degiannakis, S., & Filis, G. (2015). US stock market regimes and oil price

shocks. *Global Finance Journal*, *28*, 132–146. https://doi.org/10.1016/j.gfj.2015.01.006

Azhar, R., Kesumah, F. S. D., Ambya, Wisnu, F. K., & Russel, E. (2020). Application of short-term forecasting models for energy entity stock price: evidence from Indika Energi Tbk, Jakarta islamic index. *International Journal of Energy Economics and Policy*, *10*(1), 294–301. https://doi.org/10.32479/ijeep.8715

Bahloul, S., & Khemakhem, I. (2021). Dynamic return and volatility connectedness between commodities and Islamic stock market indices. *Resources Policy*, *71*(February), 101993. https://doi.org/10.1016/j.resourpol.2021.101993

Bank Indonesia. (2013). *Monetary Policy Objectives*. https://www.bi.go.id/en/moneter/tujuan-kebijakan/Contents/Default.aspx

Bank Indonesia. (2018). *Inflation Report*. https://www.bi.go.id/en/moneter/inflasi/data/Default.aspx

Chang, B. H., Sharif, A., Aman, A., Suki, N. M., Salman, A., & Khan, S. A. R. (2020). The asymmetric effects of oil price on sectoral Islamic stocks: New evidence from quantile-on-quantile regression approach. *Resources Policy*, *65*(June 2019), 101571. https://doi.org/10.1016/j.resourpol.2019.101571

Chkili, W., Rejeb, A. Ben, & Arfaoui, M. (2021). Does bitcoin provide hedge to islamic stock markets for pre- and during COVID-19 outbreak? A comparative analysis with gold Walid. *Resources Policy*. https://doi.org/10.1016/j.resourpol.2021.102407

Chowdhury, M. I. H., Balli, F., & Hassan, M. K. (2020). Network Connectedness of World's Islamic Equity Markets. *Finance Research Letters*, *December*, 101878. https://doi.org/10.1016/j.frl.2020.101878

Erdoğan, S., Gedikli, A., & Çevik, E. İ. (2020). Volatility spillover effects between Islamic stock markets and exchange rates: Evidence from three emerging countries. *Borsa Istanbul Review*, *20*(4), 322–333. https://doi.org/10.1016/j.bir.2020.04.003

Fred Economic Data. (2020). *Gold Fixing Price 3:00 P.M. (London time) in London Bullion Market, based in U.S. Dollars*. https://fred.stlouisfed.org/series/GOLDPMGBD228NLBM

Ftiti, Z., & Hadhri, S. (2019). Can economic policy uncertainty, oil prices, and investor sentiment predict Islamic stock returns? A multi-scale perspective. *Pacific Basin Finance Journal*, *53*, 40–55. https://doi.org/10.1016/j.pacfin.2018.09.005

Godil, D. I., Sarwat, S., Sharif, A., & Jermsittiparsert, K. (2020). How oil prices, gold prices, uncertainty and risk impact Islamic and conventional stocks? Empirical evidence from QARDL technique. *Resources Policy*, *66*(January), 101638. https://doi.org/10.1016/j.resourpol.2020.101638

Hachicha, N., Ghorbel, A., Feki, M. C., Tahi, S., & Dammak, F. A. (2021). Hedging Dow Jones Islamic and conventional emerging market indices with CDS, oil, gold and the VSTOXX: A comparison between DCC, ADCC and GO-GARCH models. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2021.04.002

Haddad, H. Ben, Mezghani, I., & Al Dohaiman, M. (2020). Common shocks, common transmission mechanisms and time-varying connectedness among Dow Jones Islamic stock market indices and global risk factors. *Economic Systems*,

100760. https://doi.org/10.1016/j.ecosys.2020.100760

Han, X., Ruan, X., & Tan, Y. (2020). Can the relative price ratio of gold to platinum predict the Chinese stock market? *Pacific Basin Finance Journal*, *62*(February), 101379. https://doi.org/10.1016/j.pacfin.2020.101379

