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Factors Affecting the Volume of Indonesian Coffee Export to The International Market

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ABSTRACT

Agriculture is a vital sector in economic activity. In 2019, this sector played a significant role in the Gross Domestic Product of Indonesia. Coffee is one of the most critical agricultural commodities in Indonesia. This commodity is one of the most significant foreign exchange contributors. This study is conducted to identify and analyze the factors that affect the volume of Indonesian coffee export to the leading export destination. They are the US, Germany, Japan, Malaysia, Great Britain, Egypt, Belgium, Algeria, and India. By using the data panel regression method, this research obtained a result that the joint influence between the coffee production, free onboard coffee prices, GDP of importer countries, exchange rate, and financial crisis in 2008, together have a significant effect on the volume of Indonesian coffee export to the international market based on the significant test.

Keywords: Coffee, Export Volume, International Market.

I. INTRODUCTION

Agriculture is a sector that plays an important role in economic activity in Indonesia. The contribution of agriculture to Gross Domestic Product was around 12.72 percent in 2019, which is the third-largest proportion after the Manufacturing Industry and Wholesale and Retail Trade at 19.70 percent and Car and Bicycle Repair Motor by 13.01 percent (BPS, 2020). The plantation sub-sector is one sector with considerable potential. In 2019, according to BPS (2020), 3.27 percent of GDP was the contribution of the plantation sub-sector and 25.71 percent of the agriculture, forestry, and fisheries sectors. This sector generates the provision of raw materials in the industrial sector, foreign exchange earnings, and employment.

One of the plantation commodities that play an important role in Indonesia's economic activities is coffee. In the export sector, coffee is a leading commodity contributing to foreign exchange and non-oil and gas. Coffee market opportunities are still wide open, in addition to having enormous export opportunities (BPS, 2020).

Indonesia is one of the largest coffee exporters in the world. According to the International Coffee Organization (ICO), in 2016, Indonesia was ranked fourth as the largest exporting country in the world after Brazil, Vietnam, and Colombia. This fact illustrates that Indonesian coffee has many enthusiasts spread throughout the world (Zuhdi, 2016).

As one of the largest coffee exporters in the world, Indonesia has significant destination countries in exporting coffee beans. The ten countries that are the main markets for Indonesian coffee beans are the United States, Germany, Japan, Italy, Malaysia, England, Egypt, Belgium, Algeria, and India. The following is a picture of the movement of coffee exports from Indonesia to the ten main export destination countries from 2000 to 2019.

According to Prajanti et al. (2019), coffee production for the last five years has decreased and exports.
The volume of Indonesian coffee exports until 2019 tends to fluctuate, ranging from -40.15 percent to 12.82 percent. In 2011, the total export volume reached 346.49 thousand tons with a total value of US$ 1036.67 million, decreased to 359.05 thousand tons in 2019 with a total value of US$ 883.12 million (BPS 2020).

In his research in 2019, Prajanti et al. found that the volume of coffee production in Indonesia had a significant positive effect on changes in Indonesian coffee exports to export destination countries. Slightly different from the Rupiah exchange rate against the US dollar, the exchange rate has a positive relationship with the volume of Indonesian coffee exports abroad, but the positive relationship is not significant.

In practice, international trade activities will be influenced by various factors, including the economic conditions of importing and exporting countries, such as GDP and exchange rates, the financial crisis that hit the global financial area, changes in free onboard prices, and product supply conditions. Policies issued on international trade can be a challenge for countries that carry out trading activities. Coffee, as one of Indonesia's mainstay commodities, also faces challenges in the international market. The factors that have been mentioned are thought to cause fluctuations in the volume of coffee exports which in this study were carried out between Indonesia and consumer countries. Based on the facts above, this study will discuss further Indonesia's coffee export activities to major importing countries and what factors affect the export volume of Indonesian coffee beans.

II. METHODS AND MATERIAL

The data used in the research is secondary data obtained from the publication of data by official national and international institutions. These institutions include the World Bank, the Central Statistics Agency, Bank Indonesia, and other institutions related to research.
The export destination countries that are the object of research are the countries with the highest number of coffee imports from Indonesia in the 20 years from 2000 to 2019. These countries include the United States, Germany, Japan, Italy, Malaysia, England, Egypt, Belgium, Algeria, and India.

