

The correlation of international trade and growth in Indonesia

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Abstract

Exports generate foreign exchange that can be used for economic activities. On the other hand, imports also give households and companies more choices in consuming goods. In other words, international trade provides advantages for each country. There have been many studies that attempt to empirically prove the relationship between export-import and economic growth. The aim of this study is to re-examine the relationship between exports, imports, and growth in the short run and long run in Indonesia. This study employed the Granger Causality test and VECM to find long-term and short-term respectively. This research used secondary data annually from 1980 to 2019. Result of this empirical study, we find correlating variables are GDP-Exports, GDP-Imports, and Imports-Exports in the long-term. These three long-term findings match the short-term findings explained by VECM modeling. According to these findings, the policy recommendation is Indonesia needs to import carefully because importing consumption goods is a sure way to deplete its own foreign exchange reserves. Second, based on our empirical found, importing intermediate goods can increase our export, so we suggest Indonesia should run substitution import strategy immediately.

Keywords: international trade; export; import; granger causality; VECM.

JEL Classification: F17, F43, F47

Abstrak

Ekspor memberikan tambahan devisa yang dapat membiayai segala aktivitas ekonomi dalam negeri. Disisi lain, impor juga membuat rumah tangga dan perusahaan lebih banyak pilihan dalam mengonsumsi barang. Dengan begitu, perdagangan internasional memberikan keuntungan dari sisi konsumsi dan produksi untuk setiap negara. Telah banyak penelitian yang berusaha membuktikan secara empiris hubungan ekspor-impor dengan pertumbuhan ekonomi. Penelitian ini bertujuan untuk mengkaji kembali hubungan antara ekspor, impor, dan pertumbuhan jangka pendek dan jangka panjang di Indonesia. Penelitian ini menggunakan melakukan uji VECM dan Granger Causality untuk menemukan jangka pendek dan jangka panjang. Penelitian ini menggunakan rentang tahun 1980 hingga 2019. Hasil studi ini menunjukkan bahwa dalam jangka panjang, ditemukan variabel yang berkorelasi adalah PDB-Ekspor, GDP-Import, dan Impor-Ekspor. Sedangkan pada jangka pendek kami menemukan bahwa ekspor, impor, dan PDB tahun berjalan ditentukan oleh PDB tahun-tahun berikutnya. Berdasarkan temuan ini, kebijakan yang disarankan adalah Indonesia perlu berhati-hati dalam melaksanakan impor karena impor barang konsumsi hanya akan membuat neraca perdagangan menjadi lebih defisit. Kedua, berdasarkan temuan empiris yang menyatakan impor Indonesia akan memengaruhi ekspornya maka kami menyarankan Indonesia perlu melaksanakan strategi substitusi impor segera.

Kata kunci: perdagangan internasional; ekspor; impor; kausalitas granger; VECM.

Klasifikasi JEL: F17, F43, F47

INTRODUCTION

International trade provides many advantages for each country. Trade allows countries to consume some goods and services cheaper through imports, and also get some resources from other countries that are not available domestically. Meanwhile, it also allows a country to export goods or services generates foreign exchange, which can be used to finance imports and encourage the country

to increase output growth (economic growth). Some scholars believe that trade can make resources distribution more efficient and spread technology transfer. So, trade gives an opportunity for developing countries in achieving sustainable economic growth. Theoretically, it can be said that there is a positive correlation between trade and economic growth.

Generalization of the relationship between international trade and economic growth becomes something important to study in order to find the right strategy for conducting trade. By finding the right strategy for trading, the government is able to get benefit from international trade activities.

From 1982 to 2019, Indonesia's international trade fluctuated. On the other hand, Indonesia's economic growth is relatively constant. Even so, Indonesia is still able to generate positive foreign exchange reserves from international trade. This means that Indonesia still has the opportunity to get benefit from international trade.

There were many studies that attempted to empirically prove the relationship between export-import and economic growth Sreenu (2019), Saaed and Hussain (2015), Vyas (2020), and Kim (2018). On the other hand, the findings of these studies revealed different results or there is no clear directional relationship regarding the relationship between exports, imports, and GDP Hye (2012), Mangir (2012), (Islam et al., 2012), Hye et al. (2013), Saaed and Hussain (2015), Gossel and Biekpe (2014). In addition, previous studies have not integrated long-term and short-term relationships on each variable. Long-term and short-term analyzes of the variables of international trade and economic growth are needed to implement appropriate strategies for the

sustainable growth. Re-examining the relationship between exports, imports, and economic growth is needed to explain this gap, especially in Indonesia.

There are several studies in Indonesia that have explored the relationship between international trade and economic growth. Research conducted by Sutawijaya, (2010), using the OLS method, from 1980 to 2006 found that economic growth has a positive correlation with non-oil exports. In addition, Ginting (2017) tried to trace the relationship between exports and economic growth using the ECM method. The difference between this study and previous research is that this study seeks to determine the long-term and short-term relationship in international trade activities, not only exports but also imports to economic growth.

In addition, the difference in this study is that it uses long-term data from 1980 to 2018. This year's range allows capturing all phenomena and fluctuations of Indonesia's trade movements, both exports and imports. Moreover, the government began to implement an inward looking strategy in 1980 which aimed to protect the domestic industry (Asbiantari, 2016). With that assumption, there will be a change in the phenomenon of Indonesia's international trade in the long term. It is hoped that this research will be able to provide a stronger generalization in explaining the relationship between international trade and economic growth.