Hasan, B., Mahi, M., Hassan, M. K., & Bashar, A. (2021). Impact of COVID-19 pandemic on stock markets: Conventional vs . Islamic indices using wavelet-based multi-timescales analysis. *North American Journal of Economics and Finance*, *58*(February), 101504. https://doi.org/10.1016/j.najef.2021.101504

Hasan, M. B., Hassan, M. K., Rashid, M. M., & Alhenawi, Y. (2021). Are safe haven assets really safe during the 2008 global financial crisis and COVID-19 pandemic? *Global Finance Journal*, *50*(December 2020), 100668. https://doi.org/10.1016/j.gfj.2021.100668

Hassan, M. K., Chowdhury, M. I. H., Balli, F., & Hasan, R. (2021). A note on COVID-19 instigated maximum drawdown in Islamic markets versus conventional counterparts. *Finance Research Letters*, *August*, 102426. https://doi.org/10.1016/j.frl.2021.102426

Hengchao, Z., & Hamid, Z. (2015). The Impact of Subprime Crisis on Asia-Pacific Islamic Stock Markets. *Journal of Asia-Pacific Business*, *16*(2), 105–127. https://doi.org/10.1080/10599231.2015.1028304

Herwany, A., Febrian, E., Anwar, M., & Gunardi, A. (2021). The Influence of the COVID-19 Pandemic on Stock Market Returns in Indonesia Stock Exchange. *Journal of Asian Finance, Economics and Business*, *8*(3), 39–47. https://doi.org/10.13106/jafeb.2021.vol8.no3.0039

Huang, D., & Kilic, M. (2019). Gold, platinum, and expected stock returns. *Journal of Financial Economics*, *132*(3), 50–75. https://doi.org/10.1016/j.jfineco.2018.11.004

Iman, S., Mawardi, I., & Sarker, M. A. R. (2020). Analysis of International Index on Indonesian Sharia Stock Index. *Jurnal Ekonomi Dan Bisnis Islam (Journal of Islamic Economics and Business)*, *6*(1), 60. https://doi.org/10.20473/jebis.v6i1.10961

Indonesia Information Portal. (2020). *Government Covers COVID-19 Cases Medical Treatment Expenses*. https://indonesia.go.id/narasi/indonesia-dalam-angka/ekonomi/kasus-covid-19-pertama-masyarakat-jangan-panik

Indonesian Stock Exchange. (2021). *Index*. https://www.idx.co.id/en-us/products/index/

Irfan, M., Kassim, S., Dhimmar, S., Zahid, M., & Fuadi, N. F. Z. (2021). Reaction of Islamic Stock Market To Macroeconomic Variables: a Study of India and Indonesia. *Jurnal Ekonomi Dan Bisnis Islam (Journal of Islamic Economics and Business)*, *7*(1), 148. https://doi.org/10.20473/jebis.v7i1.25921

Islamic Financial Service Board. (2022). *Islamic Financial Services Industry Stability Report*. Islamic Financial Services Board. https://islamicmarkets.com/publications/ifsb-islamic-financial-services-industry-stability-report-2021

Karim, M. M., & Masih, M. (2019). Do the Islamic Stock Market Returns Respond Differently to the Realized and Implied Volatility of Oil Prices? Evidence from the Time–Frequency Analysis. *Emerging Markets Finance and Trade*, *00*(00), 1–16. https://doi.org/10.1080/1540496x.2019.1663409

Memdani, L., & Shenoy, G. (2019). Impact of terrorism on stock markets across the world and stock returns: An event study of Taj attack in India. *Journal of Financial Crime*, *26*(3), 793–807. https://doi.org/10.1108/JFC-09-2018-0093

Mensi, W., Beljid, M., Boubaker, A., & Managi, S. (2013). Correlations and volatility spillovers across commodity and stock markets: Linking energies, food, and gold. *Economic Modelling*, *32*(1), 15–22. https://doi.org/10.1016/j.econmod.2013.01.023

Mezghani, T., & Boujelbène, M. (2018). The contagion effect between the oil market, and the Islamic and conventional stock markets of the GCC country: Behavioral explanation. *International Journal of Islamic and Middle Eastern Finance and Management*, *11*(2), 157–181. https://doi.org/10.1108/IMEFM-08-2017-0227

