

## EFFECT OF MACROECONOMIC VARIABLES ON JAKARTA ISLAMIC INDEX: EVIDENCE THE GLOBAL TRADE WAR PHENOMENON

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### ABSTRACT

- Purpose** : *The development of investment in the Islamic capital market, especially the Jakarta Islamic Index (JII) as a percentage, experienced significant development, and it is because the Islamic index uses Islamic principles and procedures. The phenomenon of the trade war between the United States and China has an impact on macro variable fluctuations, which can empirically influence the growth of the sharia index. For this reason, this study aims to analyze the impact of change due to the trade war sentiment*
- Design/Methodology/ Approach** : *Macroeconomic variables used in this study are the USD / IDR exchange rate, the CNY / IDR exchange rate, inflation, Crude oil WTI, and ICP Crude oil. This study uses a vector autoregression analysis (VAR) technique. Stationarity test using the Augmented Dickey-Fuller test (ADF test) and the Philips-Perron Test*
- Findings** : *The analysis shows that there is an influence between changes in exchange rates and changes in crude oil prices on the return of the Jakarta Islamic Index (JII) in the range of research data periods used*
- Keywords** : *Jakarta Islamic Index, Exchange Rate CNY / IDR, Exchange Rate USD/ IDR, Inflation, Crude Oil WTI, Crude Oil ICP*
- JEL Classification** : *F02, F40, G10*

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### INTRODUCTION

Capital market investment has an impact on economic prosperity because one of the parameters of a country's economic growth is a dynamic stock exchange (Hsing, 2008). Trading on conventional and sharia capital markets has different levels of returns and risks, the development of sharia capital market investment shows a significant increase, along with the development of the index shown in the JII (Jakarta Islamic Index) (Qizam, Ardiansyah, and Qoyum, 2017). When compared with the CSPI (Composite Stock Price Index), the value is not too large but has a greater percentage increase. The reason underlying this phenomenon is partly because the Islamic capital market uses assumptions, instruments, principles, and procedures sourced from the epistemology of Islam. (Auliyah and Hamzah, 2006).

The Islamic stock market is closely related to macroeconomic variables, returns in Islamic capital market investment are strongly influenced (Barakat, Elgazzar and Hanafy, 2015). From 2018 to 2019 the global economy was shaken by a trade war between the United States and China, the US imposed import duties on Chinese products of 200 billion US dollars and China retaliated to increase import duties on American products valued at 60 billion US dollars on June 1, 2019. According to Indonesian CNN, due to the trade war sentiment that occurred between the two countries, indexes on Wall Street were deeply corrected. The Dow Jones Industrial Average fell 617.38 points (2.38%), the Nasdaq Composite fell 3.41% at the end of trade, the Shanghai index fell 1.1% to 2872.83, and the Hang Seng Index fell 2.1% to levels 27,951, 12 (05/14/2019). The negative sentiment also affected the exchange rate of the Rupiah against the US Dollar, recorded on May 14, 2019, and Rupiah moved in the range of 14,425 to 14,455 per US Dollar (down 0.45%). This sentiment also has a significant impact on world oil prices. Citing a Reuters statement, the price of West Texas Intermediate (WTI) oil declined by 1.94% to 53.63 US dollars per barrel, while for the price of Brent oil futures recorded a weakening of 1.45% to 58.94 US dollars per barrel. During May 2019 the percentage of weakening oil prices reached 22% from its highest position in April 2019, then Brent oil prices decreased significantly by 9%, the sentiment after the announcement of the American president gave a statement that would apply more tariffs on the imported product or service from China ([www.cnnindonesia.co.id](http://www.cnnindonesia.co.id)).

Based on the phenomena, it is interesting to do research based on the impact of changes that occur in the macroeconomic against the Islamic index due to the sentiment of the American Global trade war with China. Several studies that have been conducted show that there are inconsistencies and gaps associated with testing results on macroeconomic variables with stock indexes. The findings show that world oil prices have a positive effect on the stock market, that inflation has a positive effect on sectoral indices and changes in exchange rates have a significant negative effect on sharia index in Malaysia (Lin, Fang, and Cheng, 2010; Nguyen, 2011; Hussin et al., 2013; Law and Ibrahim, 2014). Questions that arise and can be analyzed in this study are as follows:

1. What is the effect of change in the USD / IDR exchange rate to return JII (Jakarta Islamic Index) on the Indonesia Stock Exchange?
2. What is the effect of changes in the exchange rate of CNY / IDR to return JII (Jakarta Islamic Index) on the Indonesia Stock Exchange?
3. What is the effect of changes in inflation to return JII (Jakarta Islamic Index) on the Indonesia Stock Exchange?
4. What is the effect of changes in crude oil WTI to return JII (Jakarta Islamic Index) on the Indonesian Stock Exchange?
5. What is the effect of changes in ICP to return of JII (Jakarta Islamic Index) on the Indonesia Stock Exchange?

