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Comparison of the Effect of Macroeconomic Variables on the Sharia Shares Index in Indonesia, Malaysia, and Turkey

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In this study, we try to see the comparison of the influence of macroeconomic variables on Islamic stock indexes in Indonesia, Malaysia, and Turkey by using the Vector Error Correlation Model (VECM) approach. The variables used are world oil prices, the Dow Jones Industrial Average (DJIA), and the Industrial Production Index (IPI) Currency Exchange Rates against the Dollar and Consumer Price Index (CPI) in Indonesia, Malaysia, and Turkey. Research results show that in the Indonesian Sharia Stock Index (ISSI) model, the VECM estimation in the ISSI model can explain that in the short term the IPI variable, world oil prices, the exchange rate of the rupiah against the Dollar, DJIA and CPI has no significant effect on the ISSI variable. While in the long run, world oil prices have a positive effect, and the Dow Jones Industrial Average (DJIA) variable harms on ISSI. According to the results of the FEVD test, world oil prices have a more dominant contribution than other variables, a contribution of 6.02%. In the Dow Jones Islamic Market Malaysia Index (DJIMY), it can be explained that in the short term the IPI variable, world oil prices, the exchange rate of the rupiah against the Dollar, DJIA and CPI have no significant effect on the DJIMY variable. And in the long run, world oil prices, the DJIA, and the exchange rate towards the Dollar have a significant negative effect on DJIMY while the IPI and CPI variables have a positive effect on DJIMY. According to the results of the FEVD test the ringgit exchange rate to the dollar had a more dominant contribution than the other variables by 10.17%. And as for the Dow Jones Islamic Market Turkey (DJIMTR) model, based on the VECM estimation in the DJIMTR model, it can explain that in the short term the IPI variable, world oil prices, the exchange rate against the Dollar, DJIA and CPI do not significantly influence the DJIMTR variable. And in the long run, IPI, world oil prices, and CPI have a significant positive effect on DJIMTR while the exchange rate against the dollar and DJIA harms DJIMTR. In the FEVD test results, the Lira exchange rate against the Dollar contributed 5.87%.

Keywords: Macroeconomic; ISSI; DJIMY; DJIMTR; Sharia Capital Market

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INTRODUCTION

In the concept of economic growth, the Capital Market has an important role in the economic development of a country. In general, the Capital Market has two benefits. First, providing a source of financing for the business world in the long term and using it optimally to expand the company. Second, to become a means or forum for the community to carry out various forms of investment instruments, both mutual funds, stocks, and others according to sharia principles. (www.infovesta.com).

However, apart from the principle of Islamic value, the growth in the value of share prices in the Capital Market is an important consideration for investors in investing. With the time that has entered the era of globalization, stock prices are not only influenced by economic factors and domestic phenomena. However, external factors and phenomena outside the country also greatly influence the performance of Islamic stocks.

Therefore, the role of the Government is indispensable to create good macroeconomic conditions. Whether from all the policies taken by the Government in regulating economic elements or entrepreneurs operating within the country. So that by creating good economic stability it can form a more conducive economy and this can make it attractive to investors, both foreign and domestic.

In this research, three developing countries that are included in the Organization of the Islamic Conference (OIC) will be examined, namely Malaysia, Indonesia and Turkey. Where economic growth is influenced by investment, consumption, government spending and export-import. If we examine the growth of FDI inflows in OIC countries, it has increased to 10.8% in 2014, this increase is the highest since 2009. Total FDI inflows in 2014 amounted to 1.23 trillion dollars. In 2005 the value of incoming FDI was 66%, with the value of 927 billion dollars earmarked for developed countries while the rest was 34% for developing countries. In 2012, developing countries contributed 42.4% of FDI inflows and in 2014, the share developing countries increased to 45.5% which reflects the improvement in the investment climate in OIC countries (www.sesric.org)

Besides, Indonesia, Malaysia and Turkey are OIC countries that have a big influence in exports and imports for the category of developing countries. In general, OIC members that have the largest exports among Oki members-only consist of a few countries. In 2014 the largest OIC exporter contributed 54.3% of the total export goods of all OIC member countries. Whereas Saudi with an export value of 332 billion dollars, the UAE US $ 257 billion 12.1%), Malaysia (US$ 234 billion, 11%), Indonesia (US$ 176 billion 8.3%) and Turkey (US$ 157 billion 7,4%).

It is also interesting that these three countries are countries with relatively advanced Islamic finance industry growth. This can be seen from the Islamic Finance Countries Index report which captures industry growth and provides a direct assessment of the Islamic Banking Finance industry countries in each country.