Ministry of Trade Republik Indonesia. (2018). *Portal Statistik Perdagangan*. https://statistik.kemendag.go.id/exchange-rates

Mirz, N., Abbas Rizvi, S. K., Saba, I., Naqvi, B., & Yarovaya, L. (2021). The resilience of Islamic equity funds during COVID-19: Evidence from risk adjusted performance, investment styles and volatility timing. *International Review of Economics & Finance*. https://doi.org/10.1016/j.iref.2021.09.019

Mishra, S., Sharif, A., Khuntia, S., Meo, S. A., & Rehman Khan, S. A. (2019). Does oil prices impede Islamic stock indices? Fresh insights from wavelet-based quantile-on-quantile approach. *Resources Policy*, *62*(April), 292–304. https://doi.org/10.1016/j.resourpol.2019.04.005

Mongi, A. (2019). The global influence of oil futures-prices on Dow Jones Islamic stock indexes: Do energy-volatility's structural breaks matter? *International Journal of Emerging Markets*, *14*(4), 523–549. https://doi.org/10.1108/IJOEM-11-2017-0471

Naeem, M. A., Qureshi, F., Arif, M., & Balli, F. (2021). Asymmetric relationship between gold and Islamic stocks in bearish, normal and bullish market conditions. *Resources Policy*, *72*(October 2020), 102067. https://doi.org/10.1016/j.resourpol.2021.102067

Narayan, P. K., Phan, D. H. B., & Sharma, S. S. (2019). Does Islamic stock sensitivity to oil prices have economic significance? *Pacific Basin Finance Journal*, *53*(2017), 497–512. https://doi.org/10.1016/j.pacfin.2018.04.003

Ngong, C. A., Thaddeus, K. J., & Onwumere, J. U. J. (2021). Microfinancial inclusion nexus poverty alleviation: the case of Nigeria. *Journal of Economic and Administrative Sciences*, *ahead-of-p*(ahead-of-print). https://doi.org/10.1108/jeas-08-2020-0147

Nurhayati, I., Endri, E., Aminda, R. S., & Muniroh, L. (2021). Impact of covid-19 on performance evaluation large market capitalization stocks and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 1–16. https://doi.org/10.3390/joitmc7010056

Otoritas Jasa Keuangan. (2021). *Market update pasar modal syariah Indonesia*. https://www.ojk.go.id/id/kanal/syariah/tentang-syariah/Documents/pages/pasar-modal-syariah/Market Update Pasar Modal Syariah Indonesia Periode Januari - Juni 2021.pdf

Permata, R. R., Purwanto, B., & Ermawati, W. J. (2021). The Outbreak of COVID-19

and Islamic Stock Market Responses in Indonesia. *The Winners*, *22*(2), 105–112. https://doi.org/10.21512/tw.v22i2.7104

Phan, D. H. B., Sharma, S. S., & Narayan, P. K. (2015). Stock return forecasting: Some new evidence. *International Review of Financial Analysis*, *40*, 38–51. https://doi.org/10.1016/j.irfa.2015.05.002

Pradhan, R. P., Arvin, M. B., & Bahmani, S. (2015). Causal nexus between economic growth, inflation, and stock market development: The case of OECD countries. *Global Finance Journal*, *27*, 98–111. https://doi.org/10.1016/j.gfj.2015.04.006

Qizam, I., Ardiansyah, M., & Qoyum, A. (2020). Integration of Islamic capital market in ASEAN-5 countries: Preliminary evidence for broader benefits from the post-global financial crisis. *Journal of Islamic Accounting and Business Research*, *11*(3), 811–825. https://doi.org/10.1108/JIABR-08-2019-0149

Rafiqoh, Hudayah, S., Parminto, A., & Haryadi, S. (2018). The determinant of the indonesia composite stock price index and its implication to indonesia foreign direct investment for manufactur sector. *International Journal of Scientific and Technology Research*, *7*(6), 81–85.

Rashid, M., Hassan, K. M., & Yein, N. Y. (2014). Macroeconomics, investor sentiment, and Islamic stock price index in Malaysia. *Journal of Economic Cooperation and Development*, *35*(4), 221–236.