Source: World Bank (2020)

Figure 1. GDP, Export, and Import Growth

Study conducted by Belloumi and Alshehry (2020), Asbiantari (2016), Ee (2016), Giles and Williams (2000), Rana (2020), Tang et al. (2015) show relationship between exports and economic growth. The results prove empirically the hypothesis of export-led growth vice versa (except Hye, 2012). It means, this study proves that exports can cause growth as well as growth can cause exports. On the other hand, research conducted by Bashir et al., (2015) Shafiullah et al. (2017), Shirazi and Abdul Manap (2005), Khalafalla and Webb (2001), and Mangir (2012), explains that exports and growth do not have relationship in the short run. This finding at the same time rejects the hypothesis of growth led export in short run. In addition, Hye and Boubaker (2011) found the same finding in Tunisia. This various finding of study means there is gaps empirically in export and growth relationship.

However, previous study conducted by Ali et al. (2017) Hye (2012), Ashraf et al. (2011), and Hye and Boubaker (2011) found bidirectional between import and growth, consist of import led growth and growth led import. Therefore, previous study cannot explain the relationship between import and growth in the short run and long run.

The aim of this study is to re-examine the relationship between exports, imports, and growth in the short run and long run in Indonesia. Moreover, this study also tries to find the relationship between exports and imports. This is necessary to determine what kind of goods or services need to be exported or imported to support the achievement of accelerated growth.

LITERATURE REVIEW

For decades, economic growth is still relevant to discuss. Many scholars try to find and explore appropriate strategies to boost economic growth. Also, their research found various finding depend on their scope or limitation. It is proven that economic growth influenced by assorted variables. Starting with Ogundipe and Oluwatobi (2013) found that government spending has negative significant to economic growth. Different result revealed by LIN (1994) and Alexiou (2009), they found government spending has

positive significant to economic growth. Other studies give some explanation on economic growth dimensions. Akeju and Olanipekun (2014) unemployment have a positive correlation towards economic growth. On the other hand, Kreishan (2011) showed unemployment statistically insignificant with economic growth.

The various research topics above prove that economic growth has multi-dimension scope. In this study, we try to find another scope which is economic and international trade. There are many previous study which has different result in this limitation (Hye 2012, Pistorresi and Rinaldi 2012, Werner Kristjanpoller and Olson 2014).

Indonesia and International Trade Agreement

Trade is an essential activity to ensure sustainable production. Trade also made economic integration among the country. Adam Smith and David Ricardo stated that specializing in a product will encourage the output to maximal capacity. Furthermore, an endogenous theory also states that trade would impact the growth in two ways. There are improvement on investment and improvement on technology (Nguyen et al., 2019).

Indonesia has been joining several trade agreements and cooperation. The Government of Indonesia decided to join the WTO since the organization was first formed in 1995. Indonesia also associated with the ASEAN-China Free Trade Area (ACFTA) and officially joined in 2005. Indonesia's participation is based on several government policies in the international trade sector. By following this organization, the government expect that Indonesia can expand market access so that there is an integration between the national market and the global market (Firdaus, 2013; Kadarukmi, 2013; Lubis & Nuryanti, 2011; Sitanggang, 2017).

Indonesia was also incorporated by ASEAN-Korea Free Trade Area (AKFTA). This Free Trade Area involves ASEAN countries and South Korea. This agreement has Preferential treatment which is given to countries that are members of this agreement in the form of circular goods, services and investment. Moreover, under this

FTA Indonesia recorded a surplus trade balance US\$ 4.8 billion in 2010. This number increased by 43.1 percent compared to the 2009 (Setiawan, 2012).

Besides ACFTA and AKFTA, Indonesia is also associated with a Indonesia-Japan Economic Partnership Agreement (IJEPA) and Indonesia Pakistan Preferential Trade Agreement (IPPTA). Based on study conducted by Ningsih et al. (2018), these two FTA have different impact on Indonesia's trade balance. Ningsih et al. (2018) found that Indonesia recorded negative trade balance with Japan during the period of IJEPA. It means Indonesia has not utilized the export scheme under IJEPA optimally. In the other hand, Indonesia obtained positive impact in IPPTA with Pakistan. Indonesia's trade balance are growth against Pakistan and the number of firms which involve in this PTA have increased significantly.

Indonesia also has established the cooperation with Australia in Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA). CEPA is different from Free Trade Agreement. Not only eliminate trade barrier, CEPA also give more wider cooperation such as economic assistance, investment, renewable energy, and so on. This bilateral cooperation was already implemented in 2013-2018 (Rusmin et al., 2021).

Following the free trade area organization makes developing countries seem to be faced Double edged sword. On the one hand, developing countries are faced with the opportunity to get a wider market share. On the other hand, a country faced who involved in the trade needs to produce as effectively as possible. In this phase, not many developing countries are can do so. Sawit (2003) argues that international trade has three interrelated pillars. There are market access, domestic assistance, and export subsidies. It is irrelevant if a country only refers to market access if it wants to increase its trading volume. Nowadays, there is still a gap between developed and developing countries. The price level established in the international market no longer represents the level of efficiency of each country's production (Kadarukmi, 2013; Sawit, 2003).

Basuki (2020) and Sedyastuti (2018) found empirical evidence that the government's international trade policy does not negatively impact the Indonesian economy. However, not all sectors are ready to face trade openness such as small medium enterprises. Specifically, there are some weaknesses in technology, human resources, marketing knowledge and global networking in this sector. This fact shows that Indonesia still has the opportunity to gain from international trade activities. Therefore, many studies explore international trade extensively in Indonesia.

