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Understanding Causality Relation among FDI, Foreign Trade and Economic Growth in Indonesia

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Abstract

This study aims to analyze the causality relationship between Foreign Direct Investment (FDI), Foreign Trade, and Economic Growth in Indonesia using quarterly time-series data from Q1-2004 to Q2-2019. This study uses co-analytical techniques, VECM integration, and Engle-Granger causality. The results of a two-way causality test happen between export and GDP variables, as well as import and GDP variables. In other words, foreign trade has an essential role in increasing economic growth in Indonesia. However, the two-way causality relationship takes place only in the short term. In the long run, it does not occur; what happens in the long term is an only one-way relationship, namely from foreign trade (X and M) to economic growth. While export and import relations have an only one-way relationship, namely from import growth to export growth, and this relationship only happens in the short term. In contrast, in the long term, it has no significant relationship. Likewise, the one-way relationship also takes place from imports to FDI in the short term. At the same time, export variables and GDP variables do not have a significant relationship with FDI variables. In the long-term economic growth, it turns out to be very instrumental in increasing both FDI, exports, and imports.

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INTRODUCTION

The commitment of Indonesian people to implement the open economic system had given many advantages for domestic economic development. In the open economy, export and import can increase economic activity in many production sectors, which will increase economic growth. Therefore, foreign trade activity is the driving force of the economic (Sukirno, 2000). Foreign trade that becomes freer requires many things, so the products that are produced can compete well, both in the quality and the price, which means how to produce products that are efficient and high in quality. So, as consumers' choice becomes wide, then only the high-quality products with a competitive price will be accepted in the market. The recent development of economic liberalization illustrates that the trading relationship between countries become more important in the economy. The importance of foreign trade is not a new thing because, since classic and neoclassic theory, it has been assumed that foreign trade is a positive drive for the economic growth of a country, as for how Tambunan (2001) stated that for many countries, including Indonesia, international trade has a significant role as a driving force of the national economy.

Foreign trade is significantly related to Foreign Direct Investment (FDI). FDI produces the transfer of knowledge and technology that will increase production efficiency, so it will affect the increase in foreign trade, which is also the driving force of economic growth and will further influence foreign investors' interest. The positive relationship between those variables is quite reasonable because FDI, export, import, and economic growth have a two-way relationship. The change in import can influence the change in export because if import increase, then indirectly export can also increase, mainly the export of the manufacturing industry-based commodities. Contrarily, the development of export can also affect the ability of imports. Import activities, especially the import of capital goods and auxiliary raw materials, can increase capital investment or good investment both from inside and outside the country. Because through the trading relationship, the exporter country could establish the company in the importing country through direct capital investment (Alguacil and Orts, 2002).

The occurrence of direct investment flow into a country will bring the effect of technology transfer that encourages increasing productivity inside the country. The increase in production scale can also increase foreign trade, and besides that, it is also to fulfill domestic needs such as capital goods or auxiliary raw materials. The increase in the domestic production scale, not only will fulfill domestic needs but might also increase export and economic growth. Interconnected relationship between FDI, foreign trade, and economic growth had been explored by many researchers, for example, it has investigated by Chandran and Seila (2010) in India, Shahzad Iqbal (2010) in Pakistan, Ersyad Hussain and Mahpuzul Haque (2016) in Bangladesh, Nguyen Ngo, Thach, Le Hoang Anh, and Duong (2016) in Vietnam.

Generally, the previous researches used VAR or VECM analysis. The relationship between FDI, Foreign Trade, and economic growth runs in the long term, although among them also only happened in a short-term relationship after the long term changed. In the short term in some countries from above, researches show that FDI can also affect economic growth. Foreign investment is expected to increase GDP as well as export and import. However, it turns out that FDI flow cannot sufficiently increase GDP as well as export and import. It is due to the orientation of FDI that entered Indonesia is tend to be into the domestic market that stated that the entry of foreign investment into Indonesia is more dominant towards the domestic market, rather than the foreign market (Nasution, 2012).