### **Effect of Exchange Rates Changes on JII Return (Jakarta Islamic Index)**

Stock returns are the goal to be achieved by the investor, and the return is a benefit after the investor to invest in a particular security. Any investment activity both in the short or long periods still expects to obtain a return on capital that has been given. Both advantages are obtained directly or indirectly (Kurihara, 2012). In short, investment is an activity of giving up a number of funds to get profit in the future. Many things affect stock returns, both factors of the company called internal factors, which the company is still able to control this factor to minimize the impact of the internal factors (Widad and Hadjer, 2018). The second is a factor from outside the company or commonly called an external factor. The existence of these external factors is very difficult to control, or even can't be controlled by the company so that the company should receive the impact of changes in external factors. One external factor that influences is the exchange rate. Changes in the exchange rate is an area that is still often debated, for that the relationship between the exchange rate with fundamental macro variables must still be analyzed more deeply (Kurihara, 2012). The exchange rate itself can be used as a parameter of the strength of the value of a country's currency when compared to other countries' currencies (Beckmann, Belke, and Köhl, 2011). Conditions, where a country experiences an appreciation condition, allow an increase in imports and vice versa where a country experiences a depreciation. It allows an increase in exports (Musthafa, 2017). Related to the uncertainty of global economic conditions, this can explicitly be a determining factor for the growth of the sharia industry in Indonesia (Aisiyah, 2013; Widad and Hadjer, 2018). China, according to the data, is the largest country for Indonesian importers, so the government's internal policies have a significant influence on the economic conditions in the country. Since the yuan exchange rate was issued in Indonesia, this has had the effect of using the yuan as a medium of exchange for industries in Indonesia in conducting international trade with industries in China. (Yudianto and Muharam, 2018).

H1: Changes in the USD / IDR exchange rate have a positive effect on JII return (Jakarta Islamic Index)

H2: Changes in the CNY / IDR exchange rate have a positive effect on JII return (Jakarta Islamic Index)

### **Effect of Inflation Changes on JII Return (Jakarta Islamic Index)**

Inflation is the tendency of an increase in the price of the products as a whole. High inflation rates are usually associated with economic conditions that are too hot (overheated) (Zhang and Wu, 2018). That is, the economy experienced a demand for a product that exceeds the capacity of its product offerings, so prices tend to rise (Montes and Nicolay, 2015). Inflation that is too high also causes a decrease in the purchasing power of money (purchasing power of money). If the inflation rate has decreased, it will signify a positive signal to investors in line with the decline in the purchasing power of money. Generally accepted, uncertainty about inflation will distort the price mechanism and the efficiency of resource allocation (Payne, 2008). When expectations of inflation increase, it will have an impact on increasing the nominal interest rate (Wu, 2012). An increase in nominal interest rates creates pressure on prices through the money market balance if the money supply does not change (Gupta and Reid, 2013). Thus, the increase in inflation expectations can

trigger the actual conditions of inflation in the economy (Baghestani and AbuAl-Foul, 2010). Targeting the actual inflation by the central bank can be done by maintaining these inflation expectations, in turn requiring the central bank to understand the trade ecosystem, economic issues, and global economic policies (Montes and Nicolay, 2015). For entrepreneurs, inflation expectations are important because, empirically, the actual inflation in an economy can affect the level of purchasing power (Aghekyan-Simonian et al., 2012). This decrease in purchasing power directly impacts the decline in corporate income and company profits, thereby affecting the interest of investors to invest (Yudianto and Muharam, 2018).

