CURRENT ADVANCED RESEARCH ON SHARIA FINANCE AND ECONOMIC WORLDWIDE
(CASHFLOW)
Volume 2 Issue 1 (2022)

EFFECT OF EXPORTS, IMPORTS OF OIL AND GAS PRODUCTS, INFLATION, ON ECONOMIC GROWTH

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Abstract

This study aims to analyze the effect of oil and gas exports, oil and gas imports, and inflation on Indonesia's economic growth. This study employs secondary data, which consists of information retrieved or compiled by researchers from preexisting sources. The method used to analyze the relationship between endogenous and exogenous variables is a dynamic model with Vector Error Correction Approach Model (VECM). The findings revealed that in the long term and short term show that the Export of Oil and Gas Products has a positive effect on Indonesia's Economic Growth. In the long term and in the short term, imports of oil and gas negatively affect Indonesia's economic growth. Likewise, in the long term and short term, inflation negatively affects Indonesia's economic growth.

Keywords: *Economic Growth, Exports of Oil and Gas Products, Imports of Oil and Gas Products, Inflation*

1. INTRODUCTION

Economic growth was defined by the difference between one year's gross domestic product and the previous year's, and it was one of the most important indicators for measuring the economic development of a country (Larasati & Sulasmiyati, 2018). The growth in national revenue was expected to boost employment prospects. As a result of its successes in economic development, this was emphasized that Indonesia would be able to increase economic growth. According to Todaro (2013), economic growth was the increase in a country's long-term ability to supply a variety of economic products to its population. High economic growth is indicative of a robust economy. As a result, economists in middle-income, developing, and industrialized countries have paid considerable attention to the topic of economic growth. An open economic system can impact the economic progress of a nation. Export is one factor that contributes to economic growth.

Export refers to the sale of goods overseas under quality, quantity, and other terms of sale that have been agreed upon by the exporter and the importer. In general, exporting was the act of withdrawing goods/commodities from a country in order to import them into other ones. Large-scale exports of goods typically necessitate the involvement of the customs departments of both the sending and receiving countries. Oil exports comprise one of the largest export sources (Ulfa & Andriyani, 2019). Indonesia's primary export product was petroleum. This circumstance makes the Indonesian economy extremely sensitive to fluctuations in oil and gas prices on the global market.

Imports were carried out by Pertamina as the government agency responsible for purchasing and maintaining the availability of subsidized fuel, especially

gasoline/premium with a Research Octane Number (RON) specification, which was the largest contributor to the demand for fuel oil availability.

According to Lerner Gunawan (1991), inflation was a condition where there was excess demand for goods and services as a whole. Meanwhile, according to Sukirno (2002), inflation refers to a process of increasing prices that apply generally in an economy. Meanwhile, Mankiw (2000) states that inflation was an increase in the entire price level. In almost all countries, it is the duty of the central bank to keep inflation low and stable. A low and stable inflation rate will create the expected economic growth, expand employment opportunities, and provide goods and services to meet people's needs.

An inflation rate that is low and consistent will stimulate economic expansion. A controlled inflation rate will boost the earnings of entrepreneurs, increased profits will promote future investment, and accelerated economic expansion will ultimately result. In contrast, a high inflation rate will have a negative effect on the economy, which might subsequently destabilize social and political stability. Negative effects on the economy include lowering investor enthusiasm, not creating economic growth, worsening income distribution, and diminishing the purchasing power of individuals. Therefore, it is vital to work to prevent the economic ailment from impeding the development process. Exports of oil and gas products, imports of oil and gas, inflation, and economic growth for the period 1993 to 2021 are presented in Table 1.

Table 1. Exports of oil and gas products, imports of oil and gas, and inflation and economic growth for the period 1993-2021

Year	Export oil and gas	Import oil and gas	Inflation	Growth Economy
1993	9745,9	2170,5	9,77	6,50%
1994	9693,6	2367,2	9,24	7,54%
1995	10464,5	2910,8	8,64	8,22%
1996	11722	3589,7	6,47	7,82%
1997	11622,6	3589,7	11,05	4,70%
1998	7872,1	2653,7	77,63	-13,13%
1999	9792,3	2653,7	2,01	0,79%
2000	14366,6	6019,5	9,35	4,92%
2001	12621,6	5471,8	12,55	3,64%
2002	12135,9	6525,8	10,03	4,50%
2003	13643,7	7610,9	5,06	4,78%
2004	15645,3	11732	6,4	5,03%