According to the Islamic Financial Countries Index (IFCI) these three countries have different growth characteristics of the Islamic Finance Industry. Malaysia as one of the Established Leader countries which contributed 47 percent. Where the changes can have a major impact on the Global Islamic Financial Services Industry. Then Indonesia as one of the five Emerging Leader countries which in total contributes 29 percent and it is hoped that its impact can significantly influence the Global Islamic Financial Industry and Turkey as one of the Potential Leader countries of the six countries contributing 13 percent. Although the impact is not too significant on the Global Islamic Financial Services Industry. However, in the future Turkey has the potential to become a major player in the development of the Global Islamic Financial Services Industry (Global Islamic Financial Report: 2015).

The performance of the Islamic capital market in Indonesia, Malaysia and Turkey will be reflected in the Sharia Stock Index in each country. Such as the Indonesian Sharia Stock Index (ISSI). Dow Jones Islamic Market Turkey Index (DJIMTR) and Dow Jones Islamic Market Malaysia Index (DJIMY). These three indices are Islamic stock indexes that reflect all Islamic stocks listed on the Stock Exchanges of each country. Besides, the three of them refer to the Dow Jones Islamic Index for the reference used to balance Islamic stocks.

Through these three countries, it can be said that the Capital Market industry in Asia has begun to look at developing the application of Islamic sharia principles as an alternative investment instrument in capital market activities. Where, each country has different characteristics to develop and advance the Islamic finance industry, especially in the Islamic Capital Market.

The development of the Islamic Capital Market in Asia cannot be separated from the roles of the religious authorities of a country, especially countries that are predominantly Muslim, which have reiterated that usury is haram and prohibited in Islamic sharia. Like the Indonesian Ulema Council which has also issued a fatwa that bank interest is usury and haram. These fatwas are based on Sharia principles in the Koran and the Sunnah of the Prophet. This is important because of the basic concept of Islamic investment. On the basis of this awareness, the Islamic Capital Market began to be developed.

However, something that should be observed is that the development of the Islamic Financial Industry, especially the Capital Market, is not only influenced by

the nature of religion or the majority of the population who are Muslim. However, according to economic theory, the development of the capital market is also influenced by macroeconomic variables, either through external or internal factors

Previous research related to the relationship or influence of economic variables on the capital market has been carried out, such as research by Antonio et al (2013) on the Islamic Capital Market and Macroeconomic Indicators in a Comparative Study of Malaysia and Indonesia and Siti (2015) concerning the Analysis of the Impact of Macroeconomic Variables on Indonesia Sharia Stock Index.

RESEARCH METHOD

In this research method, there are three equation models, namely the Indonesian Islamic Capital Market model which is represented by the ISSI (Indonesia Islamic stock index). The Malaysian Sharia Capital Market Model is represented by the Dow Jones Islamic Market Malaysia and the Turkish Sharia Capital Market represented by the Turkish Dow Jone Islamic Market.

For Indonesian Islamic Capital Market research, this study uses five variables, so that in the Vector Autoregression (VAR) or Vector Error Correction Model (VECM) model five equation models can be processed, namely one model for each of the variables studied. The following equations will be obtained from the equation for the Islamic Capital Market in Indonesia.

The VAR equation:

$$\begin{bmatrix} lnissi_t \\ lnIPI_t \\ lnCPI \\ lnOIL_t \\ lnDJIA \\ lnER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} lnISSI_{t-1} \\ lnIPI_{t-1} \\ lnCPI_{t-1} \\ lnOIL_{t-1} \\ lnDJIA \\ lnER_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

The VECM equation:

$$\begin{bmatrix} \Delta issi_t \\ \Delta IPI_t \\ \Delta CPI \\ \Delta OIL_t \\ \Delta DJIA \\ \Delta ER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} \Delta ISSI_{t-1} \\ \Delta IPI_{t-1} \\ \Delta CPI_{t-1} \\ \Delta OIL_{t-1} \\ \Delta DJIA \\ \Delta ER_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

For the Malaysian Islamic Capital Market equation model, six equation models can explain the variables used in the Malaysian Sharia Capital Market equation model in the form of internal variables, namely Malaysia Industrial Production Index, Malaysia Inflation, Malaysia Exchange rate and external variables, namely world oil prices and DJIA. For this reason, the equation formed is as follows:

The VAR equation:

$$\begin{bmatrix} lnDJIMY_t \\ lnIPI_t \\ lnCPI \\ lnOIL_t \\ lnDJIA \\ lnER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} lnDJIMY_{t-1} \\ lnIPI_{t-1} \\ lnCPI_{t-1} \\ lnOIL_{t-1} \\ lnDJIA \\ lnER_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

