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Analysis of Rice Import Policy in North Sumatra

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ABSTRACT
Indonesia is an agrarian country where most of the population depends on the agricultural sector to live and work. Therefore, the agricultural sector has an important role, especially to maintain food security in Indonesia. The increasing population growth can disrupt Indonesia's food security; therefore, an import policy was carried out to increase rice stocks and stabilize national rice prices. Import activities carried out by a country are closely related to a country's exchange rate movement. Data for 2010-2019 shows an increase in rice consumption in North Sumatra. Unfortunately, rice production does not support the increase in consumption, which shows a declining trend in the same year. The impact of this production and consumption gap is, undoubtedly, an increase in prices from 2010 to 2019. Therefore the government performed imports to stabilize rice prices and maintain rice stocks for the population. This study aims to analyze the effect of rice consumption, rice production, rice prices, and the rupiah exchange rate on rice imports in North Sumatra. This study uses the Error Correction Model to analyze the short-term and long-term of each variable. The results of data processing obtained that in the short term, rice prices and the rupiah exchange rate have no significant effect, while production and consumption have a significant effect on rice imports. In the long term, production, consumption, prices, and the rupiah exchange rate significantly affect rice imports.

Keywords: *Rice Production, Rice Consumption, Rice Prices, Exchange Rates, Rice Imports.*

1. INTRODUCTION

Indonesia is an agricultural country with most of the population works in the agricultural sector. The agricultural sector is the most important in Indonesia's food security. Rice is the staple food for Indonesian people. Indonesia's population continues to grow, resulting in the need for rice that is also increasing. Unfortunately, this need can often not be met by Indonesian farmers' production, which results in imports as an alternative that must be done.

Import is the entrance of goods outside the customs area into the customs area [3], [1]. In trading, export-import activities are necessary because each country has different resources and climates, resulting in different production capacities and types of production [1]. Often, the rice import policy is dilemmatic. On the one hand, it is necessary to maintain the availability of domestic rice and maintain the stability of domestic rice prices. However, on the other hand, it is feared that rice imports are not in favour of domestic farmers; thus, they do not acquire prices that are following the market and production costs that have been spent. An overview of Indonesia's rice imports can be seen in Figure 1.

Fluctuations in the number of rice imports during the period 1990 - 2019 also showed varying numbers. The highest rice imports occurred in 1997 - 2000. During the economic crisis that hit Indonesia, domestic rice production was unable to meet the needs of the Indonesian population. After the crisis was over in 2000, the number of rice imports began to decline. The lowest occurred in 2001, where the number of imports was only 66,880 tons/year. However, after that, the number of imports increasing.

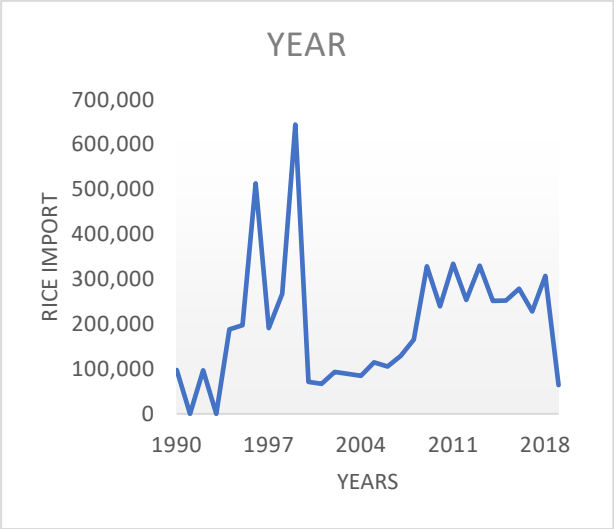

Figure 1. Total rice imports in Indonesia

The government must be cautious in issuing policies regarding the amount of imported rice that can be carried out, not to disturb domestic stability. The import itself is an effort that must be done because the government must ensure the fulfilment of national food needs. [9].

2. LITERATURE REVIEW

The rice production of domestic farmers shows the domestic ability to ensure the availability of rice for all Indonesian population; thus, it can be the basis for how much rice imports must be carried out by the government, rice self-sufficiency policy in agricultural development. Various methods are implemented to achieve self-sufficiency in rice, such as new technological breakthroughs, investment in irrigation infrastructure development, subsidies and procurement of production facilities, price policy and rice trading system, and subsidized credit.