The relationship pattern between FDI, foreign trade, and economic growth has been discussed for centuries and has become a broad reference in various researches; however, controversy continues. Until now, it cannot be concluded clearly how the direction of the relationship between FDI, foreign trade, and

economic growth. The debate rooted in the differences in economic structure and the ability of the country to overcome financial problems. The differences happened between the states as well as between developed countries and developing countries that make the trade. Some researches were done by Ming-Hsia (2013) in Taiwan; Nguyen Ngoc Thach et al. (2017) in Vietnam; Dritsaki (2014) in Croatia; Hussain, M. Ershad, and Haque, M (2016) in Bangladesh; Makki, Shiva, and Somwaru, A. (2009), Tsaurai; K (2015) in Zambia; Iqbal, M. S Shahzad (2010) in Pakistan; Jayachandran, G. (2010) in India. Likewise, many other studies had been done to know the relationship pattern only between foreign trade and economic growth, such as what has done by Riezman, at.al. (1996) Yousif, (1999), Sinsha (1999), Anyamele (2000), Doraisami (2001), Yusof, et al. (2001), Awokuse (2002), Dritsaki et al. (2004). Also, some researches that see the relationship between FDI and foreign trade only, as what has done by Marchan, Mary. A, et. Al. (2002) in East Asia countries, Simionescu, M (2014) in G7 countries, Bouras, H, and Bechir Raggad (2015) in 10 countries using data panel.

From the explanation above, it can illustrate that; there is an incompatibility between the expectation from the government related to the relationship between international trade and FDI, as well as economic growth in Indonesia. That issue has then formed the background of this research. International trade and FDI are two critical activities for the economy of Indonesia, which are interconnected with one another. Researches about the relationship between International Trade and FDI had been done many times already, whether outside the country or in Indonesia. However, the results of the researches are not always the same; some conclude that there is a one-way relationship or a two-way relationship, or there is a positive relationship, and there are also some who found there is a negative relationship between FDI and foreign trade.

From the background above, the study about the relationship between FDI and international trade becomes essential. Besides that, the relationship between FDI and international trade is strongly related to the development of GDP in Indonesia because the activities of foreign direct investment and foreign trade are very potential economic activities that make a significant contribution to the increase in the economy of Indonesia, which reflected by the interrelationship. Therefore, it is essential to be studied even further about the relationship between changes that happened in three of them, that are expected to influence each other.

RESEARCH METHODS

International trading theory empirically says that international trading and FDI can occur transfer knowledge, which will increase the efficiency in the usage of input, which will accelerate economic development (Hogendorn, 1996; Cyper and Dietz, 1997) in Parningotan (2000). The variables that will be used in this research are the GDP variable or economic growth. While for the foreign trade will include export value and import value, and foreign direct investment is FDI.

This research uses secondary data. The source of the data is obtained from the Central Bureau of Statistics Institution, Bank Indonesia. For the need of the model application, the data that will be used is quarterly time series data starting from the first quarter of 2004 until the second quarter of 2019. This is intended for technical statistic purposes so that the issue about the degree of freedom can be resolved; besides that, the data from each research variable that is used in the model is already available in the quarter.

This research will use the Vector Autoregression (VAR) analysis model approach. The reason is using the VAR method does not need to follow the assumption of the economic structure as in the theory concept, so all variables in the system may be endogenous variables (Thomas, 1997). Nevertheless, because VAR analysis method can only describe short term balance relationship, meanwhile, this research is intended to illustrate balance relationship both in the short term and in the long term. Hence, VAR model has to be combined with the cointegration

matrix, which is known as the Vector Error Correction Model, VECM (Siregar dan Ward, 2002). VECM model specification generally in the form of an equation, according to Enders (1999) is as follows:

$$\Delta Z_t = \sum_{i=1}^{p=1} \Gamma_t \Delta Z_{t-1} + \Pi Z_{t-1} + \mu_0 + \mu_1 + \varepsilon_t \quad \ldots\ldots(1)$$

Where; $\prod = \alpha\beta$ is the matrix parameters; α = coefficient matrix of ECM; β = transpose matrix cointegration; p – 1 = VECM order is derived from the optimal VAR lags; ΔZ_{t-1}= vector variable first difference; μ_0= intercept vector; μ_1= vector regression coefficient; Z_t= variable levels (FDI, X, M, GDP); Γ_t= matrix cointegration; ε_t= error terms

Vector $\prod$ or ($\alpha\beta$) is a balance parameter which implies a long-term relationship of the cointegration system in the form of the matrix r x m, where r is the cointegration rank. Whereas Γi is a matrix parameter of a short-term dynamic effect. The cointegration vector β contained in the VECM model is a parameter of the level variable. The cointegration matrix above is part of the VECM equation, which can include a picture of short-term and long-term analysis.

