

## DETERMINANTS SELF SUFFICIENCY OF RICE IN SUPPORTING FOOD INDEPENDENCE

<sup>1</sup>Lendi Ageng Kurnia, <sup>2</sup>Deden Dinar Iskandar

<sup>1,2</sup>Diponegoro University

### ABSTRACT

*The research objective is to determine the future trends of rice self-sufficiency and to know the factors that influence rice self-sufficiency so as to achieve food independence. Previous research reviews rice self-sufficiency in terms of production factors. In this study, price stability, rice supply and farmers' welfare are taken into account as research variables. The results showed that the trend of analysis with quadratic models to measure rice self-sufficiency tends to increase. Variables that influence rice self-sufficiency are rice productivity, rice supply stability, application of technology and dummy during the New Order government with reform. Whereas the gap between rice price and grain price, the level of rice consumption and the welfare of farmers, does not affect rice self-sufficiency. The conclusion of this research is that to increase rice self-sufficiency, it is necessary to increase rice productivity, ensure that government rice reserves are always available so as to stabilize food supply stability, and always develop appropriate technological innovations to support increased production.*

**Keywords:** *rice self-sufficiency, food independence, availability of rice*

### ABSTRAK

Tujuan penelitian adalah untuk mengetahui trend swasembada beras di masa depan dan mengetahui faktor yang mempengaruhi swasembada beras sehingga mampu mencapai kemandirian pangan. Penelitian dahulu mengulas swasembada beras dari sisi faktor produksi. Dalam penelitian ini, stabilitas harga, pasokan beras serta kesejahteraan petani diperhitungkan sebagai variabel penelitian. Hasil penelitian menunjukkan bahwa trend analisis dengan model quadratic untuk mengukur swasembada beras cenderung terjadi kenaikan. Variabel yang mempengaruhi swasembada beras adalah produktivitas padi, stabilitas pasokan beras, penerapan teknologi dan dummy masa pemerintah Orde baru dengan reformasi. Sedangkan variabel gap harga beras terhadap harga gabah, tingkat konsumsi beras masyarakat dan kesejahteraan petani, tidak mempengaruhi swasembada beras. Kesimpulan penelitian ini adalah untuk meningkatkan swasembada beras perlu menggenjot produktivitas padi, memastikan cadangan beras pemerintah selalu tersedia sehingga memantapkan kestabilan pasokan pangan, dan selalu mengembangkan inovasi teknologi tepat guna dalam mendukung peningkatan produksi.

**Kata kunci:** swasembada beras, kemandirian pangan, ketersediaan beras

## INTRODUCTION

Based on FAO statistics (2015) Indonesia is among the third largest rice producing countries in the world after China and India. Chinese rice production was 741 million tons, India was 153 million tons while rice production in Indonesia was 75.6 million tons. But on the other hand, as population growth is high, Indonesia is the fourth rice consuming country after Myanmar, Vietnam and Bangladesh.

According to the FAO in 2015 there were still around 19.4 million Indonesians who were starving. This situation is very ironic, the existence of large natural resources and high potential of the agricultural sector but its utilization has not been optimized so that Indonesia is a contributor to one-third of world hunger cases.

These conditions encourage the government to realize rice self-sufficiency through increased rice production. The rice self-sufficiency program has been launched since the Old Order government and was only realized in 1984 and 2008. But the self-sufficiency achieved is still temporary. The fact is that rice self-sufficiency in the past two years has never been achieved, where the failure of sustainability is without a clear reason so that the solution for fulfilling the

availability of rice through procurement of imported rice (Elizabet, 2011).

The achievement of rice self-sufficiency cannot be separated from the government's target towards food independence. According to Law No. 18 of 2012 concerning food, it is stated that food independence is an effort of the government to produce food from natural potential in the country so that it is able to guarantee the fulfillment of food needs to the level of individual households. During the big harvest, around March and April, abundant production so that the fulfillment of rice needs in the community is not a problem. However, during a famine, the availability of rice has a deficit, so an additional supply of rice is needed. This phenomenon must be handled so that food independence is fulfilled all the time.

