

ANALYSIS OF EXPORT VOLUME OF INDONESIAN COFFEE TO JAPAN

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Abstract

The role of international trade in the economic development of a country is quite prominent. As one source of revenue and financing for national development, this means that most national development efforts are directed at economic development. Through the process of economic development it is hoped that it can improve the standard of living of the people and create a just and prosperous society. To achieve this condition, a significant amount of funding is needed. And through international trade can generate foreign exchange for Indonesia, so that it can reduce Indonesia's dependence on other countries. Thus international trade becomes very influential for the progress of the national economy. Indonesia is one of the countries that have abundant natural resource potential. Recognizing this abundant wealth, the government and the population of Indonesia strive to exploit it with the aim of improving the welfare of society.

This study aims to determine the effect of Japanese GDP, Dollar Exchange Rate and Japanese Inflation on the volume of coffee exports. In this study using secondary data in the form of annual data from 2004 - 2019 measured in time series is time series .

The results of this study indicate that simultaneously the independent variables namely Japanese GDP, Dollar Exchange Rate and Inflation significantly influence the dependent variable coffee export volume. Partially, the Dollar Exchange Rate significantly influences the Coffee Export Volume, while the Japanese GDP and Japanese Inflation variables do not significantly influence the Coffee Export Volume.

Keywords: *Coffee Export Volume, Japanese GDP, Dollar Exchange Rate and Inflation*

1. INTRODUCTION

The role of international trade in the economic development of a country is quite prominent. As one source of revenue and financing for national development, this means that most national development efforts are directed at economic development. Through the process of economic development it is hoped that it can improve the standard of living of the people and create a just and prosperous society. To achieve this condition, a significant amount of funding is needed. And through international trade can generate foreign exchange for Indonesia, so that it can reduce Indonesia's dependence on other countries. Thus international trade becomes very influential for the progress of the national economy. Indonesia is one of the countries that have abundant natural resource potential. Recognizing this abundant wealth, the government and the population of Indonesia strive to exploit it with the aim of improving the welfare of society.

Since oil and gas exports have declined, this has been caused by world *recession*, with developed countries reducing their production activities, which has led to a decline in world demand for oil and gas. In addition to this, the decline in oil and gas demand is also caused by unstable prices on the international market. This forces us to look for other alternatives for export commodities that we will develop, so that our dependence on oil and gas exports can gradually be reduced. The solution taken by the government in overcoming this problem is to increase non-oil exports. By increasing non-oil exports, Indonesia will get foreign exchange from abroad. And the foreign exchange is used for purposes and interests within the country and for the interests of the people of Indonesia. So that with this the national goal of creating a just and prosperous society based on Pancasila and the 1945 Constitution will be achieved. (Jasari, 2010 : 104)

Sejarah beginning the development of non-oil exports of coffee sector which starts from developments in the volume of world trade during the decade 1971-1980 experienced an average growth of 5.7% per year, indicating sluggishness in the period from 1980 to 2018. In 1982, the volume of international trade even dropped by 1.6%. Trading. GDP is defined as the overall value of all goods and services produced in the region within a certain period (usually per year). GDP differs from Gross National Product because it includes income from production factors working abroad in the country. So that GDP only calculates the total production of a country without calculating whether the production is carried out using factors of domestic production or not. Instead pay attention to the origin of the factors of production used. The size of the coffee production will affect the contribution of the agricultural sector to GDP. The greater the production, the contribution from the agricultural sector will increase and vice versa. If Indonesian GDP increases then economic growth will also increase, because economic growth can be seen from constant price GDP (Arifin: 2011)

During 1980- 2013 , GDP showed increased every year. Only in 1998 did GDP decline. It in due to the economic crisis. But from time to time GDP gradually rises to normal. The agricultural sector is a source of national output growth, the agricultural sector contributed that is large enough to Gross Domestic Product (GDP) of all sectors of the Indonesian economy.

Likewise, the exchange rate of the rupiah which shows the price or value of a country's currency expressed in the value of other currencies (Sukirno, 2010 : 397). Currency exchange rates (exchange rates) have an important role in international trade relations. The exchange rate between two countries is the price level agreed by the population of the two countries to trade with each other.

BPS (2004 : 10) defines inflation as one indicator to see the economic stability of a region or region that shows the development of prices of goods and services in general, calculated from the consumer price index. Thus the inflation rate greatly affects the purchasing power of people with fixed income, and on the other hand also affects the amount of goods produced.