Export-Led Growth Hypothesis

Various study tried to confirm the Export led Growth Hypothesis (ELGH), but all of them hard to prove the same result Werner Kristjanpoller and Olson (2014), Guan and Hong (2012), Hye (2012), Mangir (2012), Pistoresi and Rinaldi (2012), Saaed and Hussain (2015), Hye and Boubaker (2011), and Medina-Smith (2001). Hye (2012) was conducted study in China. He employed the Phillips unit root test to test the level of integration and the autoregressive distributed lag (ARDL) was used to determine direct relationships, while the causal relationship was tested using the modified Granger causality test method. It found that there was a direct two-way relationship between economic growth and exports, economic growth and imports, as well as exports and imports in China.

Another research by Mangir (2012) empirically proved the relationship between exports and economic growth during the period 2002-2011. The method used in this research is the unit root test, cointegration test, Granger causality test. This research proves that in the short term there is a two-way relationship between exports and economic growth during the 2002-2011 period. In the long run, this study proves a one-way relationship between exports and economic growth.

Import-Led Growth Hypothesis

International trade provides some advantages for several countries in the term of consumption and production. It allows countries to consume some goods and services cheaper through imports and

enable the countries get some resources from other countries that are completely unavailable at their region. In other words, International trade increases efficiency in production by reallocation of resources, move the resources to better economic sectors which made the country has a comparative advantage.

According to Blanchard (2003) one factor that can determine import is income, where the quantity of goods will depend on the amount of country's income. If a country has a high income, then it will be able to afford to import more. This implies that higher national income will determine the country's purchasing power of goods and services from abroad. If the price of imported goods is high, then quantity demanded by importer will be lower, while lower price will result in higher quantity.

In a previous study, Ashraf et al. (2011) has tried to identify the import led growth hypothesis in Pakistan. This study uses chemical imports, machinery imports, food imports, and GDP. Moreover, the Granger causality test was used in this study. This research found a two-way relationship between imports of chemicals on economic growth and imports of machines on economic growth where food imports did not lead to economic growth and vice versa.

Islam et al. (2012) observed the relationship between imports and growth in 62 countries during 1971-2009. This study found a one-way relationship between imports and economic growth, except for the USA, Iceland, and Italy. Meanwhile, two-way relations are evident in several countries except Madagascar and Mauritania.

Import-Led Export Hypothesis

Some studies empirically found a link between import and export. Import and export relations can explain the condition of the international trade in a country. Hye (2012) and Hye and Boubaker (2011) using ARDL method found that there is a reciprocal relationship between imports and exports in China and Tunisia. The increasing of imports will be able to encourage exports and vice versa. Those are describe two conditions. First of all, if the change in imports is greater than exports,

then the country will get a deficit. Therefore, the management of the sustainability international trade deficit needs to be maintained. Secondly, if a country is able to adding value efficiently from imported goods and export it widely, then change in import is smaller than export, the country will get benefit from trade (Hye 2012; Hye & Boubaker, 2011).

This relationship between import and export also describes the cooperation between trading partners. In other words, to increase the export growth of a country, there is no need to rely on domestic raw materials goods only (Hye 2012; Mahadevan 2009). Understanding comparative advantages and implementing the right strategies, will increase exports through their imports. In the end, the reciprocal relationship between imports and exports are describes as a country that is ready to conduct an inward and outward-looking policy. In other words, this indicates the existence of two-way relationship, which is imports led export hypothesis and export led import hypothesis.

On the other side, in North Korea, Sato & Fukushige (2011) found causality from import to export without any corresponding with economic growth (import led export hypothesis). This case makes a country potentially have a deficit in international trade. This is because a country needs to import first, to make their export. In addition, Mahadevan (2009) explains that togetherness of import and export movement is describes the existence of intra industry trade. Intra industry defines as the exchange of similar product in the same industry. This applied in international trade, where the same type of goods are imported and exported. He said that Singapura could accelerate their trade in ASEAN by applying a common effective preferential tariff scheme which was implemented in ASEAN Free Trade Area in 2003.

RESEARCH METHOD

This research uses the Gross Domestic Product (GDP), export and import as the components of international trading. All variables in this research were gathered from the World Bank in the form of constant prices in Indonesian rupiah. Data used for this research were based from year 1982 to 2019.

This research employed the vector autoregression (VAR) analysis to examine both the short-term and long-term correlation between each variables. We also applied vector error correction model (VECM) and Granger Causality. VECM test was used to understand the short-term correlation between each variable by controlling the existing errors (error correction). The Granger Causality test was used to determine the course of variable correlation in long-term. In order to fulfill the VAR analysis assumption, this research used augmented Dickey-Fuller (ADF)-test for stationary test and Johansen Cointegration Test for cointegration test (Ali et al. 2017, Ashraf et al. 2011)..

Basically, VAR analysis provides an unimpeded path for each variable to move on its course. Which means a variable may become a dependent or independent at different time or conditions. Based on that logic, the modeling of this research is

$$Y_t = \alpha_0 + \sum_{i=1}^n X_{t-1} + \sum_{i=1}^n M_{t-1} + \sum_{i=1}^n Y_{t-1} + \varepsilon_{1t} \quad (1)$$

The equation above can be re-adjusted by referring to VAR principles which declares that all variables can change to dependent variables. Therefore, the short-term equation can be modified to:

$$\Delta Y_t = \alpha ECM_0 + \sum_{i=1}^n r_i \Delta Y_{t-1} + \sum_{i=1}^n X_{t-1} + \sum_{i=1}^n M_{t-1} \mu_{1t} \quad (2)$$

The equation above represents that Y_t is a symbol of economic growth (GDP), $X_{(t-1)}$ is a set of time series from the export in the first difference, $M_{(t-1)}$ is a set of time series of import in the first difference, $Y_{(t-1)}$ is a set of time series of economic growth (GDP) which happened in the first difference, while $ECM_{(t-1)}$ is an error correction which can be used to see the short-term correlation.

