Factors Affecting Indonesian Charcoal Export to China

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ABSTRACT

The purpose of this study was to determine the effect of Gross Domestic Product (GDP) and the Rupiah Exchange Rate on the Volume of Indonesian Shell Charcoal Exports to China. The data used in this study is secondary data that is time series. In this study, the method used as an analytical tool is Ordinary Least Square (OLS) to determine changes in the value of the dependent variable, namely the Export Volume of Indonesian Shell Charcoal which is influenced by the independent variable, namely China's Gross Domestic Product (GDP) and Exchange Rates using multiple linear regression techniques. The results of the analysis show that simultaneously China's GDP and the Exchange Rate have a significant effect on the Export Volume of Indonesia Shell Charcoal to China in 2001 – 2020. The results of the analysis show partially China's Gross Domestic Product (GDP) had no effect on the Export Volume of Indonesia Shell Charcoal to China in 2001 – 2020 and the Exchange Rate had a positive and significant effect on the Export Volume of Indonesia Shell Charcoal to China in 2001 – 2020. The result of the Coefficient of Determination (R^2) is carried out to see how big the proportion of the influence of the independent variable on the dependent variable is.

Keywords: Gross Domestic Product (GDP), Exchange Rate, Export Volume.

1. Introduction

Trade activities are activities that are able to grow a country's economy for the better. Therefore, it is certain that there is not a single country that does not carry out trade activities. Trade carried out is not only trade between domestic but trade is also carried out between countries (International). International trade is an activity between countries that carry out buying and selling activities in the form of goods and services that have a mutual agreement that includes export and import activities.

Indonesia is known as the country of *Nyiur Melambai* meaning that so many coconut trees grow very lushly, Indonesia has the potential to become the world's number one producer of coconuts, especially derivative products. Coconut fruit has many benefits in addition to water which is beneficial for coconut shell health and also has high economic value. Coconut shells which are raw materials for charcoal briquettes are often wasted. In fact, coconut shells if processed can be an innovative product that provides added value. Indonesian coconut shell charcoal is most widely produced in Sumatra, West Java, East Java, and Sulawesi. (Ministry of Foreign Affairs, 2021).

One of the largest shell charcoal-producing raw materials in Indonesia is Riau province, precisely in Indragiri Hilir regency where Indragiri Hilir coconut shells are sent to one of the companies in West Java and processed into coconut shell briquette charcoal that is ready to be exported. Indonesian coconut charcoal briquettes have great export potential. Because shell charcoal briquettes have the best quality value in the international market. Indonesian shell charcoal briquettes are in great demand in the international market, because coconut shell charcoal briquettes have several advantages compared to other conventional solid fuels, including being able to produce quality heat, non-toxic, smokeless, longer barracking / coal-burning time, and the potential to be a substitute for coal and more environmentally friendly. (Iskandar, 2019)

In addition to being the number one coconut production country in the world, Indonesia is also able to become the largest charcoal exporter in the world. In Table 1.1 we can see that the main destination country for Indonesian charcoal briquette exports is China. The lowest export volume of Indonesian charcoal briquettes to China occurred in 2016 with an export volume of 18,552,028 kg with a growth of -83.09%. The highest export volume occurred in 2015 amounting to 109,718,505 kg with growth reaching 210.26%. Judging from the annual growth of Indonesian shell charcoal exports to China, there is a very drastic decline compared to other export destination countries, and Indonesian charcoal exports to China are more likely to decline in the following year. Indonesian shell charcoal exports to other export destination countries such as Saudi Arabia, South Korea, Japan, and Malaysia also often decline but the decline experienced by export destination countries is not as drastic as the decline in Indonesian charcoal exports to China where the decline in exports reached -83.09%. Indonesian charcoal in China is used as a raw mate-

rial for beauty, distilled water, and cooking purposes in restaurants and air purifiers. In addition, charcoal is also used as an element of decoration, and Indonesian shell charcoal briquettes in China are also used as a mixture of steel products and raw materials for shisha (Ministry of Trade, 2020). In addition to being environmentally friendly, shell charcoal briquettes can also be an effective and efficient alternative fuel, so it is not surprising that Indonesian coconut charcoal is in great demand by foreign countries.

On the exchange rate, Indonesia has tended to depreciate from 2011-2020. At the time the exchange rate depreciated it was expected to increase Indonesian charcoal exports to China, but in fact, Indonesian charcoal exports to China tended to decrease.

This is contrary to the Mundell-Fleming Model theory which states that exports are influenced by exchange rates and national income of export destination countries. Exchange rates and exports have a negative relationship, while national income has a positive relationship with exports (Ginting, 2013). If Indonesia can take advantage of abundant natural resources, of course, this can provide jobs for the Indonesian people. This is certainly accompanied by an increase in the quality of the charcoal product itself.