RESULTS AND DISCUSSION

In some Trace and Maximum Eigenvalue statistic test cases, there are often differences in the results. However, according to Gujarati (2003), the result of the Trace-test is better for guidance. From the test results using the Johansen method, by that looking at the value of trace statistic, and max-eigenstatistic at the significance level of 5% obtained cointegration rank or r = 1, which means that in multivariate relations there is a system of the equation that in the long term is linearly co-integrated. From the cointegration restriction equation obtained, analysis and discussion of the causality between the LnFDI, LnGDP, LnX, and LnM variables that will be respectively treated as dependent variables will be conducted.

Previous cointegration test results show between the variables, FDI, GDP, X, and M are co-integrated and have long term relationships. Therefore, it is eligible to use the VECM analysis framework. In the VECM model, the one that becomes dependent variable is a different variable from LnFDI, LnGDP, LnX, and LnM, by then from the VECM model can cover both short-term relationships (in the different variable) and long-term relationships (in the level variable). Causality relations between variables in the long-term can be seen from the result of error correction coefficient (error correction, ECM) in the VECM model, whether the ECM coefficient is significant or not and whether it is negative or positive. If the ECM coefficient is significant at the level of 5%, it means that there is a causality relation in the long term. Meanwhile, to know whether short term causality relation happened or not, can be seen from the coefficient from each variable in their relationship with the dependent variable.

FDI as the Dependent Variable, meanwhile GDP, Export, and Import as Independent Variables

The result on the equation in Table 1 shows the magnitude of the coefficients of each variable. The coefficient of the ECMFDI variable is a coefficient that describes the long-term causality relationship. Meanwhile, the dLnGDP, dLnX, and dLnM variables with lag respectively show a short-term relationship; in this case, there are lag-1 and lag-2. From the VECM model equation, the coefficient obtained in the ECMFDI cointegration equation is -0.925, this coefficient is negative according to the opinion (Enders, 1995), and the t-statistic value is higher than the t-table value (5%) means that it is significant.

Therefore, this result shows there is a long-term relationship between the FDI, GDP, Export, and Import variables in Indonesia. The situation can also be interpreted, in the long term, GDP, export, import variables can determine the change in FDI variable. Specifically, from the co-integrated equation in Table 1 can be explained that, in the long-term, when export increases by one percent, then it will decrease direct capital investment (FDI) by 1.72%.

At the same time, when import increases by one percent, it can decrease FDI by 1.96%,

however, when GDP increases by one percent, it can increase direct capital investment by 0.58%. However statistically the influence from three of the independent variables, which are LnGDP, Export (LnX), import (LnM) to direct capital investment (LnFDI) in the long term, the effect is not significant or accepts null hypothesis. coefficients that overall is not significant in degrees of confidence with the α of 5%. This means that in the short term, the three independent variables respectively have no significant effect on the dependent variable. However, simultaneously have a significant effect (see the coefficient of F-statistical of 4.324 and R square of 0.49 or all three variables of GDP, export, and import can significantly influence direct capital investment in Indonesia and contribute 49% in determining the change in the FDI variable.