RESULTS AND DISCUSSION

Based on the Table 1, results of stationary test analysis show that GDP variables, exports, and imports have the probability value of 1.0000, 0.9934, and 0.9875 respectively. This means that stationary data has not achieved at the level variables.

Based on table 1, the stationary data has not achieved in level. Moreover, the data is stationer in first difference. The ADF T statistic result for GDP, export, and import is -2.96, -6.75, and -5.25 respectively. This value is greater than t statistic which is -2.94. Furthermore, GDP, exports, and imports probability is stationer in -0.0488, 0.0000, 0.0001 respectively. The probability value is smaller than 0,05. It means that all variables were stationary on the first difference.

Cointegration Test (long-term correlation)

Based on the Table 2, Johansen Cointegration Test analysis, results indicated that trace test cointegration yielded a p-value of, consecutively,

Table 1. ADF Stationarity test Result

Variable	T Statistik		Probabilitas	
	Level	1's Difference	Level	1's Difference
GDP	4.945230	-2.956917*	1.0000	0.0488**
Eskpor	0.837602	-6.747495*	0.9934	0.0000**
Impor	0.362538	-5.254671	0.9785	0.0001

Source: Eviews, 2020

Notes:

*) T statistic significant at -2.94 (T table) **) P- value Significant at 0.05

Table 2. Johansen Cointegration Test Result

	Hypothesized No. of CE(s)	P - value
Unrestricted Cointegration Rank Test (Trace Test)	None *	0.0011**
	At most 1 *	0.0061**
	At most 2	0.6780
Unrestricted Cointegration Rank Test (Maximum Eigenvalue Test)	None *	0.0417**
	At most 1 *	0.0039**
	At most 2	0.6780

Source: Eviews, 2020

Notes:

*) T statistic significant at -2.94 (T table) **) P- value Significant at 0.05

0.0011, 0.0061, and 0.6780, where two of the p-values is smaller than significance value of 0.05. Based on that results, it can be concluded that trace test cointegration provided at least two cointegration equation. While on the maximum eigenvalue test, p-value observed are 0.0417, 0.0039, and 0.6780, with two p-values less than 0.005. It can also be concluded that maximum eigenvalue test provides two cointegration equation. Therefore, based on the cointegration test, it is evident that GDP, exports, and imports have a long-term correlation or balance.

Results Analysis

VECM modeling in this research is used to understand the long and short-term correlation of each variable. Table 3 represents the long run correlation. Based on the statistic result, GDP has long run correlation between dexport (-1) and dimport (-1) with t statistic value -4.35 and 4.97 respectively. This t statistic value is greater than

t table value which is -2.94. It means, in the long run GDP has correlation with export and import. Based on statistic result, if export rise 1% then cause GDP down by 80%. Furthermore, if import rise 1% then cause GDP rise 63%.

Table 4 represents the short-term correlation from VAR model with the first difference used. Based on the table below reveal the statistical result in short-term, if take a look at cointegration equation 1, we found only variable GDP as a Variable dependent which have correlation with GDP with lag 1 (dgdp-1) and import with lag 1 (dimport-1). GDP significantly caused by D(GDP(-1)) with t-statistic value of 2.64264. Also, statistical result shows if GDP in last year rise 1 % will affect GDP in recent years risen by 0.5%. Then the result showed GDP was also affected by imports with lag 1 (dimports-1). The t statistical result shows significantly at 10%. The coefficient shows if imports last year rise by 1 % will affect GDP in recent years to decline by 0.7%.

Table 3. VECM Result for Long Run Correlation

Cointegrating Eq:	CointEq1
DGDP(-1)	1.000000
DEKSPOR(-1)	-80.19731 (18.4398) [-4.34913]*
DIMPOR(-1)	63.95039 (12.8721) [4.96814]*
C	1.27E+11

Source: Eviews (2020)

Table 4. VECM Result for Short Run Correlation

Error Correction	Variable Dependen			
	D(GDP)	D(EKSPOR)	D(IMPOR)	
CointEq1	{-0.005636} [-2.36978]*	{0.001831} [1.37722]	{0.004511} [2.75156]	
Variable Independen	D(GDP(-1))	{0.501138} [2.64264]*	{0.434683} [4.10133]*	{0.641400} [4.90637]*
	D(EKSPOR(-1))	{0.710228} [1.20603]	{-0.276158} [-0.83905]	{0.144188} [0.35517]
	D(IMPOR(-1))	{-0.788973} [-1.62892]*	{0.047542} [0.17562]	{-0.249345} [-0.74677]

Source: Eviews (2020)

Note:

{ } : parameter coefficient

[] : T Statistic's

*) T Statistic's Signifikan at T table (2.036 if probability 5% and 1.6 if probability 10%)

Granger Causality Test

Based on the analysis results in Table 5, it is known that D(Exports) has no correlations with D(GDP) because the F-statistic is 0.01485, which is less than F-table of 3.275898. While D(GDP) correlates with D(Exports) because F-statistic of 17.4057, which is larger than F-table of 3.275898. These findings indicated that correlation between exports and GDP in Indonesia is only affected by one thing, which is the GDP.

For imports, D(Imports) have no correlation with D(GDP) because F-statistic of 1.24128 is less than F-table of 3.275898. While the D(GDP) correlates with D(Imports), refers to the value of F-statistic is larger than F-table. Like the

correlation between exports and GDP, these results also indicated that the only thing affecting imports in Indonesia is its GDP.