2005	19231,5	17457,7	17,11	5,69%
2006	21209,4	18962,9	6,6	5,50%
2007	22088,6	21932,8	6,59	6,35%
2008	29126,2	30552,9	11,06	6,01%
2009	19018,3	18980,7	2,78	4,63%
2010	28039,6	27412,7	6,96	6,22%
2011	41477	40701,6	3,79	6,17%
2012	36977,3	42564,4	4,3	6,03%
2013	32633,2	45266,4	8,38	5,56%
2014	30018,8	43459,9	8,36	5,01%
2015	18574,4	24613,1	3,35	4,88%
2016	13105,5	18739,4	3,02	5,03%
2017	15744,4	24316,2	3,61	5,07%
2018	17171,7	29868,8	3,13	5,17%
2019	11789,3	21885,3	2,72	4,97%
2020	8251,1	14256,8	1,68	-2,01%
2021	12275,6	25529,1	1,87	3,69%

The table above shows fluctuations in exports of oil and gas products, imports of oil and gas, inflation, and economic growth in Indonesia. Export-import activities and inflation will basically affect the increase in economic growth in a region. Previous research conducted by Mustika et al. (2015) concluded that the value of Indonesia's oil and gas exports has a significant and positive effect on the country's economic growth. Indonesia's oil and gas imports likewise had a significant positive impact on the country's economic growth, demonstrating the similar pattern. Furthermore, Atmaja & Hidayat (2016) demonstrates that oil and gas imports have a significant impact on economic growth.

Exports and imports contributted in the economic activities of a country. In 1974 Indonesia was the largest oil exporting country. The existence of export activities of oil and gas products, the government earns income and increases the economic growth of a country. The more exports of oil and gas, the foreign exchange of the country increases and the foreign exchange rate is unstable, therefore exports cause a country to receive foreign currency and on the other hand imports must be paid for in foreign currency. The transaction will be recorded by the Central Bank and the value is shown in the balance of payments.

If a country exports more than it imports, that country will experience an increase in economic growth. Imports that are too large if not balanced with exports, foreign

exchange reserves will be depleted and the currency will weaken resulting in inflation. Hence, if the dollar is getting higher and then there is an unstable rupiah exchange rate, this will certainly have an impact on the downturn of the economy in a country. So the government tries to increase foreign debt. If the foreign debt increases, it will cause inflation and dependency on imports will also continue to cause the value of the movement of the rupiah and the health of the state's finances to be threatened. Other adverse impacts will exacerbate economic conditions, especially in the oil and gas sector.

However, economic growth itself is not only influenced by exports, imports can also affect economic growth. Hence, this study intends to investigate the relationship between oil and gas exports and imports, as well as inflation, in terms of their impact on Indonesia's overall economic growth.

2. LITERATURE REVIEW

2.1. Economic Growth

According to Arza & Murtala (2021), economic growth is the development of economic activities that leads to an increase in the quantity of goods and services produced in a society and the prosperity of that society. Economic growth indicates the amount to which economic activity will provide greater income for a community within a given time frame (Basri & Munandar, 2010).

According to Arza & Murtala (2021), economic growth is the process of gradually increasing per capita output through time. The focus is on three aspects: the process, output per capita, and long-term outlook. Economic growth is a process, not an instantaneous picture of the economy. The economy is a process of long-term per capita output growth that occurs when there is an increase in output caused by the economy's own internal processes and is transient in nature.

According to Arza & Murtala (2021), economic growth is the attempt to enhance production capacity in order to raise output, which is measured by Gross Domestic Product (GDP) and Gross Regional Domestic Product (GRDP) in a region.

According to Todaro (2013), economic growth is the increase in a country's long-term ability to supply a variety of economic products to its population. According to (Arza & Murtala, 2021), economic growth is a long-term rise in a nation's ability to deliver diverse economic benefits to its citizens.

In the meantime, Arza & Murtala (2021) define economic growth as the process of increasing per capita output through time. The focus is on three factors: process, per capita output, and the long term. Growth of the economy is a process, not a snapshot in time.