Table 1. Dependent Variable D (LnFDI)

Variable	Coefficient	Std. Error	t-Statistics
LNX (-1)	-1.718151	(2.45633)	[-0.69948]
LNM (-1)	-1.962595	(2.06607)	[-0.94992]
LNPDB (-1)	0.584632	(0.70286)	[0.83180]
ECMFDI	-0.925845	(0.22021)	[-4.20445]
D (LNX (-1))	-2.024.623	(2.07172)	[-0.97727]
D (LNX (-2))	-0.810617	(1.88564)	[-0.42989]
D (LNM (-1))	0.700960	(1.67292)	[0.41900]
D (LNM (-2))	1.929872	(1.58568)	[1.21707]
D (LNGDP (-1))	2.099373	(2.66288)	[0.78838]
D (LNGDP (-2))	-1.872886	(3.04639)	[-0.61479]

Sources: Data processed by author, 2020

If seen from the ECMFDI coefficient, where the coefficient is negative and significant at the 5% level, this shows that the use of the VECM model in this study is appropriate and fulfils the requirements (Juanda, 2012). The magnitude of the ECMFDI coefficient is -0.925. This shows fluctuations in short-term equilibrium towards long-term equilibrium, where around 92.5% of the adjustments occur in the first period (the data used is quarterly), and around 7.5% of the adjustment process will occur in the next period.

Furthermore from Table 1, when viewed from the short-term relationship with lag-1 and lag-2 to the dependent variable dLnFDI, it seems that the three different variables of dLnGDP, dLnX, and dLnM, both lag-1 and lag-2 produce dependent variable, that is influenced by dLnFDI, export (dLnX), and import variable (dLnM). From the VECM Equation, it shows the magnitude of the coefficients of each variable. The ECMGDP variable coefficient is a coefficient that describes the long term causality relationship. Whereas the dLnGDP, dLnX, and dLnM variables with lag respectively indicate a short-term relationship, there are lag-1 and lag-2. The result on the equation in Table 2, VECM model equation obtained the magnitude of coefficient in the ECMgdp co-integrated equation which is -0.0046, this coefficient has negative sign according to opinion (Enders, 1995), and the magnitude of t-statistic value is -0.854 which is smaller than the t-table value (5%), which means it is not significant.

Therefore, from this result, it shows that there is a weak long term relationship between FDI, GDP, Export, and Import variables in Indonesia. VECM model in this study is appropriate and fulfils the requirements (Juanda, 2012). The ECMGDP coefficient is -0.0046.

The result on the equation in Table 2, which is, the vecm cointegration equation that treats Gross Domestic Product (dLnGDP) as the situation can also be interpreted in the long-term, the FDI, export, and import variables cannot determine changes in the GDP variable.

Specifically, from the cointegration equation in Table 2, it can be explained, in the long term, when direct capital investment (FDI) increases by one percent, it will increase GDP by 1.711%.

Table 2. Dependent Variable D (LnGDP)

Variable	Coefficient	Std. Error	t-Statistics
LNFDI (-1)	1.710476	(0.32820)	[5.21176]
LNX (-1)	-2.938.856	(3.62462)	[-0.81080]
LNM (-1)	-3.356.973	(3.55128)	[-0.94529]
ECM_{GDP}	-0.004632	(0.00542)	[-0.85375]
D (LNFDI (-1))	0.006182	(0.00771)	[0.80173]
D (LNFDI (-2))	0.001409	(0.00620)	[0.22725]
D (LNX (-1))	-0.027325	(0.08730)	[-0.31300]
D (LNX (-2))	-0.191374	(0.07946)	[-2.40847]
D (LNM (-1))	0.066105	(0.07049)	[0.93773]
D (LNM (-2))	0.060200	(0.06682)	[0.90095]

Sources: Data processed by author, 2020

At the same time, when the value of export increases by one percent, it can cause a decrease in GDP by 2.939%, likewise when the value of import increases by one percent it will cause LnGDP to decrease by 3.356%. However, statistically, the import (LnM) and export (LnX) variables effect on LnGDP are not significant or accept the null hypothesis, and only the direct capital investment variable (LnFDI) effects significantly on LnGDP in the long term or rejects the null hypothesis.

This shows fluctuations in short-term equilibrium towards long-term equilibrium, where only about 0.5% of the adjustment occurs in the first period (the data used is quarterly) and around 99.5% of the adjustment process will occur in the next period. This condition shows a fragile relationship in the long-term.