H3: Changes in inflation have a positive effect on JII return (Jakarta Islamic Index)

#### **Effect of Crude Oil Changes on JII Return (Jakarta Islamic Index)**

Price is an exchange rate that can be equated with money or other items to the benefits derived from the goods or services of a person or group at a particular time and place. Crude oil (crude oil) is a commodity and a source of energy that is needed for the growth of a country (Hull, 2002). Crude oil can be processed into energy sources, such as Liquefied Petroleum Gas (LPG), gasoline, diesel, lubricating oil, fuel oil, and others. World Crude Oil Prices (Crude Oil Price) measured on the spot price of the world oil market, in general, used to be the standard is West Texas Intermediate and Brent. World oil traded at West Texas Intermediate (WTI) is high-quality crude oil (Schnabel, 2011). The oil type is very suitable to be used as fuel, and this causes the oil price as a benchmark for world oil trade. Crude oil is an energy source that has many attributes, including the value of resources, the value of commodities, and financial implications (Bala and Chin, 2017). Although renewable energy continues to be developed in harmony with the advancement of science and technology, crude oil still plays an important role in fulfilling energy resources (Zhang and Wu, 2018). As an energy source, crude oil is the main raw material to support production activities in the "the blood of industry" industry, directly or indirectly affecting economic development (Hull, 2002; Li and Zhao, 2011). As an important commodity, the increase in crude oil prices causes inflationary pressures and other commodity increases that affect economic growth in the real sector (Ben Mabrouk, 2018). With financial and marketing deepening, the relationship between crude oil commodities and the stock market is getting closer (Li and Zhao, 2011). The stock market reflects trends, the company's operational status, and the economic development of a country so that the effect of oil prices on the economy of the real sector can be reflected in the stock market (Schnabel, 2011). Oil prices contribute to the return of stock with two conditions, first; oil price shocks can cause changes in cash flow, second; oil price shocks can have an impact on the discount rate used to assess equity inflation expectations (Ciner, 2013). Also, oil price growth can have an impact on a company's cash flow, both negatively and positively, depending on whether the company is producing or consuming crude oil (Widad and Hadjer, 2018).

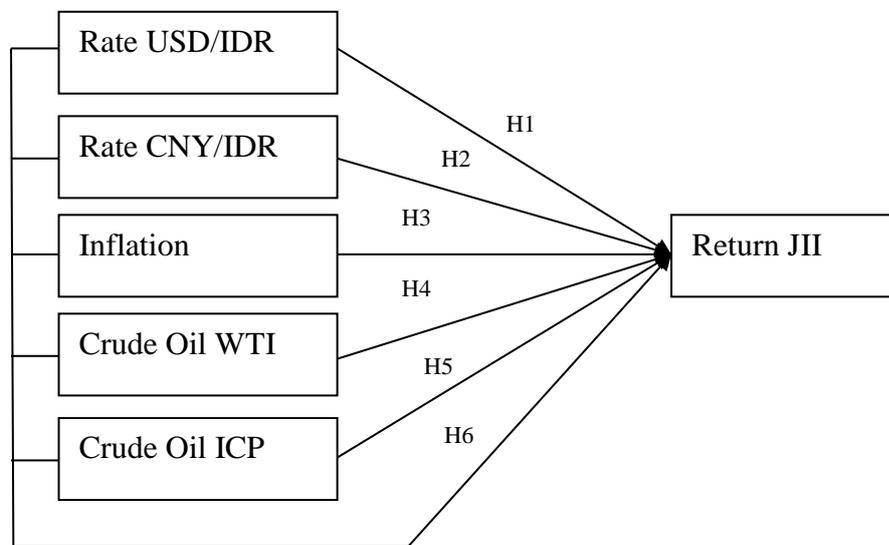
H4: Changes in WTI crude oil (West Texas Intermediate) have a positive effect on JII return (Jakarta Islamic Index)

H5: Changes in ICP crude oil (Indonesia Crude Price) have a positive effect on JII return (Jakarta Islamic Index)

**The simultaneous effect between macroeconomic variables and JII Return (Jakarta Islamic Index)**

Macroeconomic variables used in this study are changes in the exchange rate of USD / IDR, changes in the exchange rate of CNY / IDR, changes in crude oil WTI (West Texas Intermediate), changes in crude oil ICP (Indonesian Crude Price) and changes in inflation (Nur, Ela, and Qoyum, 2019). In the last few decades, there have been many studies that discuss the influence of macroeconomic variables on the Islamic index (see table 1) (Qizam, Ardiansyah, and Qoyum, 2017). Based on the results of the analysis, there are still gaps and inconsistencies related to the findings in the studies that have been conducted. Some of the researchers have a finding that the macro variable has a positive effect on the sharia index, whereas some researchers argue that the macro variable harms the sharia index.