2. RESEARCH METHODS

Operational Definition and Variable Measurement

In this study the variables used can be divided into two types, namely:

1. Bound variable (*dependent variable*) (Y)

Dependent or not independent variables are variables that need to be explained (*explained variables*). The dependent variable in this study is the Indonesian Coffee Export Volume to Japan in units (tons).

2. The independent variable (*independent variable*) (X)

The independent variable is the explaining *variable (explanatory variable)*. The independent variables in this study are:

a. GDP (Gross Domestic Product)

GDP (*Gross Domestic Product*) or GDP (Gross Domestic Product) is the value of products and services produced in Indonesia, whether done by foreign nationals working in Indonesia. Data obtained from the Central Statistics Agency (BPS). Turned in the form of billions of rupiah.

b. Rupiah Exchange Rate Against Dollar

An exchange rate is the price of a currency of a country that is measured or expressed in another currency. Exchange rates play an important role in spending decisions, because they allow us to translate prices from different countries into the same language. Exchange rates here are stated in Rupiah. Data obtained from the Central Statistics Agency (BPS).

c. Inflation

Inflation is an increase in the prices of goods and services needed by the general public or falling purchasing power of certain currencies. Inflation here is expressed in terms of units of percent (%) per year. Data obtained from the Central Statistics Agency (BPS).

Sample Determination Techniques

This study uses annual data that is measured in *time series time series* from 2004-2019. The data used in this research is secondary data.

Secondary data is taking data that is obtained and collected from several research institutions involved in this, or data that is published and taken from the agency or agencies related

Analysis Techniques

The data obtained were analyzed by multiple linear regression analysis. Multiple linear regression analysis is a method that is used to analyze the relationship between the independent variables influence the dependent variable. This multiple linear regression analysis uses the OLS (*Ordinary Least Square*) method with the help of SPSS version 22.0 which can be written as follows: (Nachrowi, et al 2009: 315)

Multiple Linear Regression Formulas:

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where :

Y = Volume of Indonesian Coffee Exports to Japan

X_1 = GDP (Gross Domestic Product)

X_2 = Exchange Rate

X_3 = Inflation

β_0 = constant (value Y_1 , if $X_1, X_2, X_3 = 0$)

β = Regression coefficient (increase or decrease value)

e = Confounding Variable

Hypothesis Test

Test used to test the hypothesis that the regression coefficients have an influence on the variable (X_1, X_2 and X_3) on the dependent variable (Y) then the previously necessary to test R^2 is to determine whether the analysis model feasible used in the proof later.

3. RESEARCH RESULTS AND DISCUSSION

Development of Coffee Export Volume

Data on the complete volume of Indonesian coffee exports to Japan are presented in table 1 below:

Table 1 . Coffee Production Volume from 2004 - 2019

Year	Coffee Production Volume (Tonnes)	Development (%)
2004	65,900,0	
2005	58,900,0	-7
2006	56,613,1	-2.28
2007	52,350,8	-4.26
2008	54,341,8	1.99
2009	49,526,6	-4.81
2010	67,012,3	17.48
2011	51,725.3	-15.28
2012	52,992,2	1.26
2013	53,678,5	0.68
2014	59,170,9	5.49
2015	58,878,9	-0.29
2016	51,438,4	-7.44
2017	41,920,4	-9.51
2018	41,234,3	-0.68
2019	41,240,1	-0.05

Source: BPS East Java (data processed).

Based on table 1 above, the development of Indonesia's coffee production volume for 16 years is fluctuating. The development of Indonesia's highest coffee production volume in 2010 was 17.48% because the area of coffee plantations had increased so that the demand for coffee exports abroad also increased. While the lowest volume of Indonesian coffee production development occurred in 2011 , amounting to 15.28% due to declining coffee production in large state estates and large private estates in that year.

Data on Japanese *Gross Domestic Product* values are presented in table 2 below :

Table 2 . Japanese GDP from 2004 - 2019

Year	Japanese Gross Domestic Product (US Dollar)	Development (%)
2004	4,887,519,660,744.9	
2005	4,303,544,259,842.7	-0,119482911
2006	4,115,116,279,069.8	-0.043784378
2007	4,445,658,071,221.9	0.080323803
2008	4,815,148,854,362.1	0.08311273
2009	4,755,410,630,912.1	-0,012406309