In addition to explaining the long term relationship, the VECM estimation results can also explain the short term relationship between the GDP variable and other variables in lag-1 and lag-2, in this case, the lag is quarterly. The short-term relationship can be seen more from the sign of the coefficient so that the direction of the relationship can be positive or negative, which also reflects the elasticity of the short term coefficient. In connection with the short-term can be explained in Table 2. If seen from the ECMGDP coefficient, where the coefficient is negative and significant at the 5% level, this shows that the use of the if seen from the short term relationship with lag-1 and lag-2 to the dependent variable dLnGDP, it seems that the three different variables of dLnFDI, dLnM, and dLnX, both lag-1 and lag-2 produce coefficients that are almost entirely insignificant at a 5% level, except the export variable (LnX) with lag-2 that turns out to has a significant effect with the t-value is bigger than t-table 5%. This means that in the short term the three independent variables with lag-1 and lag-2 variables are respectively insignificant, except for the lag-2 export.

The estimation on the equation in Table 3, from the VECM model equation obtained the coefficient amount in the ECMX cointegration equation -0.0966, this coefficient is negative according to opinion (Enders, 1995), and the results of the t-calculated or t-statistic value (2,3587) which in absolute terms means that it's more significant than the magnitude of tables of 5% (1.98), that means it is significant. Therefore, the results indicate a long term relationship between FDI, GDP, exports, and the import variables in Indonesia. The situation can also be interpreted that, in the long term, the variable GDP, FDI, and Import (LnM) can determine changes in the variable export. Specifically, from the VECM cointegration equation, it can be explained that, in the long-term, when GDP increases by one percent it will decrease the value of export by 0.34%.

Table 3. Dependent Variable D(LnX)

Variable	Coefficient	Std. Error	t-Statistics
LNGDP (-1)	-0.340268	(0.35566)	[-0.95672]
LNFDI (-1)	-0.582021	(0.11255)	[-5.17145]
LNM (-1)	1.142272	(0.52566)	[2.17301]
ECMx	-0.096639	(0.04097)	[-2.35871]
D (LNPDB (-1))	1.115271	(0.28836)	[3.86759]
D (LNPDB (-2))	-0.311715	(0.32989)	[-0.94489]
D (LNFDI (-1))	-0.024817	(0.01982)	[-1.25236]
D (LNFDI (-2))	-0.010679	(0.01593)	[-0.67017]
D (LNM (-1))	0.213520	(0.18116)	[1.17863]
D (LNM (-2))	0.333923	(0.17171)	[1.94466]

Sources: Data processed by author, 2020

At the same time, when FDI increases by one percent, it can cause a decrease in the Export value of 0.5820%, and the effect is very significant. However, when the value of import increases by one percent, it can increase the value of Export (LnX) by 1.1423%, the effect on LnX is significant or rejects the null hypothesis, thus there are two variables, which are direct capital investment (LnFDI) and import, that significantly affect LnX in the long term or reject the null hypothesis.

If seen from the ECMX coefficient, where the coefficient is negative and significant at the 5% level, this shows that the use of the VECM model in this study is appropriate and fulfills the requirements (Juanda, 2012). The magnitude of the ECMX coefficient is -0.0966. This shows fluctuations in short term equilibrium towards long term equilibrium, where only about 9.6% of the adjustments occur in the first period (the data used are quarterly), and around 91.4% of the adjustment process will occur in the next period. This condition shows a fragile relationship in the long-term.

In addition to explaining the long-term relationship, the VECM estimation results can also explain the short-term relationship between the export (LnX) variable and other variables in lag-1 and lag-2. In this case, the lag is quarterly. The short-term relationship is more seen from the sign of the coefficient so that the direction of the relationship can be positive or negative, which also reflects the coefficient of short-term elasticity. In connection with the short term can be explained through Table 3.

When seen from the short-term relationship with lag-1 and lag-2 to the dependent variable dLnX, it seems that the three different variables of dLnGDP, dLnFDI, dLnM, both lag-1 and lag-2 produce coefficients that are almost entirely insignificant at 5% level, except for the GDP variable (LnGDP) with lag-1 which turns out to has the significant effect with t-value higher than t-table 5% 2.821 > 1.981. This means that in the short term the three independent variables with lag-1 and lag-2 variables respectively have no significant effect on the dependent variable, except GDP in lag-1. However, simultaneously have a significant effect (see the coefficient F-statistic of 4.4067) and R square of 0.4917 or the three variables of GDP, FDI, and import, simultaneously can significantly influence Export (LnX) in Indonesia and contribute 49.2% in determining the changes in the LnX variable.