Factors affecting rice imports. Several factors affect rice imports, such as domestic rice production, domestic rice prices, the rupiah exchange rate against the importing country, and rice consumption [14], [17], [5], [18], [15].

This policy encouraged rice production and farmers' income during the period 2001 – 2012. However, this increase in production did not meet all the rice needs of the Indonesian population because the increase in population was much greater than the amount of domestic rice production. In addition, rice was also used as raw material for the food and non-food industries; thus, the demand for rice was also increasing. [11], [12], [13], [16].

High population growth also results in a high need for the consumption of staple foods. Most of the Indonesian population consumes rice as a staple food. Indonesia's rice consumption continued to increase during the 2010-2019 period, as did North Sumatra's rice consumption. North Sumatra's rice consumption was the highest compared to the national average consumption.

The level of rice consumption in North Sumatra in 2019 was 2501672 tons/year [2] or reached 136 kg/capita, while national consumption only reached 102 kg/capita [6]. Undoubtedly, North Sumatra's domestic production was unable to meet this level of consumption, because North Sumatra's rice production only reached 2,078,901.6 tons/year. The interaction of a country with other countries is an absolute thing that must be done in the economy because each country has different production factors, therefore trading is one solution to meet the needs of each country. Fluctuations in the exchange rate can change the relative price of a commodity, where the commodity can become cheaper or more expensive due to changes in the exchange rate. The exchange rate is often used as a measure of a country's competitiveness against other countries. Fluctuations in exchange rates will unquestionably alter export and import activities and, subsequently, change the trade balance position. Therefore it is expected that policymakers understand well how the relationship between exchange rates and trade or output is. [7]

3. METHOD RESEARCH

Time and Location of Research

This study will analyze Total Imports, Rice Consumption, Rice Production, and Exchange Rates in 2005-2019.

Data Collection Method

The data collection technique used in this study is the documentation method, using secondary data. Data were obtained from the Ministry of Finance, the Central Bureau of Statistics of North Sumatra, and other sources.

Assumption Test Analysis

The classical assumption test is a statistical requirement that must be met in multiple linear regression analysis based on Ordinary Least Square (OLS). The classical assumption test often used is the multicollinearity test, heteroscedasticity test, and autocorrelation test.

Data Analysis Methods and Research Models

The method used by the researcher was regression using panel data (pooled data) or called panel data

regression model. Before identifying the panel data regression modelling, studying the linear regression model using the cross section and time-series data is necessary. Panel data analysis in this study was used to analyze the impact of fluctuations in rice consumption, rice production, and the exchange rate on the number of rice imports in North Sumatra. From the variables used, the research model can be formed as follows:

$$Yit = \alpha it + \beta 1X1 + \beta 2X2 + \beta 3X3 \; + + \varepsilon it. \quad (3.4)$$

Where:

Yit	= Number of Rice Imports
X1	= Number of Rice Consumption
X2	= Number of Rice Production
X3	= Rupiah Exchange Rate against US Dollar
β1,β2,β3	= Regression coefficient
Ait	= *Intercept* (Constant)
Ɛit	= Disturbance error

4. RESULTS AND DISCUSSION

Stationarity Test

The statistical test results of the probability values of the five research variables are smaller than alpha 0.05, which means that at the 1st difference level, all research variable data is stationary.

Cointegration Degree Test

The result above the ADF t-statistic value is -5.41 (Prob 0.0001). The residual (ECT) is stationary and shows that there is a long-term cointegration between the dependent variable and the independent variable.

Classic assumption test

Normality test

The normality test results obtained a probability value of 0.782585 in the short-term model and a probability value of 0.048961 in the long-term model, meaning that the equation model is normally distributed.

Multicollinearity Test

The results of the multicollinearity test show that the correlation value between the independent variables in the long-term and short-term models does not show multicollinearity. The correlation value of each independent variable is above 0.90, indicating that the independent variables in the ECM equation model are free from multicollinearity in the short and long term.