2. Theoretical Basis

International trade is common because of the basis of mutual trust and mutual benefit such as barter and buying and selling transactions between countries. This happens because a country and its trading partners have differences including differences in natural resources (SDA), human resources (HR), technology, economic structure, and so on. From these differences, on the basis of mutual benefit, there is a wide-scale exchange known as international trade (Halwani, 2005

According to Nopirin (2010). International trade in general arises due to price differences in various countries. The price is determined by production costs consisting of wages, capital, land rent, raw material costs, and efficiency in the production process. Differences in tastes also have an important role in determining the demand for an item between different countries. If a country's supply is insufficient to meet demand, it can import from other countries. Although a country can produce its own goods, it does not rule out the high possibility of imports from other countries can occur. This happens because of the taste factor where people prefer goods from other countries. In addition, the income factor is also the occurrence of international trade. If income rises, purchases of domestic and imported goods and services can increase.

Adam Smith put forward the theory of absolute advantage where every country will benefit from international trade (gain from trade) because it specializes in the production and export of goods if the country has an absolute advantage. Adam Smith assured that trade would increase prosperity if implemented through free trade mechanisms, and economic actors were directed to specialize in efforts to increase efficiency.

Export activities are a trading system by removing goods from within the country abroad with applicable regulations. Export is the total goods and services sold by a country to another country which includes goods, services, and insurance in a certain year (Sutedi, 2014). Export is one of the economic activities that play an important role through market expansion between several countries, which can expand an industry.

A country's exports are influenced by several factors, including domestic prices of export destination countries, import prices of destination countries, inflation, per capita income, residents of export destination countries, tastes of people of export destination countries, and exchange rates of export destination countries.

Each country has its own currency. Economists argue that currencies can have their own names as long as they are made of the gold standard. And now the currency has changed its form where once the currency was made of gold and now the currency can be made in the form of paper and metal. The existence of currency differences in each country and differences in monetary policy will affect international payment traffic and capital traffic systems (Waluyo, 2003: 17)

The Mundell-Fleming Model as the name implies was introduced or developed by Robert Mundell (1962, 1963) and Marcus Fleming (1962). This model is a continuation of the IS-LM model. While the IS-LM model is related to autarky economics (or closed economies), the Mundell–Fleming model describes open economies. The Mundell–Fleming model describes the short-run relationship between an economy's nominal exchange rate, interest rates, and output (while in the IS-LM model, only the relationship between interest rates and output is seen).

The Mudell-Fleming model has been used to argue that an economy cannot simultaneously maintain a fixed exchange rate, free movement of capital, and an independent monetary policy. This principle is often called the irreconcilable "Trilemma" of the Trinity. The Mundell-Fleming Model or two-country model is an analytical framework that can be used to explain international transmission due to the influence of the global economy on open small economies. This theory explains that the expansion of monetary policy will result in an increase in output in one country and produce a negative output response in another.

Gross Domestic Product (GDP) is the sale of all goods and services produced by a country, both foreign companies and often foreign companies operating in the country in a certain period (Junaiddin, 2009). Gross Domestic Product (GDP) calculates the production output of an economy regardless of who owns the factors of production. All factors of production located in the economy have their output taken into account in the Gross Domestic Product. As a result, Gross Domestic Product (GDP) does not provide an

idea of how much output is actually produced by the factors of production belonging to the domestic economy.

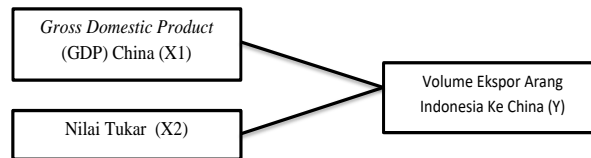## 3. Research Framework and Hypothesis Formulation

Figure 1. Framework of thinking: The influence of GDP and exchange rates

Based on the framework of thinking above, it explains the relationship between the influence of Gross Domestic Product (GDP) and exchange rates on Indonesian charcoal exports to China.

4. Research and Discussion

The residual value is expressed as normally distributed. This can be seen from the probability value of Jarque Berra of 0.095559 > 0.05, meaning that the residual research data is distributed normally. It is shown from the picture below.
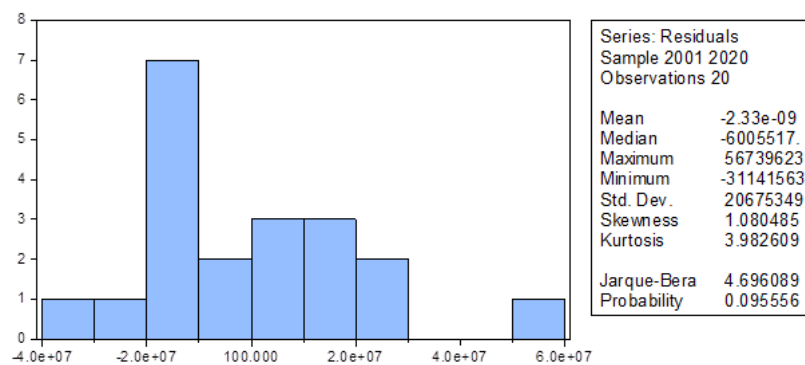

Figure 2. Normality test

Table 1. Result of Multicollinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
PERTUMBUHAN_GDP	9.53E+12	32.71293	2.589614
KURS_TENGAH	14114875	74.95796	2.589614
C	4.22E+15	176.6534	NA

Based on the figure above, we can get the VIF for all free variables 2.589614, 2.589614 is smaller than 10. Thus, it can be stated that the model has no symptoms of multicollinearity.