H6: Changes in macroeconomic variables have a positive effect on JII return (Jakarta Islamic Index)



Source: Data processed (2019)

**Figure 1**  
**Research Framework**

**Table 1**  
**Previous Research**

Authors	Title	Result
Adiningtyas (2018)	Effect of Macroeconomic Variables on Sharia Stock Price Indices (Case Studies in Indonesia and Malaysia)	Not Effect and negative effect
Barakat, Elgazzar, and Hanafy (2015)	Impact of Macroeconomic Variables on Stock Returns: Evidence from KSE-100 Index of Pakistan	Positive Effects

Authors	Title	Result
Hussin et al. (2013)	The Link between Gold Price, Oil Price, and Islamic Stock Market: Experience from Malaysia	Not Significant
Widad and Hadjer (2018)	Causal Relationship Between Islamic Bonds, Oil Price, Precious Metals: Evidence from Asia Pacific	Negative Effect

*Source: Data processed (2019)*

## RESEARCH METHOD

This study uses data sources originating from Bloomberg and Reuters, besides some of the data obtained through official website sources of institutions related to this research such as Bank Indonesia, the Financial Services Authority (OJK), the Ministry of Energy and Mineral Resources and CNN Indonesia. Samples analyzed in this study are (1) Return of the Jakarta Islamic Index; (2) Sample of macroeconomic variables used, USD/IDR exchange rate, CNY/IDR exchange rate, Inflation, Crude oil WTI, and Crude oil ICP. Time series data is used; the data period is taken and analyzed from January 2016 to December 2018. Vector autoregression is used as an analysis technique (Yusfiarto, 2017), and then the data is analyzed using Eviews software 9. Can be formulated as follows:

$$RIS_t = \alpha_i + \sum \beta_{1i} RIS_{t-1} + \sum \beta_{2i} \Delta CNY + \sum \beta_{3i} \Delta USD + \sum \beta_{4i} \Delta ICP + \sum \beta_{5i} \Delta WTI + \sum \beta_{6i} \Delta INFLA + \varepsilon_t$$

RIS : Return Indeks Syariah (JII)

$\Delta ICP$  : Price change crude oil ICP

$\Delta CNY$  : Exchange rate CNY/IDR

$\Delta WTI$  : Price change crude oil WTI

$\Delta USD$  : Exchange rate USD/IDR

$\Delta INFLA$ : Inflation change

## RESULTS AND DISCUSSION

### Stationarity Test

Vector Auto Regression (VAR) is used to project a system with time series variables and to analyze the dynamic impact of the disturbance factors contained in the variable system. Stationarity test criteria, namely the probability value  $< \alpha 0.05$ , are said to be stationary data. The analysis shows that the variable USD / IDR probability value  $0.0000 < \alpha 0.05$ , the variable CNY / IDR probability value  $0.0000 < \alpha 0.05$ , the inflation variable the probability value  $0.0000 < \alpha 0.05$ , the WTI variable value probability  $0.0000 < \alpha 0.05$ , ICP variable probability value  $0.0001 < \alpha 0.05$ , JII variable probability value  $0.0002 < \alpha 0.05$  (see table 2). It can be concluded that the research variable data meets the requirements (stationary) following the desired parameters.

**Table 2**  
**Data Stationarity Test**

		USD/IDR		CNY/IDR		Inflation	
		<i>t</i> -statistic	<i>prob.</i> *	<i>t</i> -statistic	<i>prob.</i> *	<i>t</i> -statistic	<i>prob.</i> *
<i>Augmented Dickey-Fuller test statistic</i>		-7.13086	0.000	-6.72370	0.000	-5.20073	0.001
<i>Test critical values:</i>	1% level	-3.63940		-3.63290		-3.63290	
	5% level	-2.95112		-2.94840		-2.94840	
		WTI		ICP		JII	
		<i>t</i> -statistic	<i>prob.</i> *	<i>t</i> -statistic	<i>prob.</i> *	<i>t</i> -statistic	<i>prob.</i> *
<i>Augmented Dickey-Fuller test statistic</i>		-5.814517	0.000	-5.42539	0.001	-4.23455	0.002
<i>Test critical values:</i>	1% level	-3.632900		-3.632900		-3.63290	
	5% level	-2.948404		-2.948404		-2.948404	

*Source: Data processed, 2019*

**Optimal Lag Selection and Cointegration Test**

**Table 3**  
**Cointegration Test**

<b>Hypothesized</b>	<b>Eigenvalue</b>	<b>Trace</b>	<b>0.05</b>	<b>Prob.**</b>
<b>No. of CE(s)</b>		<b>Statistic</b>	<b>Critical Value</b>	
None *	0.941928	227.9149	95.75366	0.0000
At most 1 *	0.858083	136.8408	69.81889	0.0000
At most 2 *	0.687813	74.36038	47.85613	0.0000