The estimation on the equation in Table 5, the VECM model equation, the ECMM coefficient value obtained in the cointegration equation is -0.0662, this coefficient is negative according to opinion (Enders, 1995), and the result of t-statistic value is smaller than the t-table value (5%), which means that it is insignificant. Therefore, these results indicate a weak long-term relationship between the FDI, GDP, Export, and Import variables in Indonesia. This situation can also be interpreted that, in the long

term, the GDP, FDI, and export variables are weak in determining changes in the import (M) variable.

Based on the equation in Table 5, the VECM cointegration equation that is explicitly seen from the causality relationship of the cointegration equation in Table 4 can explained that, in the long term, when Export increases by one percent, it will increase the value of imported goods and services Indonesia by 0.88%, but the effect is not significant. At the same time, when GDP increases by one percent it can decrease the value of imported goods and services by 0.298%, this condition also doesn't have a significant effect. While an increase in FDI by one percent will decrease the import by 0.51% and statistically has a significant effect.

So if we look at the three independent variables which are LnGDP, direct capital investment LnFDI, and export (LnX), the effect of LnGDP and LnX variables on import (LnM) is not significant, while the effect of LnFDI variable on import is significant in the long term or reject the null hypothesis.

If seen from the ECMM coefficient, where the coefficient is negative, this shows that the use of the VECM model in this study is appropriate and fulfills the requirements (Juanda, 2012).

However, the effect is not significant at the 5% level. The magnitude of the ECMM coefficient is -0.0662. This shows fluctuations in short-term equilibrium towards long-term equilibrium, where only about 6.6% of the adjustments occur in the first period (the data used is quarterly) and around 93.4% of the adjustment process will occur in the next period.

In addition to explaining the long-term relationship, the VECM estimation results can also explain the short term relationship between the Import value variable (LnM) and other variables in lag-1 and lag-2, in this case, the lag is quarterly. The short term relationship is more seen from the sign of the coefficient so that the direction of the relationship can be positive or negative which also reflects the coefficient of short-term elasticity.

Table 4. Long-term Granger Causality Relations

Null Hypothesis	Obs.	F-Statistic	Prob.
LNM does not Granger Cause LNFDI	60	7.99351	0.0010
LNFDI does not Granger Cause LNM	60	0.23006	0.7954
LNPDB does not Granger Cause LNFDI	60	3.16590	0.0513
LNFDI does not Granger Cause LNPDB	60	0.04882	0.9524
LNX does not Granger Cause LNFDI	60	6.82995	0.0025
LNFDI does not Granger Cause LNX	60	1.31470	0.2782
LNPDB does not Granger Cause LNM	60	6.69278	0.0028
LNM does not Granger Cause LNPDB	60	0.18060	0.8353
LNX does not Granger Cause LNM	60	0.72694	0.4887
LNM does not Granger Cause LNX	60	0.21196	0.8098
LNX does not Granger Cause LNPDB	60	2.23182	0.1186
LNPDB does not Granger Cause LNX	60	15.0386	9.E-06

Sources: Data processed by author, 2020

From the Table 4, which shows the Granger causality relationship in the long run. During the period of 2004Q1 to 2019Q2 using the criteria on $\alpha = 0.05$, the relationship between imports and direct investment is significant, meaning that the Import variable (LnM) can influence direct investment (LnFDI). However, if seen from the relationship from LnFDI to LnM it is not significant. In other words, the value of imported goods and services can affect direct investment (LnFDI), but it does not happen otherwise. Therefore the LnFDI and LnM variables do not have a causality relationship but have a one-way relationship.

The value of imports does not affect the growth of export values in Indonesia, and vice-versa. The absence of a causal relationship between exports and imports in Indonesia can occur because even though imports rise, conditions in exports can occur up or down. This shows that the development of Indonesia's exports does not depend on the development of imports, and vice-versa. The export value variable (LnX) has no significant effect on the LnPDB variable. However, if you look at the relationship from LnPDB to LnX, it turns out to show the variable of economic growth (LnPDB) has a significant effect on LnX in the long run in Indonesia. In other words, the growth of export value cannot affect Indonesia's economic growth, but on the contrary Indonesia's economic growth can affect the value of exports. Therefore the LnX and LnPDB variables do not have a causality relationship, but only have a one-way relationship from LnPDB to LnX.