2010	4,530,377,224,970.4	-0,04732155
2011	4,515,264,514,430.6	-0.003335861
2012	5,037,908,465,114.5	0.115750461
2013	5,231,382,674,593.7	0.038403677
2014	5,700,096,491,338.0	0.089596545
2015	6,157,461,124,964.0	0.080238051
2016	6,203,213,121,334.1	0.007430334
2017	5,155,717,056,270.8	-0,168863465
2018	4,848,733,415,523.5	-0.059542375
2019	4,383,076,298,081.9	-0.096036857

Based on table 2 above, the development of Japan's *Gross Domestic Product* over the past 16 years has fluctuated. The highest development of Japan's *Gross Domestic Product* occurred in 2012 at 0.115750461% due to rising domestic consumer spending, government spending, business investment, service sectors, and exports in Japan. Whereas the lowest development of Japanese *Gross Domestic Product* occurred in 2017 which was 0.168863465% due to that year Japanese investors in their investments abroad and what foreigners get in their investments in Japan has decreased. Data on the exchange rate, namely the exchange rate of the Rupiah against the US Dollar, is presented in table 3 below:

Table 3 . Dollar exchange rates from 2004 - 2019

Year	Exchange rate (Rp)	Development (%)
2004	9,595	
2005	1065	1.06
2006	9,261	0.09
2007	8,571	0.92
2008	9,030	1.05
2009	9,750	1.07
2010	9,141	0.93
2011	9,084	.99
2012	9,752	1.07
2013	10,356	1.06
2014	9,078	.87
2015	8,773	0.96
2016	9,418	1.07
2017	10,562	1.12
2018	11,884	1.12
2019	13,457	1.13

Source: Bank Indonesia (data processed).

Based on table 3 above, the development of the Rupiah exchange rate against

the United States Dollar over the past 16 years has fluctuated. The development of the Rupiah against the United States Dollar was highest in 2019, which was 1.13% because in that year Indonesia experienced a crisis in the economic sector, especially export and import. While the lowest Rupiah exchange rate against the United States Dollar occurred in 2006, which was 0.09% because Indonesia in that year was able to improve the domestic economy so that the economy tended to be stable. The full Japanese inflation value data is presented in the following table 4 :

Table 4 Inflation in Japan from 2004 - 2019

Year	Japanese inflation (%)	Development (%)
2004	-1.4	
2005	-1.1	0.3
2006	-1.5	-0.4
2007	-1.6	-0.1
2008	-1.1	0.5
2009	-1.0	0.1
2010	-0.9	0.1
2011	-0.7	0.2
2012	-1.0	-0.3
2013	-0.6	0.4
2014	-1.9	-1.3
2015	-1.7	0.2
2016	-0.8	0.9
2017	-0.3	0.5
2018	1.7	2
2019	2	0.3

Source: Bank Indonesia (data processed).

Based on table 4 above, the development of Japanese inflation for 16 years is fluctuating. Japan's highest inflation development occurred in 2018 at 2% due to the influence of the increase in world oil prices in that year which resulted in an increase in prices of products / services in other countries including Japan. While the lowest Japanese inflation development occurred in 2014, which amounted to -1.3% due to government policies that make an improvement to the country's economy, especially in terms of development, and income in the domestic sector.

Regression Analysis**1. Multicollinearity.**

Multicollinearity can be interpreted as there is a linear relationship that "Perfect" or certain among some or all of the independent variables of the regression model. Of the allegation multikolinieritas the need for statistics proving the presence or absence of symptoms multikolinier by way of calculating the *Variance Inflation Factor* (VIF). VIF states the level of "swelling" variance. If VIF is greater than 10, this means that there is multicollinearity in the linear regression equation.

The results obtained after testing multiple linear regression analysis is known that of the three variables analyzed can be seen in the following Multicollinearity test table:

Table 5: Multicollinearity Test.

Variable	VIF	Provisions	Information
<i>Gross Domestic Product</i> (X1)	1,055	≤ 10	Multicollinear does not occur
Exchange Rate (X2)	1,517		
Inflation (X3)	1,583		

Source: Appendix 3

Then the results obtained after testing multiple linear regression analysis is known that of the three variables in the test value of Indonesian coffee exports, where the VIF value is less than 10 so that in this regression model does not occur multicollinear.

2. Autocorrelation Testing.

Autocorrelation can be defined as "the correlation between two observations sorted by *time series* (*time series* data) or data taken at a particular time (*cross-sectional data*). (Gudjarati, 2014).

To test the variables examined whether autocorrelation or unusable Durbin Watson test, ie by comparing the value of Durbin Watson calculated by the value of Durbin Watson (d_L and d_U) in the table. The distribution of decision making starts from 0 to 3.