The VCEM equation:

$$\begin{bmatrix} \Delta DJIMY_t \\ \Delta IPI_t \\ \Delta CPI \\ \Delta OIL_t \\ \Delta DJIA \\ \Delta ER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} \Delta DJIMY_{t-1} \\ \Delta IPI_{t-1} \\ \Delta CPI_{t-1} \\ \Delta OIL_{t-1} \\ \Delta DJIA \\ \Delta ER_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

And for the Turkish Islamic Capital Market equation model, there are also six equation models that can explain the variables used in the Turkish Sharia Capital Market equation model in the form of internal variables, namely Industrial Production Index Turkey, Malaysian Inflation, Exchange rate Turkey and external variables, namely world Oil prices and DJIA. . For this reason, the equation formed is as follows:

The VAR equation:

$$\begin{bmatrix} lnDJIMTR \\ lnIPI_t \\ lnCPI \\ lnOIL_t \\ lnDJIA \\ lnER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} lnDJIMTR_{t-1} \\ lnIPI_{t-1} \\ lnCPI_{t-1} \\ lnOIL_{t-1} \\ lnDJIA \\ lnER_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

The VCEM equation:

$$\begin{bmatrix} \Delta DJIMTR \\ \Delta IPI_t \\ \Delta CPI \\ \Delta OIL_t \\ \Delta DJIA \\ \Delta ER_t \end{bmatrix} = \begin{bmatrix} a10 \\ a20 \\ a30 \\ a40 \\ a50 \\ a60 \end{bmatrix} +$$

$$\begin{bmatrix} \beta11 & \beta12 & \beta13 & \beta14 & \beta15 \\ \beta21 & \beta22 & \beta23 & \beta24 & \beta25 \\ \beta31 & \beta32 & \beta33 & \beta34 & \beta35 \\ \beta41 & \beta42 & \beta43 & \beta44 & \beta45 \\ \beta51 & \beta452 & \beta53 & \beta54 & \beta55 \\ \beta61 & \beta462 & \beta63 & \beta64 & \beta65 \end{bmatrix} \begin{bmatrix} \Delta DJIMTR_{t-1} \\ \Delta IPI_{t-1} \\ \Delta CPI_{t-1} \\ \Delta OIL_{t-1} \\ \Delta DJIA \\ \Delta ER_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

RESULT AND DISCUSSION

VECM Estimation Results of the ISSI Model

Short-Term (ISSI)		
Variable	**Coefficient**	**T-statistics**
CointEq1	-0.00486	[-0.55643]
D(ISSI(-1))	-0.00712	[-0.05403]
D(IPI_IND(-1))	0.553891	[0.03507]
D(OIL(-1))	2.761146	[1.47021]
D(ER_IND(-1))	-6.37235	[-0.84098]
D(DJIA(-1))	-2.29147	[-0.42349]
D(CPI_IND(-1))	0.465849	[0.02846]

Long-Term		
IPI_IND(-1)	395.6043	[1.78130]
OIL(-1)	43.48161	[2.13319]
ER_IND(-1)	41.45236	[0.44360]
DJIA(-1)	-321.364	[-3.73606]
CPI_IND(-1)	358.2504	[1.45989]

Based on the VECM estimation in the ISSI model, it can explain that in the short term the variable IPI, world oil prices, the rupiah exchange rate against the dollar, DJIA and CPI have no significant effect on the ISSI variable. Meanwhile, in the long term, the world oil price has a significant positive effect on the ISSI with a coefficient value of 43.481 units. This means that when the world oil price increases by one unit. Then it will affect the increase in the ISSI value of 43.481 units. This is because the increase in world oil prices will affect the psychology of investors or traders in buying stocks related to world oil prices. The amount of demand caused by the increase in world oil prices will affect the index increase. Although basically in the real sector it will burden the company in production costs. However, the increase in world oil prices was responded to more quickly and positively than in the real sector. In addition to the relatively low world oil price from 2014-2016, the increase in world oil prices is relatively less burdensome for the real sector when compared to 2011-2013.

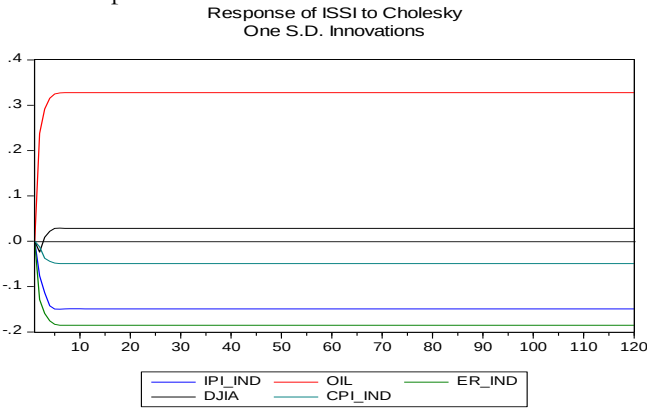
On the other hand, the Dow Jones Industrial Average (DJIA) variable in the long term harms the ISSI with a coefficient value of -321,364 units. This means that if the Dow Jones Industrial Average has increased by one unit. Then it will decrease the index by 321,364 units.