The result on Table 5 which shows the short-term relationship between Granger causality over the years 2004Q1 to 2019Q2. The relationship between imports and direct investment seems probable. The resulting value is smaller than the 5% criterion, it means rejecting the null hypothesis. In other words, the import variable (dLnM) can affect direct investment (dLnFDI) in the short term, but does not happen otherwise. The relationship between dLnPDB and dLnFDI variables is not significant.

Table 5. Short-term Granger Causality Relations

Null Hypothesis	Obs.	F-Statistic	Prob.
D(LNM) does not Granger Cause D(LNFDI)	59	3.3098	0.0454
D(LNFDI) does not Granger Cause D(LNM)	59	0.1492	0.8618
D(LNPDB) does not Granger Cause D(LNFDI)	59	0.2728	0.7625
D(LNFDI) does not Granger Cause D(LNPDB)	59	0.0481	0.9530
D(LNX) does not Granger Cause D(LNFDI)	59	1.4091	0.2547
D(LNFDI) does not Granger Cause D(LNX)	59	0.7771	0.4657
D(LNPDB) does not Granger Cause D(LNM)	59	7.4002	0.0016
D(LNM) does not Granger Cause D(LNPDB)	59	3.4834	0.0390
D(LNX) does not Granger Cause D(LNM)	59	0.4126	0.6643
D(LNM) does not Granger Cause D(LNX)	59	3.5518	0.0368
D(LNX) does not Granger Cause D(LNPDB)	59	5.3457	0.0082
D(LNPDB) does not Granger Cause D(LNX)	59	12.660	4.E-05

Sources: Data processed by author, 2020

The value of imports does not affect the growth of export values in Indonesia, and vice-versa. The absence of a causal relationship between exports and imports in Indonesia can occur because even though imports rise, conditions in exports can occur up or down. This shows that the development of Indonesia's exports does not depend on the development of imports, and vice-versa. The export value variable (LnX) has no significant effect on the LnPDB variable. However, if you look at the relationship from LnPDB to LnX, it turns out to show the variable of economic growth (LnPDB) has a significant effect on LnX in the long run in Indonesia.

In other words, the growth of export value cannot affect Indonesia's economic growth, but on the contrary Indonesia's economic growth can affect the value of exports. Therefore the LnX and LnPDB variables do not have a causality relationship, but only have a one-way relationship from LnPDB to LnX.

The result on Table 5. which shows the short-term relationship between Granger causality over the years 2004Q1 to 2019Q2. The relationship between imports and direct investment seems probable. The resulting value is smaller than the 5% criterion, it means rejecting the null hypothesis. In other words, the import variable (dLnM) can affect direct investment

(dLnFDI) in the short term, but does not happen otherwise. The relationship between dLnPDB and dLnFDI variables is not significant, it means accepting the null hypothesis, this condition also happens otherwise. In other words the dLnPDB variable and the direct investment variable (dLnFDI) do not have a causal relationship. It doesn't even have a direct relationship, because both must accept the null hypothesis. The relationship between dLnPDB and dLnFDI variables is not significant, it means accepting the null hypothesis, this condition also happens otherwise.In other words the dLnPDB variable and the direct investment variable (dLnFDI) do not have a causal relationship. It doesn't even have a direct relationship, because both must accept the null hypothesis.

The relationship between the dLnPDB variable and the import value (dLnM) shows a significant relationship. In other words, the dLnPDB variable can affect the dLnM variable in Indonesia. Likewise, on the contrary, the import value variable (dLnM), can also affect economic growth in Indonesia (dLnPDB). Therefore the dLnM and dLnPDB variables have a causal relationship in the short term. While the relationship between export value growth variables (dLnX) and import values (dLnM) in the short run. It turns out that the export variable has no significant effect on imports; on the contrary, the import value variable (dLnM) can affect the export value (dLnX). Still, from the same table, the relationship between export value (dLnX) and economic growth (dLnPDB) has a significant effect on dLnPDB variables, and vice versa also has a significant relationship. Therefore, the dLnX and dLnPDB variables have a causality relationship.