Furthermore, D(Imports) correlate with D(Exports) because F-statistic of 3.59928 is more than F-table of 3.275898. While D(Exports) and D(Imports) have no correlation according the F-statistic is 1.58192, which is less than F-table of 3.275898. These findings indicated that imports in Indonesia is affecting its own exports.

Impuls Respons Test

In the first equation, it shows that if a shock occurs in exports, it causes GDP to increase in Indonesia. Meanwhile, the import side, if there is a shock on

Table 5. Granger Causality test Result

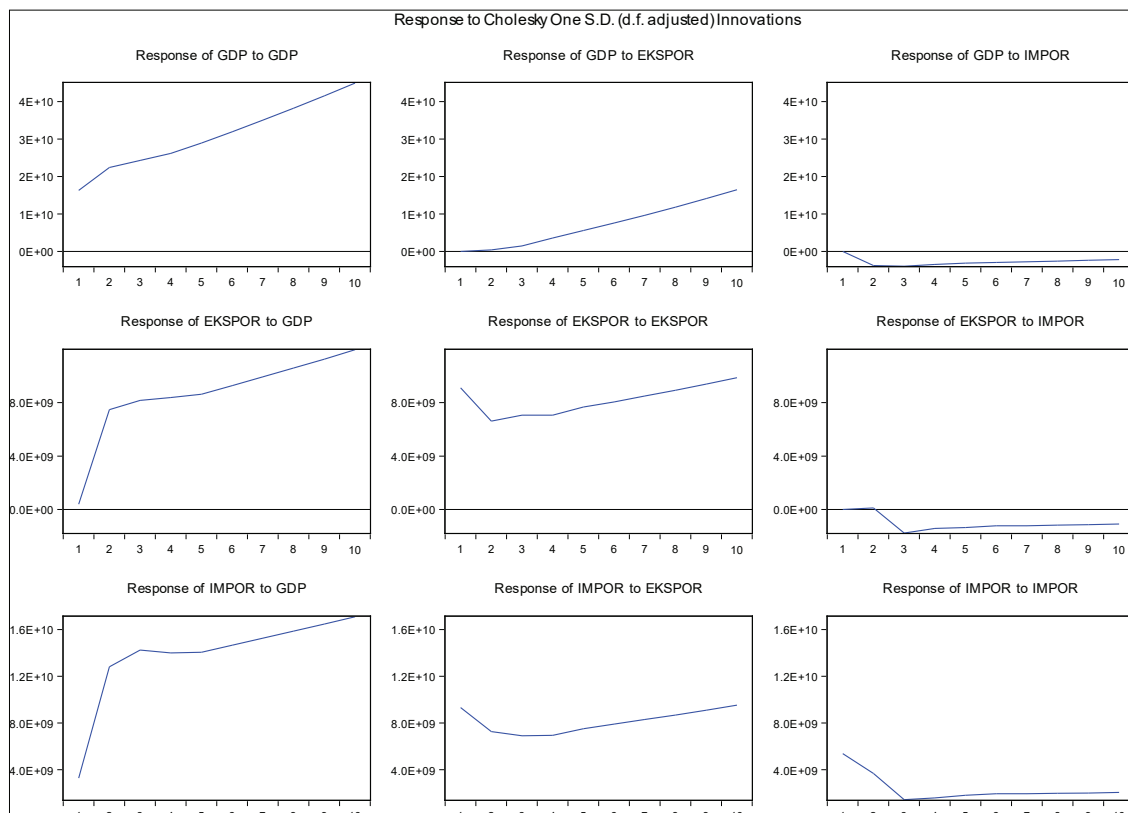
Null Hypothesis:	Obs	F-Statistic	Prob.
DEKSPOR does not Granger Cause DGDP	36	0.01485	0.9038
DGDP does not Granger Cause DEKSPOR		17.4057*	0.0002**
DIMPOR does not Granger Cause DGDP	36	1.24128	0.2733
DGDP does not Granger Cause DIMPOR		15.8228*	0.0004**
DIMPOR does not Granger Cause DEKSPOR	36	3.59928*	0.0666**
DEKSPOR does not Granger Cause DIMPOR		1.58192	0.2173

Source: eviews (2020)

Note:

*) F statistic significant at 3.275898 (F table)

**) P-value significant at 0.05



Source: Eviews (2020)

Figure 2. Impuls Respon Test

the import side, it will reduce GDP in Indonesia. In the second equation, if there is a shock to Indonesia's GDP, exports will soar. On the other hand, on the import side, if Indonesia's imports experience a shock, it will cause export activity to decline. Last equation, If GDP gives a shock, it will cause imports to increase. In addition, if exports experience a shock, the import response will decline for the first three years, then tend to increase in the fourth year, and so on.