Roache, S., Rana, V., & Conti, R. V. (2020). *Economic Research: COVID-19 Now Threatens More Damage To Asia-Pacific*. https://www.spglobal.com/ratings/en/research/articles/200305-covid-19-now-threatens-more-damage-to-asia-pacific-11378885

Ryandono, M. N. H., Muafi, M., & Guritno, A. (2021). Sharia Stock Reaction Against COVID-19 Pandemic: Evidence from Indonesian Capital Markets. *Journal of Asian Finance, Economics and Business*, *8*(2), 697–710. https://doi.org/10.13106/jafeb.2021.vol8.no2.0697

Setya, V. A., Supriani, I., & Fianto, B. A. (2020). Determinants of Underpricing in Islamic and Non-Islamic Shares on IPO. *Shirkah Journal of Economics and Business*, *5*(1). https://doi.org/10.22515/shirkah.v5i1.276

Shakil, M. H., Mustapha, I. M., Tasnia, M., & Saiti, B. (2018). Is gold a hedge or a safe haven? An application of ARDL approach. *Journal of Economics, Finance and Administrative Science*, *23*(44), 60–76. https://doi.org/10.1108/JEFAS-03-2017-0052

Sharma, S. S. (2016). Can consumer price index predict gold price returns? *Economic Modelling*, *55*, 269–278. https://doi.org/10.1016/j.econmod.2016.02.014

Singhal, S., Choudhary, S., & Biswal, P. C. (2019). Return and volatility linkages among International crude oil price, gold price, exchange rate and stock markets: Evidence from Mexico. *Resources Policy*, *60*(December 2018), 255–261. https://doi.org/10.1016/j.resourpol.2019.01.004

Supriani, I., Fianto, B. A., Fauziah, N. N., & Maulayati, R. R. (2021). Revisiting the Contribution of Islamic Banks' Financing to Economic Growth: The Indonesian Experience. *Shirkah: Journal of Economics and Business*, *6*(1), 18–37. https://doi.org/10.22515/shirkah.v6i1.383

Suteja, J., Suryaningprang, A., & Zein, E. (2019). Greek crisis, co-integration, and contagion effect of sharia stock markets in Indonesia Malaysia and Singapore: Is there a problem for investors? *Journal of Entrepreneurship Education*, *22*(2),

1–18.

The Economics Time Market. (2020, March 23). *Covid-19 impact: How stock exchanges are protecting their markets from intense volatility*. https://economictimes.indiatimes.com/markets/stocks/news/covid-19-impact-how-stock-exchanges-are-protecting-their-markets-from-intense-volatility/drastic-times-drastic-measures/slideshow/74772307.cms

The Jakarta Post. (2020). *The market and the economy: A great disconnect*. https://www.thejakartapost.com/academia/2020/06/17/the-market-and-the-economy-a-great-disconnect.html

Thomson Reuters. (2018). *Islamic Finance Development Report: 2018 Building Momentum*. https://ceif.iba.edu.pk/pdf/Reuters-Islamic-finance-development-report2018.pdf

Trabelsi, N. (2019). Dynamic and frequency connectedness across Islamic stock indexes, bonds, crude oil and gold. *International Journal of Islamic and Middle Eastern Finance and Management*, *12*(3), 306–321. https://doi.org/10.1108/IMEFM-02-2018-0043

Tsen, W. H., Ann, L. H., & Rahim, D. A. A. (2018). Real exchange rate return and real stock price returns: An investigation on the stock market of Malaysia. *International Journal of Economics and Management*, *12*(2), 421–442.