2.2. Export

According to Anggi (2019) export is the activity of removing goods from the Customs area. From this understanding, it can be explained again regarding export goods and customs areas. The customs area is the entire territory of the Indonesian state, starting from land, sea and air as well as certain areas determined from the exclusive economic zone and the continental shelf in which the provisions of the Law that have been stipulated apply. As for export goods are goods issued from the customs area.

According to Anggi (2019) based on this explanation, goods are said to have been exported if the goods have been transported outside the customs area boundary, but from

a service and security perspective it is impossible to place customs and excise officials along the border line to provide services and supervise goods export. Then the assumption arises in the law (fiction) which states that goods that have been loaded in the means of transport to be removed from the customs area are considered to have been exported and required as export goods (article 2 paragraph 2 of the Customs Law). What is meant by means of transportation, namely any land, sea or air vehicle used to transport export goods. While what is intended is loaded, a customs notification is submitted including the fulfillment of export duties. Even though the goods have been loaded on the means of transport that will leave the customs area, if the goods are unloaded inside the customs area by submitting a customs notification then these goods cannot be considered as export goods.

According to Anggi (2019) export is trade by removing goods from inside out of the Customs area of a country to another country by fulfilling the applicable provisions. Further, Anggi (2019) emphasized that notification of Export of Goods is stipulated with the code BC 3.0 and can be submitted in written form on a form or in the form of electronic data.

According to article 1 of the Decree of the Directorate General of Customs and Excise no. KEP/151 of 2003, exports are items produced inside the Indonesian Customs territory for importation into or exportation from other countries. According to Customs Law No. 17 of 2006, export is the removal of commodities from within to outside customs.

2.3. Import

According to Amir (2013), import is the economic activity of purchasing foreign goods for domestic use or marketing. In international trade statistics, imports are the same as commerce, which is defined as the entry of foreign goods into Indonesian customs area in accordance with applicable regulations.

Santoso & Hamdani (2007), import is the shipment of merchandise from abroad to ports throughout the territory of Indonesia except for free areas that are considered overseas, which are commercial or non-commercial in nature. Foreign goods that are processed and repaired in the country are recorded as imported goods even though the goods will return to the country

Purnawati & Fatmawati (2013), Import is the act of purchasing foreign items in compliance with government laws and using foreign currency for payment. The ability to manufacture goods that are competitive with foreign products determines imports. Therefore, the value of imports relies on the national economic level of the country. Imports are more the higher the national income and the poorer the ability to create particular items.

In Customs Law No. 10 of 1995, import is defined as the introduction of commodities into the customs zone. In other words, import activities involve bringing foreign items into the country.

2.4. Inflation

According to AP Lehner, the common definition of inflation in the early post-World War II period was a situation in which there was an excess demand for products in the economy as a whole (Gunawan, 1991). According to Boediono (1993), inflation is the propensity for prices to rise constantly and generally.

FW Paish, meantime, defines inflation as a circumstance in which national revenue rises substantially faster than the increase in commodities and services provided by an economy (Gunawan, 1991).

2.5. Conceptual Framework

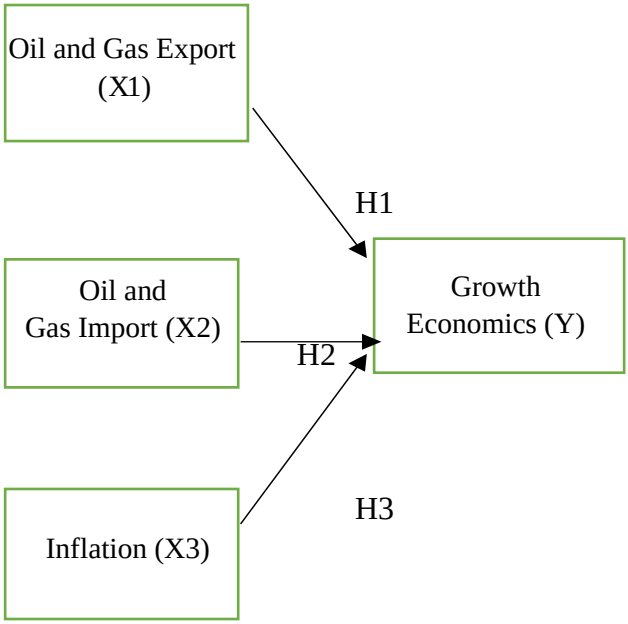

Figure 1. Conceptual Framework

2.6. Conceptual Framework

The conceptual framework covers the independent variable and the dependent variable, specifically the influence of oil and gas product exports (X1), oil and gas imports (X2), and inflation (X3) on economic growth (Y), which will be assessed simultaneously with the F test and partially with the t test.