This is because the majority of the largest investors in the capital market in Indonesia are foreign investors, where they easily move their funds or investments to the American capital market due to the increasing integration of the world capital market. DJIA can describe the performance of the American economy. When the value on the DJIA index increases, it means that it reflects the improving performance of the American economy. This can cause foreign investors to withdraw their investment from Indonesia and divert it to America.

Impulse Response Function (IRF) Analysis

After pre-estimating such as the root unit root test, VAR stability test, Optimum lag test, and cointegration test, the model used can be used to see the short and long effects through VECM estimation.

The following is the result of the impulse response function (IRF) in the ISSI model. The results listed besides explain how the response of the Indonesian Islamic stock index when there is a shock to the IPI, CPI, DJIA, exchange rate against the dollar, and world oil prices.



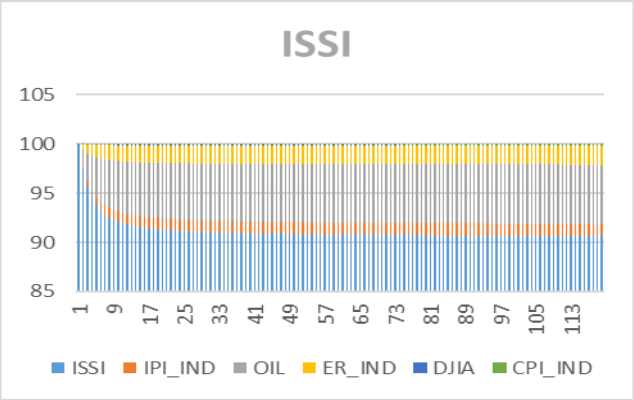
Based on the picture above, it explains that when there is a shock to the DJIA and world oil prices, there is a positive response from ISSI to world oil prices, where ISSI reaches stability in the 7-8 period to the next period. Likewise, for the shocks that occurred in the DJIA, the Indonesian Sharia Stock Index responded positively and reached relatively the same stability, namely in period 8 to the end of the period.

A negative response occurs in ISSI when there is a shock in the CPI, where the ISSI is stable against the CPI shock in the 6th period and is permanent until the next period. Likewise with the IPI variable and the rupiah exchange rate, where the ISSI responded negatively when there was a shock to the IPI and the rupiah exchange rate against the dollar. ISSI experiences stability against IPI shocks in the period 4-5. Likewise, with the rupiah exchange rate, ISSI experienced stability against the rupiah exchange rate against the dollar in the 5th period.

From the five variables previously described, it can be concluded that the ISSI achieves relatively fast stability in these five variables. It is seen where the ISSI has reached stability for no more than 10 periods.

Forecasting Error Variance Decomposition (FEVD) Analysis

After analyzing the response in the Impulse Response Function analysis, the next step is to look at the contribution of each variable in the ISSi model which will be seen in the results of Forecasting Error Variance Decomposition. (FEVD).



That the behavior of the Indonesian Sharia Stock Index (ISSI) is primarily influenced by ISSI itself with a contribution of 90.6%. followed by world oil prices (OIL) with a contribution of 6.02%, Rupiah Exchange Rate against United States Dollar (er_IND) with a contribution of 1.91%, Industrial Production Index (IPI) with a contribution of 1.24% Consumer Price Index (CPI) with a contribution of 0.134 % and the last one is the Dow Jones Industrial Average (DJIA) with a contribution of the Dow Jones Industrial Average (DJIA) with a contribution of 0.0449%.

VECM Estimation Results for the Malaysian Model

Shor-Term (DJIMY)		
Variable	**Coefficient**	**T-statistics**
CointEq1	-0.16456	[-2.83728]
D(DJIMY(-1))	0.042769	[0.24222]
D(ER_MLY(-1))	0.134582	[0.37963]
D(IPI_MLY(-1))	0.278087	[1.69298]
D(OIL(-1))	-0.03264	[-0.41866]
D(DJIA(-1))	-0.19966	[-0.88031]
D(CPI_MLY(-1))	-2.31693	[-1.34072]
Long-Term		
ER_MLY(-1)	-1.47194	[-2.30379]
IPI_MLY(-1)	3.676425	[4.89485]
OIL(-1)	-0.27691	[-2.15930]
DJIA(-1)	-2.18505	[-5.56454]
CPI_MLY(-1)	6.121772	[2.07592]

Based on the VECM estimation in the DJIMY model, it can explain that in the short term the variable IPI, world oil price, the rupiah exchange rate against the dollar, DJIA and CPI have no significant effect on the DJIMY variable. Meanwhile, in the long term, the world oil price has a significant negative effect on DJIMY with a coefficient value of 0.2769 units. This means that when the world oil price increases by one unit. Then it will affect the decline in the DJIMY value of 0.2769 units.