Tursoy, T., & Faisal, F. (2018). The impact of gold and crude oil prices on stock market in Turkey: Empirical evidences from ARDL bounds test and combined cointegration. *Resources Policy*, *55*(April), 49–54. https://doi.org/10.1016/j.resourpol.2017.10.014

U.S Energy Information Administration. (2018). *Petroleum & Other Liquids*. https://www.eia.gov/dnav/pet/hist/RWTCD.htm

Umam, A. K., Ratnasari, R. T., & Herianingrum, S. (2019). the Effect of Macroeconomic Variables in Predicting Indonesian Sharia Stock Index. *Jurnal Ekonomi Dan Bisnis Islam (Journal of Islamic Economics and Business)*, *5*(2), 223. https://doi.org/10.20473/jebis.v5i2.15031

Vanitha, S., & Saravanakumar, K. (2019). The usage of gold and the investment analysis based on gold rate in India. *International Journal of Electrical and Computer Engineering*, *9*(5), 4296–4301. https://doi.org/10.11591/ijece.v9i5.pp4296-4301

Wei, Y., Qin, S., Li, X., Zhu, S., & Wei, G. (2019). Oil price fluctuation, stock market and macroeconomic fundamentals: Evidence from China before and after the financial crisis. *Finance Research Letters*, *30*(February), 23–29. https://doi.org/10.1016/j.frl.2019.03.028

WHO. (2020). *Coronavirus disease (COVID-19) outbreak*. https://www.who.int/emergencies/diseases/novel-coronavirus-2019

World Economic Forum. (2020). *The economic effects of COVID-19 around the world*. https://www.weforum.org/agenda/2020/02/coronavirus-economic-effects-global-economy-trade-travel/

APPENDIX

Table 6
The Estimates of Long-Term and Short-Term Relationship (75% Out of Sample)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long Run Coefficients				
D(LNJII(-1))	0.208107	0.079481	2.618309	0.0102
D(LNJII(-2))	0.167329	0.065290	2.562874	0.0118
D(LNJII(-3))	0.149234	0.065149	2.290660	0.0240
D(INFLATION)	0.007853	0.007734	1.015315	0.3124
D(LNER)	-0.539379	0.164439	-3.280112	0.0014*
D(LNER(-1))	0.370755	0.170797	2.170729	0.0323
D(LNCOP)	-0.034201	0.020147	-1.697568	0.0926
D(LNWGP)	0.165736	0.036032	4.599724	0.0000*
D(LNDJIM)	0.793710	0.104205	7.616845	0.0000*
CointEq(-1)	-0.296667	0.058459	-5.074792	0.0000
Short Run Coefficients				
LNJII(-1)	0.911440	0.088919	10.25021	0.0000*
LNJII(-2)	-0.040778	0.102491	-0.397870	0.6916
LNJII(-3)	-0.018094	0.098068	-0.184508	0.8540
LNJII(-4)	-0.149234	0.065149	-2.290660	0.0240
INFLATION	0.007853	0.007734	1.015315	0.3124
LNER	-0.539379	0.164439	-3.280112	0.0014*
LNER(-1)	0.896818	0.220326	4.070403	0.0001*
LNER(-2)	-0.370755	0.170797	-2.170729	0.0323
LNCOP	-0.034201	0.020147	-1.697568	0.0926
LNWGP	0.165736	0.036032	4.599724	0.0000*
LNDJIM	0.793710	0.104205	7.616845	0.0000*
LNDJIM(-1)	-0.476454	0.108635	-4.385811	0.0000*
C	-1.512910	0.587279	-2.576137	0.0114

R-squared	0.983086
Adjusted R-squared	0.981096
Sum squared resid	0.178624
Durbin-Watson stat	2.075261
Prob(F-statistic)	0.000000