3. RESEARCH METHODS

This study utilizes quantitative secondary data presented as time series. The data covers the years 1993 through 2021 and includes information on Indonesia's economic development, exports of Indonesian oil and gas products, imports of Indonesian oil and gas, and inflation. The source of the data is the official website of the Central Bureau of Statistics of Indonesia. Economic Growth is the development of economic activity that increases the affluence of the Indonesian people annually between 1993 and 2021. The Central Bureau of Statistics' website (https://www.bps.go) contains information regarding economic growth. During the years 1993 to 2021, export is the activity of transporting goods or commodities from Indonesia to other nations. The official website of the Central Bureau of Statistics (https://www.bps.go) contains export data. Import is the legal purchase of foreign goods/services or commodities into Indonesia through a commercial

process. The Central Bureau of Statistics' website (https://www.bps.go) provides the yearly average of oil and gas imports from 1993 to 2021, which is used to calculate import data. In addition, inflation is a process of continuously rising prices that influences each other and is documented annually by the Indonesian Central Bureau of Statistics (https://www.bps.go.) from 1993 to 2021.

3.1. Operational Definition

Variables The variables used in this study consist of three independent variables and one dependent variable.

1) Economic Development (Y), Economic growth is the continuous improvement of a nation's economic conditions over a specific time period. Growth in the economy is measured in percent.
2) Export of Oil and Gas Products (X1), Export of Oil Products is the process of transportation of oil products from Indonesia to other countries. This variable is measured in Tons.
3) Oil and Gas Import (X2), Petroleum import is the process of transportation of petroleum from the country of origin to Indonesia. This variable is measured in Tons.
4) Inflation (X3), Inflation is a process of increasing prices that takes place continuously and influences each other. This variable is measured in percent units

3.2. Data Analysis Method

Agus (2013), suggests that if there are several variables in the time series data, then the interdependence relationships between these variables need to be analyzed within a system. The Vector Error Correction Model (VECM) is the approach of data analysis that is utilized here. One of the time series methods that are utilized in research, particularly in the subject of economics, is known as the Vector Error Correction Model, or VECM. The VECM model is an econometric model that was built with the concept of minimizing the theoretical approach in order to achieve the goal of successfully capturing economic events. Therefore, the VECM is not a structural model and it is also not a theoretical model (atheoretical). One of the methods that can be derived from VAR is known as VECM, which stands for Vector Error Correction Model. The necessary assumptions are the same as those for VAR, with the exception of those concerning stationarity concerns. In contrast to the VAR, the VECM needs to be stationary in the first differentiation, and all of the variables need to have the same stationary, which means they all need to be differentiated in the first derivative (Widarjono, 2018).

VECM is an analytical model that may be used to identify the short-term behavior of a variable in the long term owing to a persistent shock. This can be done by looking at how the variable changes over time. In econometric analysis, the problem of non-stationary time series variables (also called spurious regression) can be solved by using VECM analysis, which can also be used to find solutions to the problem of non-stationary time series variables (Widarjono, 2018).

The characteristics of the VECM are a non-theoretical time series econometric model (Widarjono, 2018). There are several advantages of the equation in the error correction model or VECM as follows (Gujarati, 2003):

1) Able to see more variables that analyze short-term and long-term economic phenomena.

2) Able to examine whether or not the empirical model is consistent with econometric theory.
3) Able to find solutions to the problem of time series variables that are not stationary (non-stationary) and spurious regression.

According to Gujarati (2003), there are several weaknesses to the VECM equation model, namely:

1) The VECM model is an atheoritic model or not based on theory.
2) The emphasis on the VECM model lies on forecasting or forecasting so that this model is not suitable for use in policy analysis.
3) The big problem in the VECM equation model is choosing the right lag length. Because the longer the lag, it will increase the number of parameters that will have problems with the degree of freedom.

3.3. Stationarity Test

The Augmented Dickey-Fuller (ADF) Test is a method for analyzing data utilizing a unit root test established by Dickey-Fuller . The unit root test, also known as the stationarity test, seeks to assess if the time series data utilized is stationary or not. If the data are not steady, a false regression will be constructed. If a time series is not stationary, there is a unit root issue.

