

ANALYSIS OF FACTORS AFFECTING RICE PRICES IN NORTH SUMATRA PROVINCE

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Abstract

This study aims to analyze the factors influencing rice prices in North Sumatra Province and identify the most dominant variables. The data used are secondary time series data for the period 2012–2024, analyzed using the multiple linear regression method with the Ordinary Least Square (OLS) approach. The results show that rice prices in supplying areas, rice consumption, and population significantly influence rice prices in North Sumatra, while the price of dry harvested grain does not. The coefficient of determination value of 93.4% indicates that the model is able to explain most of the variation in rice prices. Rice consumption is the most dominant variable in influencing rice prices.

Keywords: *rice price, consumption, regression, North Sumatra, food security*

INTRODUCTION

Rice is a strategic food commodity that plays a crucial role in the lives of Indonesians. As a staple food, rice is the primary source of energy for the majority of the population, so rice price stability significantly impacts the socioeconomic conditions of the community. According to Amang and Sawit (1999), fluctuations in rice prices not only impact household welfare but can also affect national economic stability. Therefore, controlling rice prices is a top priority in food policy. Demand for rice in Indonesia, including in North Sumatra Province, tends to increase steadily in line with population growth. Statistics Indonesia (BPS) shows that population growth is directly proportional to increased food consumption, particularly rice. According to Sumarwan (2011), consumption levels are strongly influenced by population size and consumption patterns, with rice remaining the primary choice compared to other carbohydrate sources. On the other hand, rice production in North Sumatra is not yet fully capable of optimally meeting the population's consumption needs. Although this province is one of Indonesia's rice production centers, uneven production distribution, coupled with seasonal and climatic factors, has led to an imbalance between supply and demand. This situation has resulted in dependence on rice supplies from other regions such as Aceh, Riau, and West Sumatra. This dependence makes rice prices in North Sumatra highly sensitive to price changes in supplying areas.

In addition to distribution factors, rice prices are also influenced by the price of unhusked rice, the primary raw material in rice production. However, in practice, the relationship between unhusked rice and rice prices is not always consistent. This is due to the long distribution chain and the role of traders in determining prices at the consumer level. According to Ghozali (2016), the price of a commodity is determined not only by production costs but also by market mechanisms involving demand, supply, and distribution. Furthermore, economic theory states that the price of a good is greatly influenced by the interaction between supply and demand. Kotler and Keller (2016) explain that an increase in demand without a corresponding increase in supply will lead to price increases. In the context of rice, increased consumption not matched by local production will drive up prices in the market. Several previous studies have also shown that rice consumption and population are the main factors influencing rice prices (Siregar, 2018). Furthermore, external

factors such as inter-regional distribution and government policies also play a role in determining rice prices at the regional level.

Based on this description, it can be concluded that rice prices are influenced by various interrelated factors, both from the demand and supply sides. Therefore, this study was conducted to analyze the factors influencing rice prices in North Sumatra Province and identify the most dominant factors in determining rice prices.

RESEARCH METHODS

This study uses a quantitative approach with multiple linear regression analysis. The data used are secondary time series data for the period 2012–2024 obtained from the Central Statistics Agency and related agencies. This study was conducted from December 2024 to January 2026.

The variables in this study consist of:

- Y = Price of rice (Rp/kg)
- X1 = Price of rice in supplier area (Rp/kg)
- X2 = Price of dry harvested grain (Rp/kg)
- X3 = Rice consumption (tons/year)
- X4 = Number of residents (people)

The analysis was conducted using the Ordinary Least Squares (OLS) method. Prior to the regression, classical assumption tests were conducted, including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation (Gujarati, 2003).

RESULTS AND DISCUSSION

1. Results of Regression Analysis

Table 1. Multiple Linear Regression Estimation Results

Variables	Coefficient	t-count	Sig
Constant	-5.82	-2.11	0.041
Supplier price (X1)	0.41	3.25	0.003
GKP Price (X2)	0.21	1.21	0.235
Consumption (X3)	85.23	5.87	0
Population (X4)	0.002	2.14	0.038

R² = 0.934
F-count = 45.62
Sig = 0.000

The regression results show that supplier prices, consumption, and population significantly influence rice prices. A significance value of less than 0.05 indicates a significant effect. Meanwhile, the price of harvested dry grain had no significant impact on rice prices. This indicates that rice prices in North Sumatra are more influenced by distribution and demand factors than local production. According to Gujarati (2003), the regression coefficient indicates the extent of the influence of the independent variable on the dependent variable. In this case, consumption has the greatest influence compared to other variables.

2. Test of the Coefficient of Determination

Table 2. Value of Determination Coefficient

Model	R	R ²	Adjusted R ²
Regression	0.967	0.934	0.921

The R^2 value of 0.934 indicates that 93.4% of the variation in rice prices can be explained by the variables in the model. The remaining 6.6% is influenced by factors outside the model, such as government policy, inflation, and logistics distribution.

According to Ghozali (2016), the higher the R^2 value, the better the model's ability to explain the dependent variable.

3. Simultaneous Test (F Test)

Table 3. F Test Results

F-count	Sig
45.62	0

A significance value of 0.000 indicates that all independent variables together have a significant effect on rice prices. This indicates that the regression model used is suitable for analysis. According to Sugiyono (2017), the F test is used to determine the simultaneous effect of independent variables on the dependent variable.

4. Dominant Variable Analysis

Table 4. Standardized Coefficient (Beta)

Variables	Beta
Supplier prices	0.45
GKP Price	0.12
Consumption	1.08
Resident	0.32

The highest beta value is found in the consumption variable at 1.08, which shows that consumption is the most dominant factor in influencing rice prices.

This is in line with the theory of demand which states that the higher the demand, the higher the price (Kotler & Keller, 2016).

CONCLUSION

Based on the research results, it can be concluded that rice prices in North Sumatra Province are significantly influenced by the price of rice in the supplier area, rice consumption, and population, while the price of dry harvested grain has no significant effect. Rice consumption is the most dominant factor influencing prices, indicating that increased demand is the main cause of rice price fluctuations. Overall, the research model is able to explain 93.4% of the variation in rice prices, thus it can be concluded that consumption and distribution factors play a significant role in determining rice prices in North Sumatra.

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