Varian Decomposition Test Result

Based on the results of the variance decomposition test above, the variance in GDP is more likely to be influenced by itself from the first period to the tenth period. Meanwhile, in the export variance, this export variance is more likely to be explained by the GDP variable. The highest export variance value described by the GDP Variable was in the tenth period, which was 54.3 percent. On the import side, the entire period of import variance

Table 6. Varian decomposition test

Variance Decomposition of GDP:				
Period	S.E.	GDP	EKSPOR	IMPOR
1	1.63E+10	100.0000	0.000000	0.000000
2	2.80E+10	98.14649	0.022140	1.831371
3	3.73E+10	97.69143	0.166665	2.141904
4	4.58E+10	97.27297	0.720769	2.006262
5	5.46E+10	96.70591	1.549864	1.744225
6	6.38E+10	95.95274	2.552438	1.494819
7	7.35E+10	95.07716	3.651362	1.271476
8	8.37E+10	94.11345	4.810297	1.076251
9	9.45E+10	93.09872	5.993650	0.907626
10	1.06E+11	92.06107	7.175254	0.763680

Variance Decomposition of EKSPOR:				
Period	S.E.	GDP	EKSPOR	IMPOR
1	9.12E+09	0.191800	99.80820	0.000000
2	1.35E+10	30.63271	69.36068	0.006612
3	1.74E+10	40.57686	58.40086	1.022277
4	2.06E+10	45.45520	53.33916	1.205637
5	2.36E+10	47.78245	50.97844	1.239113
6	2.67E+10	49.64394	49.17278	1.183284
7	2.97E+10	51.12318	47.75707	1.119752
8	3.28E+10	52.36503	46.58772	1.047252
9	3.59E+10	53.41167	45.61630	0.972032
10	3.92E+10	54.32315	44.78050	0.896352

Variance Decomposition of IMPOR:				
Period	S.E.	GDP	EKSPOR	IMPOR
1	1.12E+10	8.429539	68.82053	22.74993
2	1.89E+10	48.96538	39.20012	11.83450
3	2.47E+10	61.98569	30.75849	7.255819
4	2.93E+10	67.01355	27.52966	5.456793
5	3.34E+10	69.28379	26.23074	4.485478
6	3.73E+10	70.72948	25.42209	3.848439
7	4.12E+10	71.73351	24.89040	3.376095
8	4.51E+10	72.44781	24.53726	3.014929
9	4.89E+10	72.95153	24.31857	2.729894
10	5.27E+10	73.31011	24.19121	2.498678

Cholesky Ordering: GDP EKSPOR IMPOR

Source: Eviews (2020)

is also explained by the GDP variable. The highest value in period 10 which states that 73.3 percent of the GDP variable explains the variance of imports in Indonesia.

Analysis of Data

Correlation between Exports and Economic Growth

The empirical result of GDP to export confirmed that a country should not be too hasty to engage in international trade. A country needs to focus on fulfilling its own domestic needs (household consumption, gross investment, and government consumption) before preparing for exports. If the output has been absorbed by domestic market and still in excess, then the country can drive the output to the global market (export).

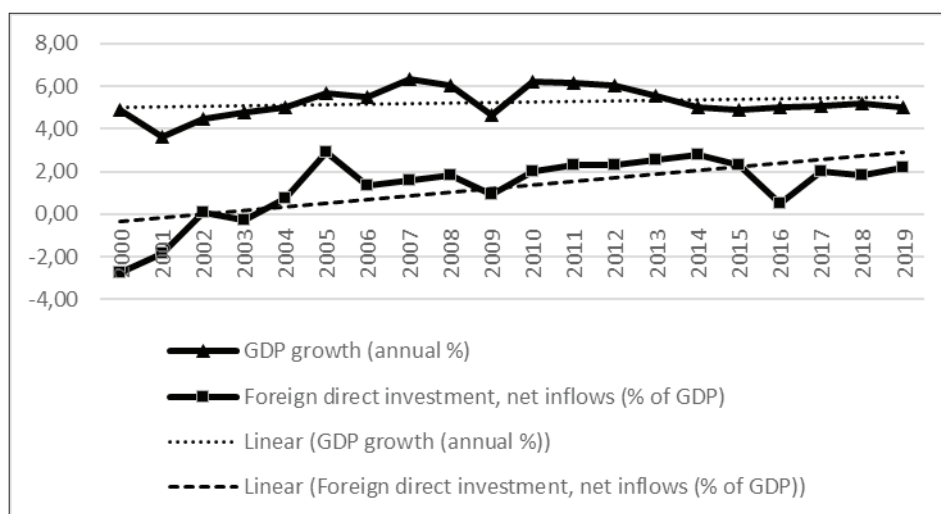
Relation GDP to export also confirmed that industrial sectors in Indonesia have already started to develop. As stated by Andrzej (2018), FDI could increase the production capacity of domestic companies and it will have a positive impact on output growth. Increasing in output will accelerate exports. Foreign direct investment also making possibility for Indonesia to acquire advanced technology and machinery to increase production capacity. Moreover, increase in production capacity will trigger an increase in export. GDP growth and developing domestic markets will stimulate the companies to increase their production. With transfers of technology, every company will also be able to increase the comparative advantage of its product. These provide Indonesia with opportunities to engage

in global market, as well as pushing the growth of domestic output further, potentially creating more exports (Nain & Ahmad, 2010; Pistorosi & Rinaldi, 2012).

Correlation Between Imports and Economic Growth

Findings in this research show that Indonesia needed an increase in goods and services through imports. However, these imports do not always mean a final product. An increase of imports in raw materials are also important to increase domestic productivity. In other words, imports do not always mean a waste of foreign exchange reserves. Furthermore, the governments also need to develop industries that create a substitute for imported goods. All this steps are necessary for a developing country like Indonesia to achieve an independent economy (Guan & Hong, 2012; Mahadevan & Suardi, 2008; Sato & Fukushige, 2011).