The unit root test is used to determine if a time series is stationary or not. Dickey-Fuller was utilized to conduct the unit root test. The statistical findings of the method's estimation results will be compared to the Mc Kinnon critical value at the 1%, 5%, and 10% levels. If the value of the t-statistic is less than the McKinnon critical value, then the data has a unit root or the data is not stationary. If t-statistics are bigger than the critical value of McKinnon data, there is no unit root or stationary data.

3.4. Optimal Lag Determination

In the VECM model, the determination of this optimal lag is of utmost importance. In selecting the lag length of the variables included in the VECM model, it is preferable to have a sufficient lag length so that the desired dynamics of the system to be described can be achieved. If the latency is too lengthy, more factors will need to be estimated, hence reducing the capacity to reject H0, as too many additional parameters will lower the degrees of freedom. Utilizing the Akaike Information Criterion (AIC) and Schwarz Criterion (SC) can be advantageous when determining the ideal lag length. The lag is the criterion with the minimum AIC and SC values.

3.5. Cointegration Test

Before doing VECM modeling, a cointegration test must be carried out. The concept of cointegration is basically to see the long-term balance between the observed variables. The long-term equation can be defined as follows:

$$Y = c + \beta 1X1 + \beta 2X2 + €$$

Information :
Y = dependent variable

X = independent variable
C = constant
β = coefficient of independent variable
€ = residuals

Cointegration is a mixture of linear relationships between nonstationary variables, where all variables must be integrated to the same degree or order. If there is no cointegration relationship, the analysis is conducted using the VAR difference approach (VAR with all stationary variables at the difference level), whereas if there is a cointegration relationship, VECM analysis can be conducted. The Engle-Granger test and the Johansen test can be used to determine whether or not cointegration exists.

The Johanse co-integration test employs trace statistical analysis and/or test statistics to determine the greatest eigenvalue and critical value at the α = 5% confidence level. The data are cointegrated if the trace test statistic and/or the highest eigenvalue are greater than the critical value when α =5% (Gujarati, 2003).

3.6. Granger Causality Test

In the examination of economic data using econometric methods, it is frequently observed that one variable is dependent on one or more other variables in the equation model employed. Alternatively, there may be a causal relationship between model variables. Using time series data from the estimation model, a Granger causality test was conducted to determine the link between the two variables. Using this technique, estimation results reveal the following possibilities: (Gujarati, 2003).

1) One-way causality relationship from Yt to Xt, which is referred to as unidirectional causality from Yt to Xt.
2) One-way causality relationship from Xt to Yt, which is referred to as unidirectional causality from Xt to Yt.
3) Two-way causality or mutual influence (bidirectional causality).
4) There is no interdependence relationship (no causality).

In the causality test, decisions can be made by comparing the estimated t-statistic value to the t-table value or by examining the F-probability statistic's value. If the estimated t-statistic value is greater than the t-table value or the statistical probability value is ά = 5%, then the null hypothesis H0 is rejected, indicating that there is an influence between the two tested variables, and vice versa.

3.7. Vector Error Correction Model (VECM) Estimation

VECM can be used to determine the short-term behavior of a variable towards its long-term value if it has been established that a cointegration relationship exists between a time series and a variable. VECM is also utilized to estimate the long-term association between variables by utilizing the residual lag of cointegrated regression. Vector Error Correction Model (VECM) is a derivative of the VAR (Vector Autoregression) or restricted VAR models. The distinction between VAR and VECM is that cointegration indicates a long-term relationship between each variable. According to Basuki & Yuliadi (2015), VECM is typically referred to as a VAR design for non-stationary series with a cointegration connection.