*Source: Data processed, 2019*

The next step is to choose the optimal lag in VAR testing by comparing the lag test that has been done. Lag selection test results (see table 3): based on the output shows that the lag that will be used is lag two because it is considered more optimal than Lag 1. The evaluation is seen from the sign (\*) at most on the data criteria. Furthermore, cointegration test analysis, cointegration test analysis is important to determine whether the model is a VAR level of differentiation if there is no stationarity of the tested data (Yudianto and Muharam, 2018). The results of the cointegration test analysis show (see table 4), all variables passed the cointegration test are indicated by the sign (\*) on the indicator "At most 1-5" and indicated by the existence of a critical value greater than 0.05.

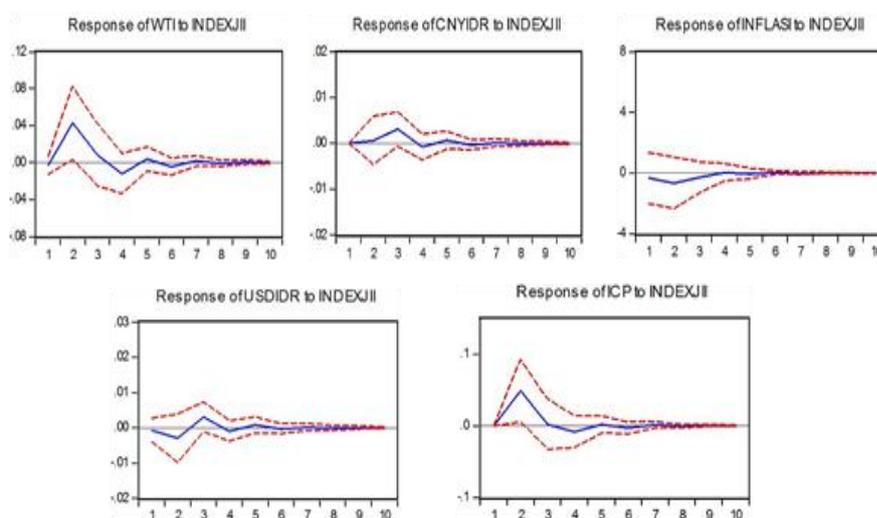
**Table 4**  
**Optimal Lag Test**

<b>Lag</b>	<b>LogL</b>	<b>LR</b>	<b>FPE</b>	<b>AIC</b>	<b>SC</b>	<b>HQ</b>
0	141.6576	NA	1.38e-11	-7.97986	-7.710502*	-7.888001
1	192.9766	81.50665	5.80e-12	-8.880977	-6.995473	-8.237966*
2	236.3892	53.62733*	4.63e-12*	-9.317012*	-5.815362	-8.122849

*Source: Data processed, 2019*

### Impuls Respons

Individually, the coefficients in the VAR model are difficult to interpret, so experts use impulse response analysis. This response impulse is an important analysis in a VAR model. Response impulse analysis tracks the response of endogenous variables from the VAR system due to shock or shock in the interference variable (e). Following are the results of the Impulse Response test:



Source: Data processed, 2019

**Figure 2**  
**Impuls Respons Variable**

In the graph above, it can be seen that there is a shock in one variable with another. The variation in the shock does not lead to one particular trend. This data shows that the occurrence of disturbance  $e$  in the equation between the variables being tested affects the variable now or in the future. Because between variables give each other shock, then  $e$  disturbance can also affect.

### Variance Decomposite

Variance Decomposition is useful for predicting the contribution of the percentage of the variance of each variable due to changes in certain variables in the VAR system. The following are the outputs of the decomposition variant in the Jakarta Islamic Index (JII) period one variable JII Index variance explained by the variable itself by 86.3%. In period 2, the JII Index variance was explained by the variable itself at 49.8%, while the rest is explained by the variables CNY / IDR, USD / IDR, ICP, WTI, and Inflation.