It can be explained that an increase in world oil prices will affect the company's overall production costs so that an increase in production costs will affect the price of goods which causes inflation to rise. Besides, even though Malaysia is an oil-exporting country, the increase or change in Malaysian oil production has not been able to influence world oil price movements, especially in light of sweet oil. This is because the market share of crude oil from Malaysia is relatively small when compared to other exporting countries. Based on the results of the British Petroleum report in 2015, crude oil production from Malaysia was only 0.7 percent of the total world oil price.

Another variable that harms DJMIY is the ringgit exchange rate against the dollar with a coefficient value of 1.4719 units. This means that each increase in the exchange rate of the ringgit against the dollar one unit will reduce the DJIMY by 1.4719 units. This is because the depreciating exchange rate will weaken the value of imports so that it has an impact on the profitability of companies. This research is supported by the findings of a study conducted by Mohd Yahya et al (2012) which shows that the exchange rate has a negative relationship with the Malaysian stock market.

Besides, the DJIA variable harms DJIMY with a coefficient value of 2.185. This means that every increase in the DJIA by one unit will decrease the DJIMY by 2.185 units. This condition is that the capital

market in Malaysia is relatively the same as in Indonesia where the majority of the largest investors in the capital market in Malaysia are foreign investors, where they easily move their funds or investments to the American capital market due to the increasingly integrated world capital market. DJIA can describe the performance of the American economy. When the value on the DJIA index increases, it means that it reflects the improving performance of the American economy. This can cause foreign investors to withdraw their investment from Indonesia and divert it to America.

In contrast, the Industrial Production Index (IPI) in the long-run has a positive effect on DJIMY with a coefficient value of 3.6764 units. This means that if the Industrial Production Index has increased by one unit. Then it will increase the index by 3.6764 units.

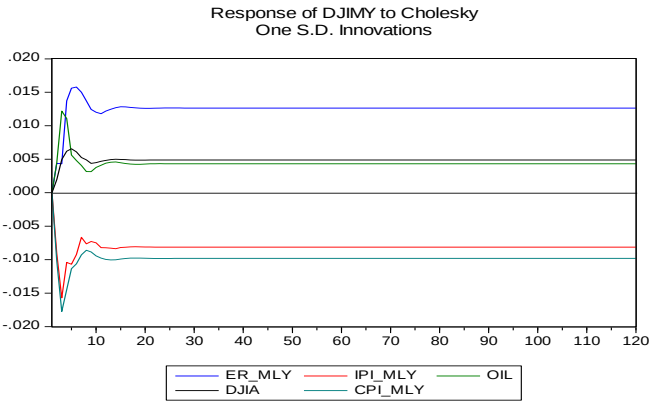
This is following the theoretical concept where the increase in IPI shows a positive response from investors to capital market conditions due to the increase in IPI as a reflection of the value of a country's economic growth. This is in line with research conducted by Mohd Yahya et all (2012) Irfan Syauqi (2014) which states that KLSI values have a positive correlation with the IPI variable. This is in line with the stock analysis theory based on the discounted cash flow model theory which states that the higher the IPI value, the higher the expected stock price.

Another variable that has a positive influence on DJIMY is CPI with a coefficient value of 6.12177. This means that each increase in the CPI by one unit will increase the DJIMY by 6.12177 units. This explains that the CPI is the first measure of what people are experiencing about the economy in their country. This index determines whether the economy is in a stable condition, rising, or recession. The increase in the value of the Consumer price index shows people's optimism about economic conditions so that it will have an impact on the stock index value.

Impulse Response Function (IRF) Analysis.

After pre-estimating such as the root unit root test, VAR stability test, Optimum lag test, and cointegration test, the model used can be used to see the short and long effects through VECM estimation.

The following is the result of the impulse response function (IRF) in the DJMIY model. The results listed besides explaining how the response of the Malaysian Dow Jones Islamic Market when there is a shock in the IPI, CPI, DJIA, exchange rate against the dollar, and world oil prices.