Table 2. Result of the Heteroscedasticity test

F-statistic	0.733080	Prob. F(5,14)	0.6106
Obs*R-squared	4.149808	Prob. Chi-Square(5)	0.5281
Scaled explained SS	4.471282	Prob. Chi-Square(5)	0.4837

If the probability value of Obs*R-squared < α = 5%, then the model is exposed to heteroscedasticity. Based on the heteroscedasticity test, the export prob value (Obs * R-squared) of 0.5281 > α = 0.05 means that the model is free from heteroscedasticity problems.

The result of the autocorrelation test is the value of Prob Chi-Square (2) which is the p-value of the Export Breusch-Godfrey Serial Correlation LM test, which is 0.5537 where > 0.05 so that it accepts H0 or which means there is no autocorrelation problem.

Table 3. Result of the Autocorrelation test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.471170	Prob. F(2,15)	0.6332
Obs*R-squared	1.182184	Prob. Chi-Square(2)	0.5537

Table 4. Result of the Heteroscedasticity test

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	1180.981	171.652	6.880091	0.0000
X	-0.036596	0.047970	-0.762902	0.4490
D1	-121.3186	254.3216	-0.477028	0.6353

Based on the results of the heteroscedasticity test in Table 4. above, the two independent variables of foreign investment (X) and COVID-19 (D1) have probability values of 0.4490 and 0.6353 respectively. The decision-making is, if the probability value of the independent variable is greater than the standard *error* of 0.05 then there is no heteroscedasticity problem. Therefore, this model has been free from the problem of heteroscedasticity.

The equation of multiple linear regression results in this study is as follows:

EXPORTS = -72926389 + 491680.8 China's GDP + 8877,311 Exchange Rate

From the equation above, it can obtain that:

1.Coefficient of constant

The regression equation above, shows a constant of -72926389 From the coefficient, it can be stated that when all independent variables (China's GDP and exchange rate) are zero, it can be said that Y (the volume of Indonesian shell charcoal exports to China) fell by 72926389 kg.

2.Koefisien *Gross Domestic Product (GDP)* China

From the regression equation above, it can be seen *that the variable Gross Domestic Product (GDP) shows a coefficient of 491680.8, meaning that if there is an increase in Gross Domestic Product (GDP) by 1 percent, the volume of Indonesian shell charcoal exports to China will increase by 491680.8 kg and vice versa if there is a decrease in Gross Domestic Product (*GDP) constant at 1 percent, the volume of Indonesian shell charcoal exports to China will decrease by 491680.8 kg assuming other factors are considered fixed *(cateris Paribus).*

3.Exchange Rate Coefficient

From the regression equation above, it can be seen that the exchange rate variable shows a coefficient of 8877,311, meaning that if there is an exchange rate depreciation of 1 Rp/USD, the export volume of Indonesian shell charcoal to China will increase by 8877,311 kg and vice versa, if there is an appreciation of 1 Rp/USD, the export volume of Indonesian shell charcoal to China will decrease, the export volume of Indonesian shell charcoal to China is 8877,311 kg, assuming other factors are considered fixed *(cateris paribus).*

5. Conclusions and Suggestions

Based on the discussion of several descriptions of the factors affecting the export of Indonesian Shell Charcoal to China in 2001 – 2020 using multiple linear regression tests, the following conclusions can be obtained:

1. Partially, China's Gross Domestic Product (GDP) has no effect on the export volume of Indonesian shell charcoal to China in 2001-2020 at a level of α to 5%.
2. Partially, the rupiah exchange rate against the United States dollar has a significant effect on the export volume of Indonesian shell charcoal to China in 2001 - 2020, which means that if the rupiah exchange rate against the United States dollar depreciates, the volume of Indonesian shell charcoal exports to China will increase. Conversely, if the rupiah exchange rate against the United States dollar appreciates, it will decrease the volume of Indonesian shell charcoal exports to China.

Based on the discussion of several descriptions of the factors affecting the export of Indonesian shell charcoal to China in 2001 - 2020 above, there are several suggestions given by researchers, including the following:

1. For the government, it is necessary to anticipate the Chinese economy so that the stability of Indonesian shell charcoal exports is maintained and the need for the government to maintain exchange rate stability to maintain the stability of shell exports because Indonesian shell charcoal briquettes have great potential for overseas exports in the long term and hope that the government will look at the shell charcoal briquette business so that it can start cooperation with several countries in the world.

2. For market participants, it is recommended to make a country's Gross Domestic Product (GDP) as an indicator in determining the marketing target of shell charcoal briquettes so that it can increase exports of Indonesian shell charcoal briquettes and can maintain and improve the quality of shell charcoal briquette production.

3. For other researchers, more in-depth research is needed in analyzing the export of Indonesian shell charcoal briquettes to the United States by comparing the export demand of Indonesian shell charcoal from competing countries. Furthermore, it is expected to be able to add other variables to see the effect on the export of Indonesian shell charcoal briquettes so that the results obtained explain various other phenomena.

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