According to the 2015 Research and Development, rice self-sufficiency achievement factors are influenced by land, water, people, technology, climate change, market liberalization and farmers' income. And one of the main potentials in spurring an increase in rice production is the area of paddy fields. Based on BPS data, the biggest rice producer is Java with a narrow agricultural land area. Java Island is considered as a food granary for the fulfillment of community rice needs. This

condition cannot be balanced by other islands because it is related to soil fertility. This is an obstacle to achieving self-sufficiency in rice. To see the development of harvested area, production and productivity can be seen in table 1.

Table 1. Development of harvested area, production and productivity

Year	Harvested area (ha)	Rice Production (ton)	Productivity (ku/ha)
1970	8.135.083	19.331.000	23,79
1975	8.495.104	22.339.200	26,30
1980	9.005.065	29.651.905	32,93
1985	9.902.293	39.032.945	39,42
1990	10.464.651	45.132.642	43,13
1995	11.420.680	49.697.442	43,52
2000	11.793.575	51.898.852	44,01
2005	11.839.060	54.151.097	45,74
2010	13.253.450	66.469.394	50,15
2015	14.309.364	75.550.895	52,80

Source: BPS

Based on table 1 illustrates that although rice production always increases but only in small amounts. The above is in accordance with the research of Palm Oil (2013) that the relatively low growth of rice supply is due to the relatively stagnant production growth caused by the increasingly limited area to increase rice production and the symptoms of slowing rice production growth (productivity).

According to research Mulyani et al (2017) states that to achieve sustainable

rice self-sufficiency needs to improve / improve irrigation channels, providing balanced fertilizers, and developing superior varieties. Besides that, it is necessary to expand agricultural areas on swamps (tides, peat), non-swamp wetlands and dry land with slope of less than 15% for dry fields.

According to Sawit (2013) efforts to achieve rice self-sufficiency in the present are increasingly challenging because the source of rice production is still dominated by agricultural land area, not based on superior quality seeds / seeds. This causes the growth of rice production to be less stable. Likewise, the policy to provide subsidies for seeds, fertilizers and the regulation of grain / rice prices did not significantly affect the increase in productivity and sustainability of local rice products.

According to the 2015 Ministry of Agriculture, realizing self-sufficiency in rice must pay close attention to the interaction of complex factors both in terms of supply and demand. In achieving self-sufficiency in rice is interpreted in 3 aspects, namely:

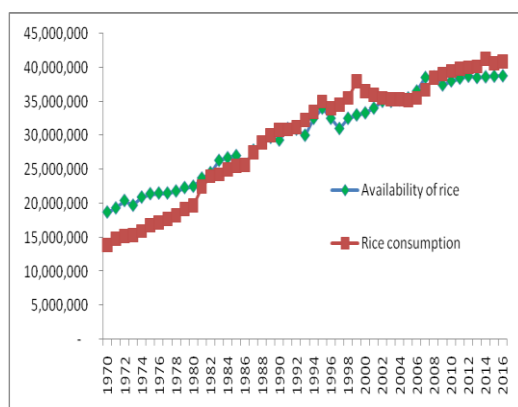
- The ability to produce domestic products to meet people's consumption needs.
- Ability to recover due to shocks (due to climate or social factors) which causes

production for consumption to decrease.

- Ability to anticipate production shocks by providing safe stock to manage rice shortages.

It is a common problem that there are fears of food insecurity because production tends to fall and population increases so that demand will not be proportional to availability on the ground. To find out the domestic rice production with the needs of the community can be seen the following graph.

Figure. 1 Domestic rice production and rice consumption needs in Indonesia 1970-2016



Source: BPS and IRRRI processed

Based on Figure 1, there was a surge in rice demand in 1988-2002 that exceeded local rice production. According to BPS data the largest population growth rate occurred in the period 1980 - 1995 around 1.79% whereas the year before the population growth rate was lower. According to Thomas Malthus's theory that the number of people will increase

exponentially, while efforts to increase food supply can only increase arithmetic.