Each variable is represented by a separate equation in the VECM model (as the dependent variable). Error Correction Term (ECT) is a model component that distinguishes VECM. Following is the general form of the VECM model with a lag length of (p-1):

$$\Delta yt = \alpha\ et\text{-}1 + \beta 1 \Delta yt\text{-}1 + \beta 2 \Delta yt\text{-}1 + €t$$

Δyt	= Vector of the first derivative of the dependent variable
Δyt-1	= Vector of the first derivative of the dependent variable with the 1st lag
et-1	= Error obtained from the regression equation between Y and X at the 1st lag and is also called ECT (Error Correction Term)
€t	= Residual vector
A	= Cointegration coefficient matrix

Impulse response and variance decompositions are two methods for analyzing the dynamic properties of the VECM model. Impulse response reveals the duration of the shock effect of one variable on other variables, whereas variance decomposition reveals the extent of one variable's influence on other variables. Analysis of Impulse Response Function The coefficients on the VECM equation are challenging to comprehend, hence the impulse response is utilized to analyze the VECM model equation. The impulse response function depicts the rate of shock of one variable against another variable in a certain time interval, such that the duration of the shock's influence on other variables until the effect dissipates or returns to equilibrium can be determined.

3.8. Forecast Error Variance Decomposition Analysis

Variance decomposition, sometimes called forecast error variance decomposition is a component of the VECM model that measures the estimated error variance of a variable, namely the extent to which a variable can explain other variables or the variables themselves. Using the VECM approach, it is possible to determine the proportion of the influence of changes in a variable if it suffers a shock or changes to the variable itself during a given time period. By evaluating the findings of variance decomposition, it is possible to conclude that the estimated variance error of a variable can be assessed, namely, the magnitude of the difference between before and after the shock, as determined by the variable and other variables.

4. RESULTS AND DISCUSSION

4.1. Research Results

4.1.1. Stationarity Test

In research employing a dynamic model, it is crucial to do a data stationarity test to avoid spurious regression while estimating a model (Puspita, 2005). In this investigation, the unit root test will be conducted utilizing the Augmented Dikey Fuller technique. If the data is not stationary at level 1 (0), then the stationary test can be lowered to First Different 1 (1), and if the first different data is also not stationary, then the stationary test is done on Second Different 1 (2) (Sembiring, 2016). Table 2 displays the unit root test based on the Augmented Dickey Fuller (ADF) approach.

Table 2. Test Unit Root Test with Augmented Dickey Fuller (ADF)

Unit Root Test (First Diff)				
Variables	**ADF Test Statistics**	**Critical Values 5%**	**Prod Adf**	**Information**
Growth Economics (Y)	-4.604087	-2.986225	0.0013	stationary
Export Results Oil & Gas (X1)	-4.674254	-2.986225	0.0011	stationary
Oil and Gas Import (X2)	-7.271485	-2.991878	0.0000	stationary
Inflation (X3)	-6.377333	-2.632604	0.0000	stationary

Source: Data processed in 2022.

4.1.2. Optimum Lag Determination

In a dynamic study, determining the optimal lag demonstrates how long a variable's reaction takes to another variable. If the lag employed in the stationarity test is too little, then the residuals from the regression will not exhibit the white noise process, preventing the model from providing accurate estimates. In this investigation, the optimal lag was determined using the Akaike Information Criterion (AIC): -2 (1/T) + 2 (kT), as indicated in table 3 below.

Table 3. Optimum Lag Test Results

lag	LogL	LR	FPE	AIC	SC	HQ
0	-121.1292	NA	0.261584	10.01034	10.20536	10.06443
1	-46.21714	119.8593*	0.002400*	5.297372*	6.272472*	5.567823*
2	-33.87176	15.80210	0.003601	5.589740	7.344922	6.076553

Source: eviews. 10 (processed)

According to the Sequential Modified LR test statistic's table 3 criteria, Final Prediction Error (FPE), Akaike Information Creterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quin Information Creterion (HQ) all lie at lag 1. Therefore, the lag length that should be used that is best for this investigation is 1. Once all of the stars have been accumulated, lag 1 will have the most stars.

4.1.3. VAR Model Stability Test

Calculating the roots and polynomial functions, also known as the roots of characteristics polynomial, is the next stage in testing the stability of the VAR model to see whether the VAR estimation that has been generated is stable. If the modulus of all roots is smaller than 1, the VAR model is considered stable. Table 4 below displays the results of the VAR model's stability test.