Imports play two important roles in economy. First, imports can be a necessary way of trading to satisfy domestic consumption. These imports will provide a necessary amount of goods or services in a place where such products are scarce, which potentially increase the price of domestic goods. With enough number of products, prices will be stabilized and an efficient economy will return. Second is imports as a way to push economic growth. This can be achieved if a country imported additional components for raw materials. Those components were



Source: World Bank (2020)

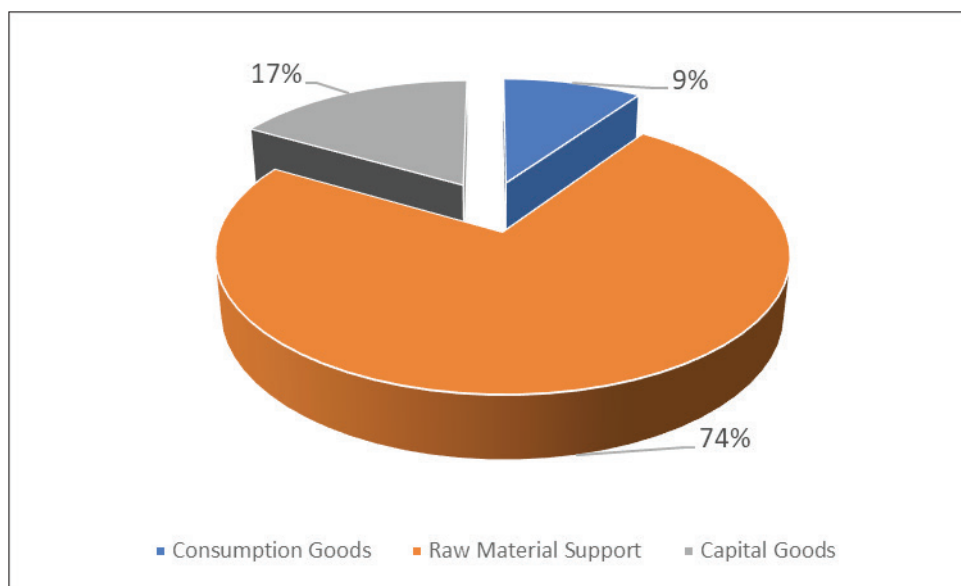
Figure 3. GDP Growth and Foreign Direct Investment (FDI)

bought to ensure the production of outputs in the country will continue.

On the other hand, a decision to import goods is not always an easy one. There are many considerations that need to be made in order to place an import, such as availability of foreign exchange reserves, existing industrial structures, political conditions, and many more. Foreign exchange reserves are important because of its utility to support the growth of economy. A scheme to import additional components is based on the import of raw materials, which will help in increasing a GDP of a country. Therefore, importing a

consumption goods with debts is an improper action (Ashraf et al., 2011).

Based on figure 4, the proportion of imports in Indonesia follows raw materials support 74%, capital goods 17%, and consumption goods 9%. Additionally, Indonesia’s consumption import reached 16.4 billion US dollars. This value is smaller than imports of raw materials for stone and imports of Indonesian capital materials. Imports of Indonesian raw materials are 126.4 billion US Dollars. Imports of raw materials are dominated by imports of industrial raw materials amounting to 48.6 billion US dollars. On the other hand, imports of Indonesian capital materials amounted



Source: Ministry of trade (2020)

Figure 4. Proportion of Indonesian Imports by category of goods in 2019

Table 7. Indonesian Import in 2019

Month	Consumption Goods	Raw Material Support	Capital Goods
January	1,220.90	11,427.48	2,356.81
February	1,027.76	9,224.29	2,213.02
March	1,169.46	10,350.06	2,227.11
April	1,460.22	11,570.70	2,368.27
May	1,553.19	10,730.75	2,322.72
June	1,029.77	8,736.16	1,729.46
July	1,465.60	11,272.83	2,780.05
August	1,363.84	10,329.97	2,475.55
September	1,407.53	10,261.50	2,594.42
October	1,436.11	10,881.07	2,441.90
November	1,667.81	11,167.80	2,504.87
December	1,651.85	10,402.95	2,451.98
Total	16,45.04	126,35.56	28,46.16

Source: Ministry of trade (2020)

to 28.5 billion US dollars. Capital goods imports are also dominated by capital goods except for transportation equipment with an import value of 25.8 billion US dollars. This shows that the raw materials and capital of the domestic industry still have a dependence on foreign countries.