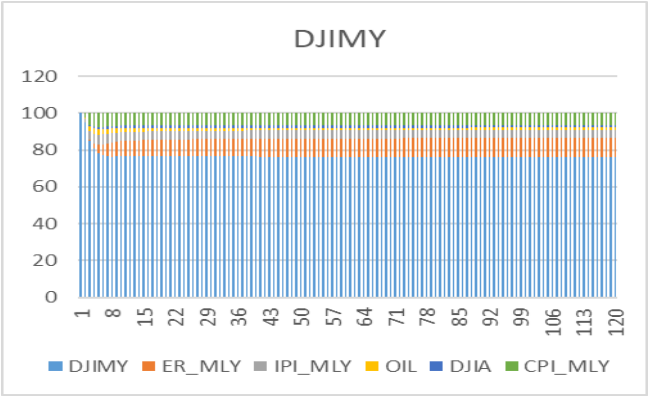
Based on the picture above, it explains that when there is a shock in the DJIA, the world oil price, and the exchange rate against the dollar, there is a positive response from DJIMY on the world oil price, where DJMIY reaches stability in period 20 to the next period. The same thing with the shocks that occurred in the DJIA, the Dow Jones Islamic Market Malaysia responded positively and achieved relatively the same stability, namely in the 22nd period until the end of the period. Likewise, with the shocks that occurred in the exchange rate variable against the dollar, DJIMY fluctuated in the 15-17 period and reached stability in the 28th period.

A negative response occurs in DJIMY when there is a shock in the CPI, where DJMIY is stable to the CPI shock in the 16th period and is permanent until the next period. Likewise with the IPI variable, where DJIMY responded negatively when there was a shock on IPI. DJIMY experienced stability against IPI shocks in period 22.

From the five variables previously described, it can be concluded that DJMIY achieves relatively longer stability in these five variables. It is seen where DJIMY has been stable for more than 10 periods.

Forecasting Error Variance Decomposition (FEVD) analysis of the DJIMY model

After analyzing the response in the Impulse Response Function analysis, the next step is to look at the contribution of each variable in the DJIMY model which will be seen in the results of Forecasting Error Variance Decomposition (FEVD).



That the behavior of the Indonesian Sharia Stock Index (DJIMY) is mainly influenced by DJIMY itself with a contribution of 76.33%. followed by the exchange rate of Ringgit against the United States Dollar (er_MLY) with a contribution of 10.17%, Consumer Price Index (CPI) with a contribution of 6.32%, Industrial Production Index (IPI) with a contribution of 4.34%, Dow Jones Industrial Average (DJIA) with a contribution of 153% and finally the world oil price with a contribution of 1.31%.

The estimation results of the VECM Model DJIMTR

Short-Term (DJIMTR)		
Variable	**Coefficient**	**T-statistics**
CointEq1	0.016436	[0.63875]
D(DJIMTR(-1))	0.177932	[0.31237]
D(DJIMTR(-2))	-0.05988	[-0.31166]
D(DJIMTR(-3))	-0.20829	[-1.09744]
D(ER_TRK(-1))	0.148519	[0.55075]
D(ER_TRK(-2))	0.023405	[0.06397]
D(ER_TRK(-3))	-0.17362	[-0.52484]
D(IPI_TRK(-1))	0.303704	[1.05717]
D(IPI_TRK(-2))	0.285944	[0.96181]
D(IPI_TRK(-3))	0.028494	[0.11023]
D(OIL(-1))	-0.03259	[-0.39343]
D(OIL(-2))	0.117603	[1.33951]
D(DJIA(-1))	-0.33874	[-1.24087]
D(DJIA(-2))	-0.41277	[-1.50741]
D(DJIA(-3))	-0.13646	[-0.53162]
D(CPI_TRK(-1))	-1.06378	[-1.15669]
D(CPI_TRK(-2))	0.637076	[0.66388]
D(CPI_TRK(-3))	1.185316	[1.34358]
Long-Term		
ER_TRK(-1)	-0.48758	[-0.40365]
IPI_TRK(-1)	3.314727	[1.51643]
OIL(-1)	1.389336	[3.83980]
DJIA(-1)	-10.6443	[-6.18611]
CPI_TRK(-1)	15.89452	[4.99741]

Based on the VECM estimation in the DJIMTR model, it can explain that in the short term the variable IPI, world oil prices, exchange rates against the Dollar, DJIA and CPI have no significant effect on the DJIMTR variable. Meanwhile, in the long term, IPI has a significant positive effect on the DJIMTR with a coefficient value of 3,315. That is when the IPI increases by one unit. Then it will increase the DJIMTR value by 3,315 units. This is in line with the stock analysis theory based on the discounted cash flow model theory which states that the higher the IPI value, the higher the expected stock price. And it is also strengthened by the research of Bilal and Fahmi (2010) regarding the effect of macroeconomic variables on returns on the Turkish stock market, showing that IPI has a positive effect on the stock market and IPI is one of the barometers of future economic growth.