Table 4. The results of testing the stability of the VAR model

Root	Modulus
0.984763	0.984763
0.848781	0.848781
-0.009497 - 0.172514i	0.172775
-0.009497 + 0.172514i	0.172775

Source: eviews. 10 (processed)

Description: *stable model The results of the VAR model stability test show that the recommended optimal lag is lag 1 has a modulus value smaller than 1. This indicates that the estimated VAR model is stable. In line with the research of Oktiani (2017) on cassava price modeling which also has a modulus value smaller than 1, which is 0,618238

4.1.4. Cointegration Test

The cointegration method developed by Johnson is based on maximum likelihood, which gives foreign value and trace statistics to identify the number of cointegration vectors in an equation (Sembiring, 2016). Table 5 demonstrates the outcomes of cointegration:

Table 5 Cointegration test results

Hypothesized No. of CE(s)	Eigenvalue	trace Statistics	0.05 Critical Values	Prob.**
None *	0.636334	54.02251	40.17493	0.0012
At most 1 *	0.538786	28.73451	24.27596	0.0128
At most 2	0.294405	9.387204	12.32090	0.1477
At most 3	0.026419	0.669358	4.129906	0.4731

Source: eviews. 10 (processed)

There are two equations that are cointegrated at the 5% significance level. Based on Table 14 shows the cointegration test results using the Johansen Cointegration Test method at a 5% significance level, there is one equation whose trace statistic value (54.02251) is greater than the critical value (40.17493). This shows that the equation is cointegrated so that further analysis is carried out using the VECM model.

4.1.5. Vector Error Correction Model (VECM) Estimation Results

As previously described, variable exports of oil products, imports of petroleum, and economic development remain stationary at the first difference. Additionally, the VECM estimation will proceed from the first difference. The results of estimating the Vector Error Correction Model (VECM) with endogenous variables of economic growth and exogenous variables of oil and gas exports, imports, and inflation. Table 6 displays the findings of the VECM estimation for the analysis of short- and long-term effects.

Table 6. VECM Results (Long Term and Short Term)

Long-term			
Variables	**Coefficient**	**t-statistics**	**Estimates**
EXM(-1)	0.16393	-16.5667	-1.148510
IMM(-1)	0.10442	-8.81904	-0.920848
INF(-1)	0.02118	7.55918	0.160074
C	2.313148		
Short-term			
Variables	**Coefficient**	**t-statistics**	**Estimates**
CointEq1	0.16393	0.07034	0.011530
D(PBD(-1)	0.89032	-0.42842	-0.381431
D(EXM(-1))	0.87066	0.87066	0.765062
D(IMM(-1))	0.18863	-1.34780	-0.254236
D(INF(-1))	0.03287	-0.92964	-0.049569
C	0.13086	-1.01757	-0.133162

Based on the table above in the long term, the interpretation results can be explained as follows:

$$\Delta yt = 2.31\ et\text{-}1 - 1.14\ yt\text{-}1 - 0.92\ yt\text{-}1 + 0.16\ yt\text{-}1$$

1) The constant is 2.31, meaning that if the variables of oil and gas exports, oil and gas imports, and inflation have a fixed value during the period, then economic growth is worth 2.31%.
2) Exports of oil products have a negative value of -1.14, if exports of oil and gas products increase by 1% then Indonesia's economic growth will decrease by 1.14%. This indicates a negative relationship between exports of oil and gas products and economic growth.
3) Crude oil imports have a negative value of -0.92, if oil and gas imports increase by 1% then Indonesia's economic growth will decrease by 0.92%. This indicates a negative relationship between oil and gas imports and economic growth.
4) Inflation has a positive value of 0.16, if inflation increases by 1% then Indonesia's economic growth will increase by 0.16%. This indicates a positive relationship between inflation and economic growth.

And based on the table above, the short-term model can be explained as follows:

$$\Delta yt = -0{,}13 + 0.76\ yt\text{-}1 - 0.25\ yt\text{-}1 - 0.05\ yt\text{-}1$$

1) Economic growth in lag 1 is negative by -0.38, meaning that if there was an increase of 1 percent in the previous year, it would reduce economic growth by 0.38 percent in the current year.
2) If there is an increase in exports of oil and gas products by 1 percent in the previous 1 year, then there will be an increase in economic growth of 0.76 percent.

3) If there was an increase in oil and gas imports by 1 percent in the previous 1 year, it would cause a decline in economic growth of -0.25 percent in the current year.
4) If there is an increase in inflation of 1 percent in the previous 1 year, it will cause a decrease in economic growth by -0.05 percent in the current year.