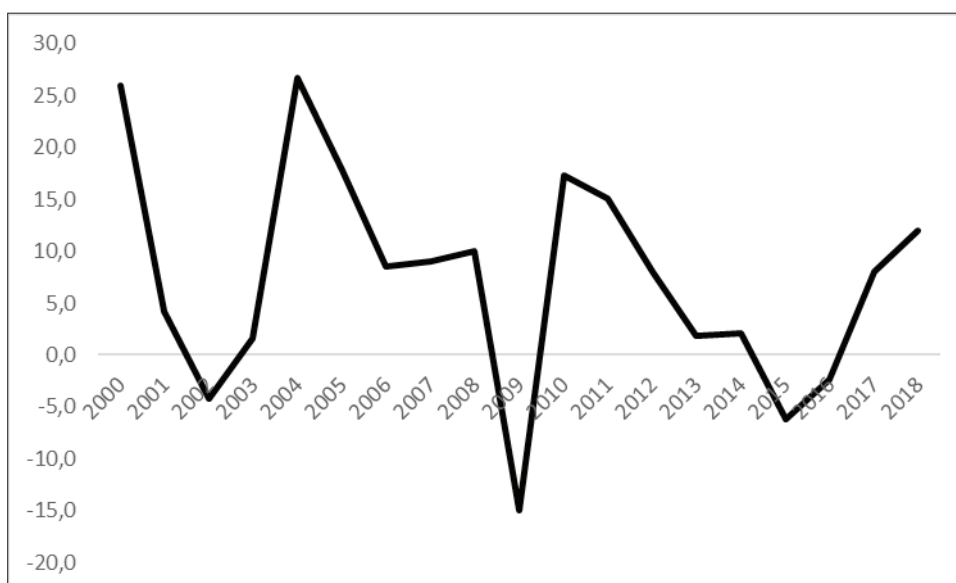
Correlation Between Imports and Export

Based on the Figure 5, Indonesia's import growth was fluctuate extremely. This indicates that Indonesia's import still depends on some countries. This fact is confirmed by a study conducted by Atmadji (2004) who found that Indonesia needs partners to import some goods. Based on this, Atmadji (2004) suggested that Indonesia needs to prepare the domestic industry with import substitution (inward looking strategy) in order to achieve economic autonomy. Inward looking strategy seems to be a contradiction to the theoretical framework developed by Adam Smith and David Ricardo which states that countries need to specialize in trade. However, this policy is carried out to support and protect the domestic industry so that it does not have dependence on other countries. Susanti and Sholeh (2020) stated that this strategy is a strategy aimed at strengthening the domestic sector to find substitute goods

Involvement in international markets gives Indonesia the opportunity to contribute to the global value chain (GVC). GVC is

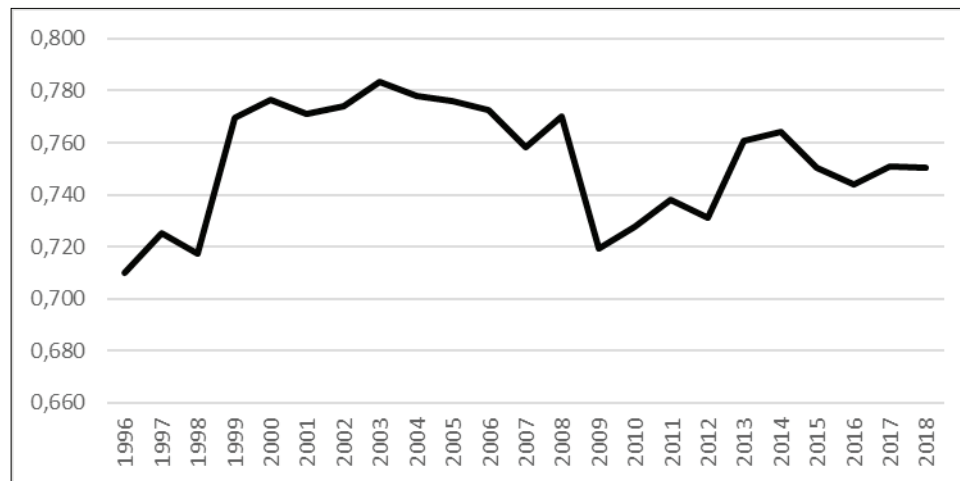
a phenomenon which each country has a contribution in distributing raw materials, intermediate products, or final goods. According to Ingot and Laksani (2019), Indonesia's role in GVC is still dominated by the supply of raw materials. In addition, Indonesia's involvement in GVC still uses low technology. Indonesia's weak GVC involvement occurs in several sectors, Nurdiati et al. (2018) finds that Indonesia has weak GVC involvement in the electricity sector. Indonesia's market share in this sector is included in the weak category. Finally, the electricity sector provides little added value. In the textile sector, Sudhana (2017) finds that the average participation rate of the textile industry shows a value of 2.6. This value is relatively low when compared to Vietnam and Cambodia. This is because the production machines owned by the domestic industry are old.

This study is also confirmed by Sato and Fukushige (2011) and Mahadevan (2009) study. Our empirical result confirms import led export, while not vice versa. Although sustainable trade deficit does not always exist in Indonesia. This indicates Indonesia's import growth is not associated with economic growth. This finding shows that Indonesia prefers to import intermediate goods rather than final goods.



Source: Indonesia Central Bureau of Statistics (2020)

Figure 5. Indonesia Imports Growth



Source: Indonesia Central Bureau of Statistics (2020)

Figure 6. Proportion of Import of intermediate goods to total import

Based on the picture above, the proportion of intermediate goods import by total imports, consistently has more than 70 percent. Unfortunately, during this research period, Indonesia's imports can't be following by economic growth (reject import led growth hypothesis). Since the 1990s, the patterns of Indonesia's import have changed from final goods to imports of intermediate goods. Another study conducted by Nizar and Wibowo (2007) found that there was import and export activity moving together between Indonesia and Asia. This fact describes that high level intra-industry between Indonesia and other trading partners in Asia (Mahadevan, 2009; Nizar & Wibowo, 2007). This phenomenon indicates that Indonesia has already in the ready phase of implementing import subsidy policy (inward looking strategy) and export promotion (outward looking strategy).

Of course, the application of import substitution policy is not only goods that will enter the domestic industry, but also it will let the transfer of technology come in the country. Besides technology transfer, the readiness of other resources such as people/labor and capital will help accelerate the economic (Tambunan, 2008).

CONCLUSION AND RECOMMENDATION

Based on this research findings, we found GDP to export, which approves growth led exports hypothesis and also single correlation GDP to imports, which approves the growth led import

hypothesis. It means that Indonesia output growth will lead to export. In the case of imports, prove that increase in national income will support imports. Imports have two implications on the economy. On one hand, importing on capital and raw materials could positively affect the economy. On the other hand, import on consumption goods is a sure way to deplete its own foreign exchange reserves. In other words, Indonesia should careful manage its imports.

For the implication of our result, we suggest Indonesia should run substitution import strategy gradually. Because based on our empirical found, importing intermediate goods can increase our export. Imports substitute strategy will make Indonesia able to create or recreate its own goods through imports. However, it is also needs to fully support with adequate infrastructure. This is important to increasing output productivity.

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