**Table 5**  
**Variance Decomposite Index**

Variance Decomposition of Indeks JII							
Period	S.E.	CNY/IDR	ICP	INDEX JII	INFLATE	USD/IDR	WTI
1	0.930322	10.07305	3.610916	86.31604	0.000000	0.000000	0.000000
2	1.294095	6.033396	18.34050	49.83073	20.40749	1.895198	3.492687
3	1.421939	5.192494	15.97814	41.59897	17.22982	10.32820	9.672370
4	1.460772	4.988361	15.28338	39.46553	21.29328	9.786572	9.182875
5	1.518869	5.058282	14.45068	36.50705	22.82294	10.51755	10.64349
6	1.565038	5.657483	13.78455	34.53226	26.09000	9.910310	10.02540
7	1.586851	5.552465	14.82705	33.58941	26.09974	9.671596	10.25974
8	1.621776	5.356528	15.75554	32.33947	27.32298	9.260275	9.965200
9	1.632739	5.307735	15.56451	32.16617	27.19201	9.210554	10.55903
10	1.636274	5.353369	15.73993	32.09809	27.07571	9.175181	10.55772

*Source: Data processed, 2019*

### Discussion

Based on the estimated output of the vector autoregression model, it can be concluded that the USD / IDR exchange rate variable has a significant effect with a probability value of  $0.0010 < \alpha 0.05$ , the exchange rate variable CNY / IDR has a significant effect with a probability value of  $0.0002 < \alpha 0.05$ , the variable change in inflation does not have a significant effect with a probability value of  $0.1928 > \alpha 0.05$ , the variable changes in crude oil WTI has a significant effect with a probability value of  $0.0049 < \alpha 0.05$ , the crude oil ICP variable has no significant effect with a probability value of  $0.1469 > \alpha 0.05$  and the independent variables simultaneously affect the dependent variable seen from the probability value (f-static) of  $0.0021 < \alpha 0.05$  (see table 6).

**Table 6**  
**Estimated**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.074439	0.181328	-0.410519	0.6845
D(USDIDR)	55.42301	15.05094	3.682362	0.0010
D(CNYIDR)	87.68977	20.53743	4.269754	0.0002
D (INFLASI (-1))	-0.038656	0.028967	-1.334469	0.1928
D (WTI (-1))	5.536533	2.696429	2.053283	0.0495
D (ICP (-1))	-4.000981	2.681528	-1.492053	0.1469

*Source: data processed, 2019*

**Table 7**  
**Hypothesis Conclusion**

Hypotesis	Variable Independen	Variable Dependenden	Effect	Significancy	Conclusion
H1	$\Delta$ USD/IDR	Return JII	Positive	Significant	Accepted
H2	$\Delta$ CNY/IDR	Return JII	Positive	Significant	Accepted
H3	$\Delta$ Inflasi	Return JII	Negative	Significan	Rejected
H4	$\Delta$ WTI	Return JII	Positive	Significant	Accepted
H5	$\Delta$ ICP	Return JII	Negative	Not significant	Rejected
H6	$\Delta$ Macroeconomic	Return JII	Positive	Significant	Accepted

*Source: Data processed (2019)*

Based on the results of data processing (see table 7), the USD / IDR exchange rate change variable has a positive effect on the variable return, and the CNY / IDR exchange rate variable has a significant positive effect on the return variable, this result supports research conducted by Barakat, Elgazzar, and Hanafy (2015) which states that changes in exchange rates have a positive effect on the return variable. Next related to the variable changes in inflation shows a negative effect on the index return variable, and this supports the results of research conducted by Widad and Hadjer (2018) that changes in inflation negatively affect the variable return. For the crude oil variable used, two results are stating that ICP crude oil has a negative effect on the variable return, which is different from the WTI crude oil, which shows a positive effect on the stock market return. These results differ or do not support research conducted by Husin (2013) that the oil price does not affect the stock market return, but specifically for the WTI oil price variable, these results support previous studies that have been conducted.

## CONCLUSION

Fluctuations in macroeconomic conditions due to global trade war sentiments have shown significance; hence, a deeper diagnostic of the phenomenon is needed. It is a big challenge for economists and investors to test how much influence between changes in variables due to a sentiment that occurs with the Islamic stock index. The main objective of this study is to add literacy value to the sharia index by analyzing changes that occur in macroeconomics caused by the sentiments of the trade war that occurred. The results showed that the majority of residuals in the study responded to shocks at various levels, but the shocks occurred varied, not lead to a particular trend. For this reason, short-term policies are needed for companies and for the government to stimulate investor growth in the Islamic stock market.

For further research to pay attention to the influence of other factors that can affect the movement of stock returns because, in this study, macroeconomic factors used to predict stock returns are limited to the inflation rate, crude oil price, and the exchange rate. Further research can also increase the period and number of samples in the study so that the results

obtained are more accurate and more reflective of stock return movements on the Jakarta Islamic Index, for potential shareholders to consider the movement of inflation, crude oil price, and the exchange rate because it has been proven to have a significant effect on stock returns. It is important to carry out a strategy in investing.

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