In the VECM approach, it is possible to determine if there is a long-term or short-term link by comparing the t statistical value to the estimation findings of the t table value. If the t statistic is bigger than the t table, a long-term and short-term association can be inferred (Gujarati, 2003). The long- and short-term associations demonstrate that the factors influence the dependent variable. The following is an interpretation of the VECM model's results:

1) In the long term, the export of oil and gas products has a negative and significant impact on Indonesia's Economic Growth, this is evidenced by statistical testing where the t statistic > from t table is 16.5667 > 2074 or -16.5667 > -2.074.
2) In the long term, oil and gas imports have a negative and significant impact on Indonesia's economic growth, this is evidenced by statistical testing where the t statistic > from t table is 8.81904 > 2.074 or -8.81904 > - 2.074.
3) In the long term inflation has a negative and significant effect on Indonesia's Economic Growth, this is proven through statistical tests where the t statistic > from t table is 7.55918 > 2.074 or -7.55918 > - 2.074.
4) In the short term, exports of oil and gas products at lag 1 have no effect on economic growth, this is proven through statistical tests where the value of t statistic <from t table is 0.87066 < 2.074.
5) In the short term, oil and gas imports at lag 1 have no effect on economic growth, this is evidenced by statistical testing where the value of t statistic < from t table is -1.34780 < -2.074
6) In the short term inflation at lag 1 has no effect on economic growth, this is evidenced by statistical testing where the value of t statistic < from t table is -0.92964 < 2.074.
7) In the short term economic growth at lag 1 has no effect on economic growth, this is evidenced by statistical testing where the value of t statistic < from t table is -0.42842 < -2.074.

4.2. Discussion

4.2.1. The Effect of Oil and Gas Exports on Economic Growth

The results of the study indicate that the export of oil and gas products has a negative impact on economic growth over the long term. The existence of a negative influence indicates that with the decline in exports of oil and gas products, it will increase Indonesia's economic growth. This happens because oil and gas production in Indonesia continues to decline every year, but on the other hand Indonesia's economic growth has actually increased because current economic growth has been supported by various exported commodities.

In the short term, exports of oil and gas products have no effect on economic growth. This shows that fluctuations in oil and gas output that are exported abroad do not cause economic growth this year because oil and gas production in Indonesia is decreasing, so that in the long term it will cause economic growth to decline (Atmaja &

Hidayat, 2016). Indonesia's economic growth that continues to show positive values has resulted in increased production in various industrial sectors as well as consumption growth (Atmaja & Hidayat, 2016).

4.2.2. Effect of Crude Oil Imports on Economic Growth

The findings indicates that oil and gas imports have a negative effect on economic growth over the long term. The existence of a negative influence indicates that increasing Indonesia's oil and gas imports will reduce economic growth.

The results of this study are in line with research conducted by Atmaja & Hidayat (2016); Kartikasari (2017); Mustika; Haryadi; Siti Hodijah (2015), concluding that oil and gas imports have a negative effect on Indonesia's economic growth This shows that the higher the import of oil and gas, the lower the economic growth.

Meanwhile, in the short term, oil imports have proven to have no effect on economic growth. This shows that fluctuations in oil imported to Indonesia in the previous period did not cause changes in economic growth this year. However, in the long term, if imports continue to increase, it will reduce employment and will result in low economic growth.

4.2.3. The Effect of Inflation on Economic Growth

The findings also indicate that inflation has a negative effect on economic growth over the long term. The existence of a negative influence suggests that rising inflation will reduce economic growth in Indonesia.

Meanwhile, in the short term, inflation has proven to have no effect on economic growth. This shows that the inflation that occurred in Indonesia in the previous period did not cause changes in economic growth this year. However, in the long run, if inflation continues to increase, it will result in lower economic growth.

5. CONCLUSION

Based on the results of research and discussion, this study concluded that In the long term and short term, exports of oil and gas products have a positive effect on Indonesia's economic growth for the period 1993 to 2021. Meanwhile, in the long term and short term, oil and gas imports have a negative effect on Indonesia's Economic Growth for the 1993 to 2021 period. Likewise, in the long term and short term inflation also has a negative effect on Indonesia's economic growth for the period 1993 to 2021.

According to the preceding facts and conclusions, it is hoped that the Indonesian government will promote economic growth by employing other commodities produced in Indonesia. It is also hoped that the findings can serve both as a reference for future research as well as a reference for the advancement of scientific knowledge.

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