Another variable that has a positive effect on DJMITR is the world oil price with a coefficient value of 1.39 units. This means that each one-unit increase in the world oil price will increase the DJIMTR by 1.39 units. The results of this study are in line with that of Umut and Fatma (2011) that there is a positive relationship between world oil and the Turkish stock market. In his research, he found that there was an increase in foreign portfolio investment inflows and changes in the preferences of local market players which made this condition a unique factor so that the relationship between oil prices and stock market prices was inconsistent with the expected theory. This shows that global factors dominate the Turkish stock market. It is believed that the existence of a positive relationship is based on several factors: 1. there is a positive expectation effect by investors which means that expectations on economic performance in the country and the continuation of capital flows during periods of higher oil prices are very strong among investors, 2. Oil prices are positively related to stock prices, hereby meaning that any oil price shocks will reflect changes in aggregate demand, 3. the Islamic stock index consists of gas and oil companies.

Besides, the CPI variable also has a positive effect on DJIMTR with a coefficient value of 15.91. This means that each one-unit increase in the CPI will increase the DJIMTR value by 15.91 units. It can be said that investors can still get profits when the stock price rises or falls by implementing hedging strategies (hedging). Hedging is done to protect yourself from losses due to price fluctuations that can occur at any time. Thus, losses due to CPI value can be minimized. This is supported also by research by Fatma Sonmez (2007), in her research which states that the inflation rate in Turkey has a strong variability impact in predicting stock market volatility in Turkey.

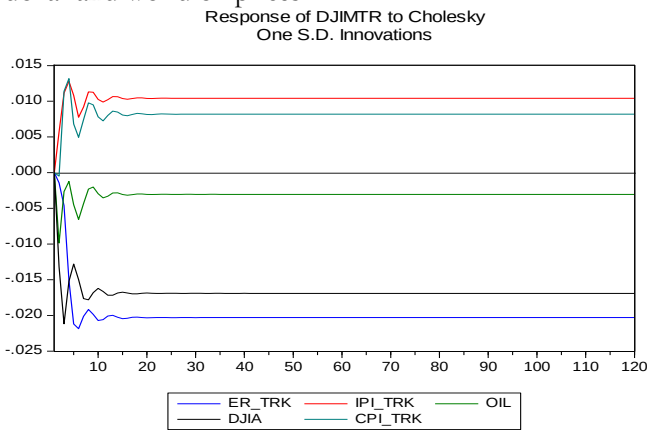
In contrast, the Turkish Lira exchange rate against the dollar in the long-run harms the DJIMTR with a coefficient value of 0.49 units. This means that if the exchange rate against the dollar has increased by one unit. Then it will decrease the index by 0.49 units. The results of this study are supported by the findings of a study conducted by Mohd Yahya et al (2012) which shows that the exchange rate has a negative relationship with the Malaysian stock market, strengthened by research conducted by Bilal Savasa et al (2010), Oguzhan Aydemir (2009) regarding the relationship Between the value of shares and the exchange rate against the dollar in Turkey shows that there is a negative relationship. This is because the depreciating exchange rate will, in turn, weaken the value of imports so that it has an impact on company profitability.

And the Dow Jones Industrial Average (DJIA) variable harms the DJIMTR with a coefficient value of 10.64. this means that every increase that occurs in the DJIA by one unit will reduce the DJIMTR value by 10.64 units. This is in line with the research conducted by Hakan Berument et al (2011) regarding the effect of US stock on the stock market in Turkey, in which DJIA is included. He stated that the DJIA has a significant negative effect on the stock market index in Turkey. This is because the stock market in Turkey almost follows the movements of the stock market which only has a small or medium capitalization like The AMEX rather than following a large capitalized stock market.

Impulse Response Function (IRF) Analysis

After pre-estimating such as the root unit root test, VAR stability test, Optimum lag test and cointegration test, the model used can be used to see the short and long effects through VECM estimation.

The following is the result of the impulse response function (IRF) in the DJMITR model. The results listed beside explain how the response of the Dow Jones Islamic Market Turkey when there is a shock on the IPI, CPI, DJIA, exchange rate against the dollar and world oil prices.