Table 6. Relationship between Long-Term and Short-term Causality between the variables of FDI, GDP, X and M

Relations	FDI-GDP	FDI-X	FDI-M	GDP-X	GDP-M	X-M
Long-term	←	←	←	←	←	—
Short-term	—	—	—	—	—	←

Sources: Data processed by author, 2020

From the Table 6, the relationship between two variables, whether it has a two-way relationship or a one-way relationship can be column. If we pay attention to it, the relationship between FDI and GDP only has a one-way relationship which is in long term, or GDP can affect the entry of direct investment flow (FDI), however, in the short term, they don't have a significant relationship. Indeed, it is important for Indonesia to keep stable and great economic growth, so foreign investors will be interested to put their direct investment in Indonesia.

The relationship between the export variable (X) and the FDI variable shows the same behavior as the relationship between GDP and FDI. In the short term, it has an insignificant relationship, but in the long term, the increase in export variables can increase the flow of foreign capital into Indonesia. It seems that the great development of exports of goods and services can attract foreign investors, this possibility might happen because foreign investors also want to enjoy the export results by doing the production in Indonesia.

The relationship between FDI and the import variable (LnM), both in the short-term and long-term shows that the import variable can increase the flow of foreign capital into Indonesia. It seems that the development of the value of imports of goods and services can attract foreign investors, but not vice-versa, both have a one-way relationship which means, import variable is the one that can determine variations in direct capital flows from investor countries, but the opposite does not happen, so that only one-way relationship happens.

The relationship between GDP variable and export variable, in the short term, has a two-way relationship. This shows that both the GDP variable and X variable can affect each other.

In other words, if Indonesia's economic growth changes upward, exports will also change upward, and vice versa, if the value of Indonesia's exports increases, it will increase Indonesia's economic growth. In the long run, it turns out that the GDP variable can still consistently affect variations in the value of exports, but it does not happen otherwise. Moreover, in the short term, there is a two-way causality relationship, but in the long term, there is only a one-way relationship.

The relationship between the GDP variable and the Import variable (M) turns out to have the same pattern as the relationship between the GDP variable and the export variable. In the short term, the relationship between the GDP and import has a two-way relationship. But in the long term, there is only a one-way relationship that the GDP variable remains consistent which can affect variations in the import value.

In the short term between the GDP variable and the M variable, there is a two-way causality relationship, but in the long term, it does not happen. The relationship between the Export and Import variables (M) turns out to have a very different pattern from the relationship between the other variables. In the short term between export and import, they have a one-way relationship to the left, which means that the variable M can determine variations in the value of export, but export development cannot determine the value of the import.

This condition can be predicted that export growth, especially exports of industrial processing commodities, is still very dependent on imported content. So that in the short term, the variations in Indonesia's Export are still very dependent on the imports. But in the long run, between variables X and M, statistically don't have a significant relationship. Thus, both variable X and variable M do not affect each other.

CONCLUSION

Variables that have causality relationships are between the GDP variable and the Export variable, as well as the GDP variable with Import variable. The causality relationship happened in a short term, meanwhile in the long term, both export variable and import variable in their relation to GDP variable is only a one-way relationship, which is the relationship from GDP affects both X and M, but not vice versa.

Variables that don't have causality relationship are between the FDI variable and the GDP variable, the FDI variable and X variable, FDI variable and M variable, three of them in the long term only have a one-way relationship, which is from GDP to X and M, but not vice versa, three of them can affect the variations of FDI, meanwhile, GDP variable and X variable in the short term don't have a significant relationship with FDI variable.

X variable and M variable, both in long term and in short term don't have causality relationship, even in the long term don't have any significant relationship direction, even so, there's a one-way relationship in short term, which is the value of import of goods and services (M) can affect the variation of export value (X). It should illustrate brief and clear results of study, contributions to new theories, and new ideas for future researches. Here, the theoretical and practical implications should be written in paragraphs.

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