The decision rules can be explained as follows:

1. If d is smaller than d_L or greater than $(3-d_L)$, then the null hypothesis is rejected which means there is an autocorrelation.
2. If d lies between d_U and $(3-d_U)$, then the null hypothesis is accepted which means there is no autocorrelation.

3. If the value of d lies between d_L and d_U or between $(3-d_L)$ and $(3-d_U)$ then the Durbin Watson test does not produce definitive conclusions, for these values it cannot be concluded whether or not there is autocorrelation between factors - disruptive factors.

To determine the presence or absence of autocorrelation symptoms in the research model, it is necessary to look at the DW table values.

The test is as follows:

1. Number of samples (N) = 16

2. Number of independent variables (K) = 3

So that the DW table value is equal to $d_L = 0.857$ and $d_U = 1.726$

3. Heterokedastisitas Testing.

In linear regression, the residual value cannot be related to the independent variable (X). This can be identified by calculating the Spearman rank correlation between residuals and all independent variables. Proof of heterokedasticity can be seen in the table below:

Table 6 . Heterokedastisitas test.

Y variable	Sig 2-tailed (X ₁)	Sig 2-tailed (X ₂)	Sig 2-tailed (X ₃)	Provisions	Information
Coffee Export Volume	.196	.356	.774	≥ 0.05	No Heterokedastisitas Happened

Source: Appendix 4

Based on the table, the significance of the Spearman rank correlation coefficient is obtained for the dependent variable of the value of Indonesian coffee exports to Japan, the overall residual is greater than 0.05 (not significant). This shows that the residual value with the variables that explain does not have a significant correlation. So it can be concluded that the equation does not occur heterokedastisitas.

Based on the tests conducted above, it can be concluded that in this research model there was no violation of the classical assumptions.

Hypothesis Analysis and Testing

Based on the calculation results of data processing with the help of a computer program SPSS (*Statistical Program for Social Science*), it is obtained :

Table 7 : Effects of Free Variables on Bound Variables

Variable	Regression Coefficient (Y)
GDP (X1)	6,564
Dollar Exchange (X2)	4,640
Inflation (X3)	-7,217
Bound Variable: Coffee Export Volume (Y) Constant Y = -39,807 R (Y) = 0.824 R ² (Y) = 0.678976	

Source: *Outlook Model Summary*

Discussion.

Based on the results of the analysis obtained, the researcher can conclude that:

- Overall, the independent variables, namely the Japanese *Gross Domestic Product* (X_1), the Dollar Exchange Rate (X_2), Japanese Inflation (X_3) have a simultaneous and significant effect on the volume of Indonesian Coffee Exports to Japan (Y).
- Japan's *Gross Domestic Product* (X_1) has no effect on the volume of Indonesian Coffee Exports to Japan (Y). This is not the same as the results of research conducted by Retnowulan (2016 : 72) which shows that GDP significantly affects the volume of coffee exports. This is because Indonesia is not only exporting coffee to Japan, but also to countries other than that of Japan only requires the amount of coffee exports it needs only and no more so as to increase and decrease the amount of production of the Indonesian Coffee has no effect on the volume of export of coffee from Indonesia to Japan so that the effect is not too significant for the volume of Indonesian Coffee exports to Japan.
- Dollar exchange rate (X_2) affects the volume of Indonesian Coffee Exports to Japan (Y). This is because if the exchange rate of the rupiah against the dollar rises, the demand for coffee exports will rise and vice versa, if the exchange rate of the rupiah against the dollar falls, the demand for coffee exports will also decrease. This research was also supported by Bismo Try Raharjo (2017 : 1) and Retnowulan (2016 : 72)
- Japanese inflation (X_3) has no effect on the volume of Indonesian Coffee Exports to Japan (Y). This is because in Japan the inflation is very low or it can be said that deflation is due to the highest inflation development in Japan by 2% and the lowest development by -1.3%. So how high the inflation rate and low

inflation rate in Japan does not affect the volume of Indonesian coffee exports to Japan (Data on Inflation in Japan).

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the results of data analysis and the descriptions that the author has described, the following conclusions can be drawn: Japanese GDP does not affect the volume of Indonesian coffee exports to Japan. Dollar exchange rate influences the volume of Indonesian coffee exports to Japan. Japanese inflation has no effect on the volume of Indonesian exports to Japan. Simultaneously that Japan's GDP, Dollar Exchange Rate and Japanese Inflation significantly affect the Indonesian Coffee Export Volume to Japan.

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