To test the data in this study using the panel data regression method. There are three (3) techniques used to estimate the regression model with panel data, namely Common Effect (CEM), Fixed Effect (FEM), and Random Effect (REM). The general form of the panel data model equation is as follows (Baltagi, 2008):

$$Y_{jit} = \alpha_i + \sum_{j=1}^{n} \beta_{ji} x_{it} + \varepsilon_{it} \; i = 1, \dots, 5 \; t = 2000, \dots 2019$$

Where :

Y_{jit} : Dependent variable j for section i at time t

X_{it} : Independent variable for section i at time t

I : The unit cross-section is k

t : k time-series units

ε : Error Term

III.RESULTS AND DISCUSSION

Based on the Chow test, it was found that the Fixed Effect Method (FEM) is the most efficient in estimating the panel data regression equation in this study. When the Hausman Test was carried out, the test results said that "Cross-section test variance is invalid. Hausman statistics set to zero". The assumption that the random effect method (REM) model has different intercepts and slopes is not found in this study. It can be concluded that the appropriate model for regression testing will use the FEM method. The following is the output of the results of the regression test using the FEM method.

Based on the output, the equation model obtained is

Export Volume = 34431.73 + 0.012 Production + 0.22 Price + 0.078 Exchange Rate – 0.06 GDP +712.21 Dummy.

A. Partial Significance Test (T-test)

The degrees of freedom in this study were df=194 and T-table=1.65275. So based on the output obtained, the significance of the independent variables in this study can be seen in table 1.

TABLE I

THE SIGNIFICANCE OF THE INDEPENDENT VARIABLE

Ind-Variable	T- Stat	Probability	Significance
Production	1.298116	0.1959	Not Significant
FOB Price	9.14157	0.000	Significant
Exchange rate	0.3	0.75	Not Significant
GDP	-9.135	0.000	Significant
Dummy	0.538	0.59	Not Significant

From the table above, it is found that the FOB price and GDP of the importing country are the most influential factors in changing the volume of Indonesian coffee exports to the ten largest importing countries. In contrast, other factors do not significantly affect changes in the volume of Indonesian coffee exports.

B. Simultaneous Significance Test (F-test)

In this test, the degrees of freedom are df1=9 and df2=185, and F-table=1.93. So based on the output obtained, F-count = 95,465, which is greater than F-table and probability = 0.000 less than 0.05, it can be said that the independent variables together have a significant effect on the dependent variable, namely the volume of exports.

C. Coefficient of Determination Test R^2

From the output obtained, the value of R-squared = 0.878 and Adjusted R-Squared = 0.869 is obtained. So, the independent variable in this study has an effect of 86.9% on the dependent variable. The remaining 13.1% influence is given by other factors that are outside this research. The factors in this study have a strong influence on the volume of Indonesian coffee exports.

Based on the results of panel data regression in the output table, which describes the significance test where the independent variables, namely Production Volume, FOB Price, Exchange Rate, GDP, and the 2008 economic crisis dummy variable, affect the dependent variable, namely the volume of Indonesian coffee exports, either partially or simultaneously. From the simultaneous significance test results, the F-statistic probability value is 0.000, which is smaller than the significant level of 5%. The results of this test explain that there is a significant effect where the independent variables jointly affect the dependent variable, namely the volume of Indonesian coffee exports in the international market. In addition, the R-squared value of 0.878 was also obtained. This value indicates that the independent variable can explain the dependent variable by 87%, and other factors outside this study explain the remaining 13%. The factors in this study have a strong influence on the volume of Indonesian coffee exports.

The partial significance test based on the table shows the significance level of each independent variable with a significant level of 5%. These results explain that all the independent variables, namely, the GDP of the export destination country and the price of coffee in the export destination country, have a significant effect on the volume of Indonesian coffee exports. However, three independent variables do not significantly affect the volume of Indonesian coffee exports in the international market, namely production volume, exchange rate, and the dummy variable of the 2008 economic crisis.

Domestic coffee production to Indonesia's coffee export volume has a positive relationship. The effect is positive, with a significant level of 5% and a coefficient value of 0.012. From these results, it can be concluded that if domestic coffee production increases by 1%, the effect on changes in the volume of Indonesian coffee exports is 0.012%. Increased production in Indonesia will lead to an increase in coffee supply by Indonesia to export destination countries. According to Komalasari (2009), an item's production and export volume has a positive influence in terms of supply. In this case, domestic coffee production in Indonesia will increase coffee exports to importing countries. However, the results obtained are not significant, meaning that this study shows that when domestic coffee production increases, it does not automatically increase the volume of coffee exports due to the ample supply. According to Hamdani (2012), products produced for export should be those that have high potential in competing in the global market. Not all domestically produced coffee has a good enough quality according to the importing country's standards, so even though it has a positive effect, changes in production volume cannot significantly affect the volume of coffee exports.