Heteroscedasticity Test

The results of the heteroscedasticity test in Table 5 show the Chi-square probability value of 0.1619 in the short-term model and 0.3180 in the long-term model, where the value of p is greater than the significance level of 0.05, which means Ho is accepted, which indicates there are no symptoms of heteroscedasticity in the equation model.

Autocorrelation Test

The results of the autocorrelation test show that in the short and long term, the ECM model used is free from autocorrelation problems. This is indicated by the probability value of Obs*R-squared of p=0.8629 for the short-term model and p=0.9356 for the long-term model. Where both values are greater than 0.05 which means Ho is accepted (no autocorrelation).

ECM Model Estimation Research Results

The short-term equation model is as in equation 1, while the long-term equation model is shown in equation 2.

$$DImp_t = -7752.3 - 0.18DProd_t + 1.04\ DKons_t - 4.53DHrg_t - 27.32\ DKr_t - 1.04 + U_t \quad (1)$$

$$DImp_t = 815053.5 + 0.12\ DProd_t + 0.72\ DKons_t - 39.82DHrg_t - 29.44\ DKr_t - 1.04 + U_t \quad (2)$$

4.1. Discussion

Effect of Rice Production on Rice Imports in North Sumatra

In the short term, the rice production variable has a negative and significant effect on changes in imports at α = 5%, and the coefficient value is -0.184801. When rice production increases, it certainly causes the availability of rice reserves for food security to increasing; thus, the number of imports that are useful as an addition to food reserves will decrease. Meanwhile, in the long term, the rice production variable has a positive and significant effect on rice imports in North Sumatra at α = 5% with a coefficient value of 0.116774. This result is consistent with [19] research, which states that rice production has a positive and significant effect on rice imports in Nigeria. The factor of the decrease of harvested land area and the immense threat from nature to crops. Uncertain conditions in the future cause import policies to remain being implemented.

The Effect of Rice Consumption on Rice Imports in North Sumatra

According to [4], consumption positively correlates with income or output of goods and services available in a country. The results of the research in the short and long term models of rice consumption variables have a positive and significant effect on

changes in imports at α = 5%, the number of the short-term coefficient value is 1.04, while in the long term it is 0.12, meaning that every increase in consumption will be followed by an increase in imports.

The Effect of Rice Prices on Rice Imports in North Sumatra

Import prices are relative to domestic prices. Importers will import a product when the relative price of imports is cheaper than the price of domestic products [10].

In the short term, it has a negative and insignificant effect, meaning that changes in domestic rice prices will not affect the number of imports, while in the long term, it is found that the price of rice has a negative and significant effect on imports, meaning that an increase in domestic rice prices will reduce the number of rice imports in North Sumatra. When all factors change, price is an important variable that affects the number of imports.

Effect of Exchange Rate on Rice Imports in North Sumatra

The exchange rate of a country will determine the number of imports that will be carried out [8]. The results of the study obtained that in the short and long term, the exchange rate had a negative and significant effect on the number of imports, when the short-term coefficient is 27.3, and the long-term is 29.4, meaning that the decline in the rupiah exchange rate will cause imports to increase, and this will certainly cause the price of imported rice becomes expensive.

5. CONCLUSION

In the short term, the rice production variable has a negative and significant effect on changes in imports at α = 5% and the coefficient value of -0.184801. In the long term, it has a positive and significant effect on rice imports in North Sumatra.Rice consumption in the short and long term models of rice price variables has a positive and significant effect on changes in imports at α = 5%, the number of the short-term coefficient value is 1.04, while the long term is 0.12.

Domestic rice prices in the short term have a negative and insignificant effect, meaning that changes in domestic rice prices will not affect the number of imports, while in the long term, it is found that rice prices have a negative and significant effect on imports.In the short term and long term, the exchange rate negatively affects the number of imports; the coefficient is 27.3 during the short-term and 29.4 during the long term.

The government must always carry out price stabilization, for example, conducting market operations during the harvest season; thus, all harvests can be accommodated by the government and farmers are protected from low prices. Maintaining rice stocks as a basic need can also be achieved with controlled imports; thus, people can still enjoy affordable rice prices.

Increased skills and knowledge of farmers continue to be carried out with counselling; thus, production can be maximized at low costs. The government to conduct socialization for alternatives to rice as a staple food.

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