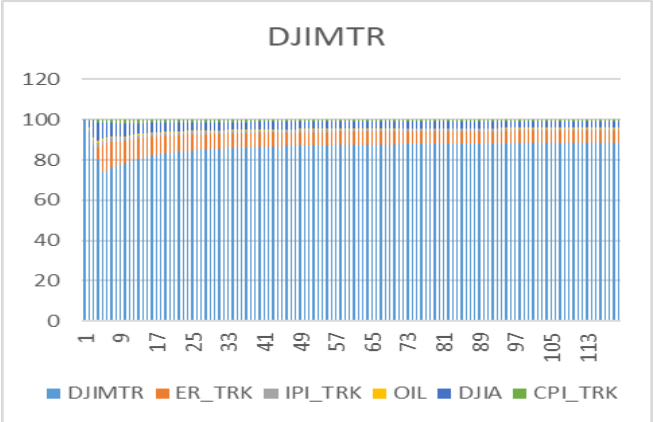


Based on the picture above, it explains that when there was a shock to the CPI and IPI, there was a positive response from DJIMY to IPI, where DJMIY reached stability in period 20 to the next period. The same thing with the shocks that occurred in the CPI, Dow Jones Islamic Market Turkey responded positively and reached relatively the same stability, namely in the period 18 to the end of the period.

The negative response occurs in DJIMY when there is a shock in DJIA, where DJIMTR experiences stability to the DJIA shock in the 20th period and permanently until the next period. Likewise with the exchange rate variable against the Dollar, where DJIMTR responds 4negatively when there is a shock in the exchange rate against the Dollar. DJIMTR experienced stability against exchange rate shocks against the dollar in period 21. And the last one is the variable world oil price, where DJIMTR responded negatively to shocks that occurred in world oil prices and reached stability in period 15.

Forecasting Error Variance Decomposition (FEVD) analysis of the DJIMTR model

After analyzing the response in the Impulse Response Function analysis, the next step is to look at the contribution of each variable in the DJIMTR model which will be seen in the results of Forecasting Error Variance Decomposition (FEVD).



Based on the behavior of Dow Jones Islamic Market Turkey (DJIMTR), it is mainly influenced by DJIMTR itself with a contribution of 88.54%. followed by the Turkish Lira Exchange rate against the United States Dollar (er_TRK) with a contribution of 5.87%, the Dow Jones Industrial Average (DJIA) with a contribution of 3.124%, the Industrial Production Index (IPI) with a contribution of 1.02%, the Consumer Price Index (CPI) with a contribution of 0.959%, and the last is the world oil price with a contribution of 0.298%.

CONCLUSION

Based on the three models obtained, it can be concluded that the macroeconomic variable that has the same effect is the DJIA variable. The DJIA variable harms the three Islamic stock indexes in Indonesia, Malaysia and Turkey. Meanwhile, the IPI, Exchange Rate, CPI and OIL variables have different effects.

The results of the Impulse Response Function (IRF) show that in the ISSI model, the Indonesian Sharia Stock Index responds positively to shocks to the world oil price variable and the DJIA. This means that if these variables occur, it will increase the value of shares in the ISSI. Meanwhile, the variable CPI, IPI and the exchange rate against the dollar received a negative response. So it can be interpreted that if there is a shock to these variables it will weaken the value of shares in the ISSI. For the results of the Impulse Response Function (IRF) in the DJIMY model, it can be explained that DJIMY responds positively to the exchange rate variable against the dollar, DJIA and world oil. This means that if these variables experience shocks, it will increase the share value of DJIMY. Meanwhile, the CPI and IPI variables responded negatively. This means that

if there is a shock to this variable it will weaken the share value of DJIMY. And in the results of the Impulse Response Function (IRF) in the DJIMTR model, it can be explained that the DJIMTR responds positively to the IPI and CPI variables. This means that if there is a shock to these variables it will strengthen the stock value at DJIMTR. Whereas in the DJIA variable, the world oil price and the exchange rate of Lira against the Dollar responded negatively, which means that if a shock occurs in this variable it will weaken the stock value at DJIMTR.

Based on the FEVD test results, it can be explained that each index model is influenced by the index variable itself. Besides, in the three models, it can be explained that with the same macroeconomic variables as external factors, namely DJIA and OIL, and internal factors, namely inflation, IPI, and Exchange rate. So it can be concluded that the better model is the ISSI model because in the FEVD table it is explained that the ISSI variable influenced by the variable itself is greater than other macroeconomic variables by 90.63%. Macroeconomic policy is an important part in influencing the growth of the Sharia Stock Index in each country. Besides, the capital markets in Indonesia, Malaysia and Turkey have relatively different characteristics, both in terms of investor characteristics or monetary and fiscal conditions. So this also makes the potential for the growth of the Islamic financial services industry in each country to have varied values. This can be seen from the results of research that have been tested.

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