FOB coffee prices in export destination countries have a positive relationship with the volume of Indonesian coffee exports. The effect is positive with a significant level of 5% with a coefficient value of 0.22. From these results, it can be concluded that if the retail coffee price in the importing country experiences a price increase of 1%, then the effect on changes in the volume of Indonesian coffee exports has increased by 0.22%. Vice versa, if the price of coffee in the export destination country has decreased by 1%, then Indonesia's coffee export volume decreased by 0.22%. This result shows that the price is not following the law of demand, which under normal circumstances has a negative relationship with demand. However, in this study, the price is seen from the exporter's point of view, namely Indonesia, where when the FOB price of coffee rises in the importing country, the exporter will increase the volume of exports. This increase in export volume results from the desire to increase the value of Indonesian coffee exports. This fact concludes that the increase in retail coffee prices in importing countries will impact increasing the volume of Indonesian coffee exports.

The rupiah exchange rate against the USD has a positive but not significant relationship with the volume of Indonesian coffee exports with a significant level of 5% and a coefficient value of 0.078. From these results, it can be said that if the rupiah exchange rate against the USD appreciates (USD depreciates) by 1%, the volume of Indonesian coffee exports will decrease by 0.078%. On the other hand, if the Rupiah exchange rate against the USD decreases (USD appreciates) by 1%, the volume of Indonesian coffee exports will increase by 0.078%. The exchange rate describes the price level that has been agreed upon by the two trading countries (Mankiw, 2003). In the flexible exchange rate regime, changes in domestic currency exchange rate to foreign currencies often occur. When a country experiences an increase in foreign currencies, there will be currency appreciation and vice versa. The relationship between the rupiah exchange rate against the USD in this study did not significantly affect.

The Gross Domestic Product (GDP) of the importing country has a negative and significant relationship with the export volume of Indonesian coffee with a significant level of 5% and a coefficient value of -0.06. From these results, it can be said that if the GDP of the export destination country increases by 1%, the export volume will increase by 1%. Indonesian coffee to the country decreased 0.06%. On the other hand, if the GDP of the importing country decreases by 1%, the volume of Indonesian coffee exports to that country will increase by 0.06%. A negative but significant relationship between GDP and the volume of Indonesian coffee exports to export destination countries can occur. When a country's output level increases, the country focuses more on its economic activities on the domestic market. Thus, coffee imports to importing destination countries from Indonesia, in particular, will experience a decline. On the other hand, coffee exports from Indonesia to export destination countries will increase if the GDP of the importing country decreases.

The variable Dummy of the 2008 financial crisis in this study does not significantly affect the volume of Indonesian coffee exports. With a probability value of 0.59 at a significance level of 5%. This percentage means that this dummy variable does not affect the volume of Indonesian coffee exports. From these results, it can be concluded that the dummy variable has no effect on the volume of Indonesian coffee exports, and the dummy variable is not significant. Thus, the financial crisis in 2008 was neither an obstacle nor a determining factor for the volume of Indonesian coffee exports to export destination countries. According to Prasmuko and Anugrah (2010), the decline in the national economy decreased significantly in the fourth quarter of 2008, which is estimated to impact exports, which also declines because the economy of international trading partners also slows down. However, because the 2008 financial crisis variable did not significantly affect Indonesian coffee exports, it can be said that coffee is an export commodity that is resistant to crisis.

IV.CONCLUSION

Based on the results of testing and analysis of the determinants of Indonesian coffee exports to destination countries, the following conclusions can be drawn:

Based on the regression results from panel data regarding the demand for Indonesian coffee exports, it shows that GDP and retail prices of importing countries significantly influence the volume of Indonesian coffee exports to export destination countries. Meanwhile, other variables, namely the volume of production, the exchange rate of the Rupiah against the Dollar, and the dummy variable of the financial crisis in 2008, did not significantly affect the volume of Indonesian coffee exports.

The retail price of coffee from the importing country has a positive coefficient. Thus, the law of demand does not apply because the higher the retail price of coffee, the higher the volume of Indonesian coffee exports to export destination countries.

The dummy variable of the 2008 financial crisis did not significantly affect the volume of Indonesian coffee exports. Thus, it can be said that the financial crisis is neither an obstacle nor a determining factor for the size of the volume of Indonesian coffee exports to export destination countries.

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