Table 7
The Estimates of Long-Term and Short-Term Relationship (50% Out of Sample)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INFLATION)	-0.010972	0.012513	-0.876811	0.3840
D(INFLATION(-1))	-0.010738	0.016080	-0.667792	0.5067
D(INFLATION(-2))	0.037034	0.014233	2.602078	0.0116
D(LNER)	-0.846975	0.215441	-3.931362	0.0002*
D(LNER(-1))	0.343456	0.207065	1.658690	0.1022
D(LNCOP)	0.078954	0.080452	0.981380	0.3302
D(LNWGP)	0.053588	0.040493	1.323369	0.1906
D(LNDJIM)	0.603248	0.142749	4.225925	0.0001*
CointEq(-1)	-0.106680	0.060946	-1.750405	0.0850
Short Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNJII(-1)	0.893320	0.060946	14.65758	0.0000
INFLATION	-0.010972	0.012513	-0.876811	0.3840
INFLATION(-1)	-0.013848	0.015450	-0.896320	0.3735
INFLATION(-2)	0.010738	0.016080	0.667792	0.5067
INFLATION(-3)	-0.037034	0.014233	-2.602078	0.0116
LNER	-0.846975	0.215441	-3.931362	0.0002*
LNER(-1)	1.221001	0.316895	3.853021	0.0003*
LNER(-2)	-0.343456	0.207065	-1.658690	0.1022
LNCOP	0.078954	0.080452	0.981380	0.3302
LNCOP(-1)	-0.162470	0.076026	-2.137034	0.0365
LNWGP	0.053588	0.040493	1.323369	0.1906
LNDJIM	0.603248	0.142749	4.225925	0.0001*
LNDJIM(-1)	-0.382390	0.153400	-2.492763	0.0154
C	-1.291571	1.372691	-0.940905	0.3504
R-squared			0.981744	
Adjusted R-squared			0.977916	
Sum squared resid			0.123267	
Durbin-Watson stat			1.957351	
Prob(F-statistic)			0.000000	

Source: Data Processed (2021)
Note: The asterisk * denote the two-tail statistical significance at 1%

Table 8

The estimates of long-term and short-term relationships (25% out of sample)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INFLATION)	-0.010972	0.012513	-0.876811	0.3840
D(INFLATION(-1))	-0.010738	0.016080	-0.667792	0.5067
D(INFLATION(-2))	0.037034	0.014233	2.602078	0.0116
D(LNER)	-0.846975	0.215441	-3.931362	0.0002*
D(LNER(-1))	0.343456	0.207065	1.658690	0.1022
D(LNCOP)	0.078954	0.080452	0.981380	0.3302
D(LNWGP)	0.053588	0.040493	1.323369	0.1906
D(LNDJIM)	0.603248	0.142749	4.225925	0.0001*
CointEq(-1)	-0.106680	0.060946	-1.750405	0.0850
Short Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNJII(-1)	0.155306	0.130573	1.189419	0.2647
LNJII(-2)	0.215056	0.138429	1.553545	0.1547
LNJII(-3)	-0.214738	0.159969	-1.342372	0.2124
INFLATION	-0.070193	0.016322	-4.300606	0.0020*
INFLATION(-1)	0.042773	0.023471	1.822364	0.1017
INFLATION(-2)	0.000293	0.021607	0.013575	0.9895
INFLATION(-3)	-0.160528	0.024082	-6.665918	0.0001*
INFLATION(-4)	-0.027692	0.017476	-1.584545	0.1475
LNER	0.743591	0.289267	2.570602	0.0302
LNER(-1)	-0.072507	0.360711	-0.201012	0.8452
LNER(-2)	0.222254	0.365871	0.607466	0.5586
LNER(-3)	-1.202632	0.386063	-3.115123	0.0124
LNER(-4)	3.125478	0.490536	6.371551	0.0001*
LNCOP	-0.602106	0.111085	-5.420235	0.0004*
LNCOP(-1)	0.381153	0.126128	3.021963	0.0144*
LNCOP(-2)	-0.013613	0.094323	-0.144327	0.8884
LNCOP(-3)	0.153448	0.100508	1.526724	0.1612
LNCOP(-4)	-0.063847	0.079809	-0.800004	0.4443
LNWGP	0.960761	0.170991	5.618785	0.0003*
LNWGP(-1)	-0.369661	0.151632	-2.437891	0.0375
LNWGP(-2)	0.326590	0.117329	2.783553	0.0213
LNDJIM	1.037340	0.183486	5.653502	0.0003*
LNDJIM(-1)	2.179677	0.387222	5.629015	0.0003*
LNDJIM(-2)	-1.329955	0.459475	-2.894511	0.0178
LNDJIM(-3)	-0.455644	0.256033	-1.779633	0.1088
LNDJIM(-4)	1.325390	0.268003	4.945433	0.0008*
C	-47.24835	5.265771	-8.972732	0.0000
R-squared			0.998265	
Adjusted R-squared			0.993253	
Sum squared resid			0.004749	
Durbin-Watson stat			2.993876	
Prob(F-statistic)			0.000000	