In this study, rice self-sufficiency is not only seen based on factors of production alone, it is also examined the level of welfare of farmers as the main actors, procurement of rice reserves in maintaining supply stability and the level of rice consumption as a measure of how much local rice is dependent on the community.

To achieve food independence, serious and comprehensive steps need to be taken so that the goal of optimizing local rice production is able to be achieved as expected. And so far to meet food needs must still be supported by rice imports, as a solution to stabilize local rice supply.

## OBJECTIVES AND PROBLEMS

Self-sufficiency in rice to meet the needs of the community is a crucial matter. Where the need for rice continues to increase while meeting availability tends to stagnate. Availability can be met both local production and through rice imports. To reduce dependence on imports, ensuring a steady and sustainable domestic rice production is a major factor that cannot be denied. The problems of this research are:

1. What is the trend in the ability of rice self-sufficiency in the future?
2. What factors determine rice self-sufficiency?

Based on the formulation of the problem outlined above, the objectives of the study are:

1. To see a trend towards the ability to fulfill local rice production in a positive or negative direction.
2. To find out the extent of the determinants of rice self-sufficiency in supporting food independence.

## **LITERATURE REVIEW**

### **1. Rice Self-Sufficiency**

Rice self-sufficiency is the ability of the state to meet rice needs without the need to bring in and intervene from foreign parties. With rice self-sufficiency, it is expected that the community will be able to access local products easily and farmers feel protected because of the certainty of buying yields.

The toughest challenge in achieving rice self-sufficiency is the ability to provide local rice products in a sustainable manner where the demand and demand for rice tends to continue to increase. The government's step in pursuing rice self-sufficiency by identifying potential sources of growth of panga products accurately so that they can be taken into consideration in formulating policies to increase rice productivity. In policy making, the government not only pursues the ability of local products but also considers environmental conditions and farmers as the main stream in

increasing productivity (Balitbang Pertanian, 2015).

Rice self-sufficiency is not only a matter of meeting people's consumption needs but must also pay attention to the stability of rice supply reserves that are only used during emergencies such as natural disasters, surging rice prices on the market or subsidies for the poor.

International Institutions with a neoliberal attitude see that rice self-sufficiency is not the right step in realizing food security. This is because there will be a conflict of interest, that is, there will be restrictions on rice imports so that they are not in accordance with international agreements on free trade.

The realization of rice self-sufficiency faces many obstacles both at home and abroad. But the government continues to aggressively promote rice self-sufficiency as an effort to maintain the stability of domestic rice prices to reduce surges in world rice prices, protect farmers' products

### **2. Prior Research**

Based on previous research related to rice problems, it can be seen in the research of Wijayanti et al (2011) with the title National Rice Inventory Analysis in Meeting the National Rice Needs of Bulog Public Companies, using the least squares method for trend analysis and multiple linear regression with the SPSS program.

The results of the study stated that the trend of national rice supply to meet the needs of Perum Bulog tends to decrease because the increase in the distribution of quantum exceeds the increase in domestic procurement so that the national rice supply decreases. While the factors that determine the national rice supply are domestic rice production and domestic distribution while rice imports are complementary if necessary.

Sawit (2013) in the Self-Reliance Policy of Big Desire Losing Focus using a descriptive method states that the 2010-2012 rice policy has not been focused in overcoming problems. Subsidy policy has no significant effect on increasing productivity, land conversion is unstoppable, SOEs such as Bulog should focus on strengthening the downstream food industry.

Elizabeth (2011) with the title Strategy for Achieving Diversification and Food Independence between Expectations and Reality using descriptive research methods. It was stated that food independence could be realized by increasing domestic food production based on local resources, limiting food imports below 10% of national food needs, increasing agricultural land expansion of at least 15 million ha, increasing food reserves, strengthening government policies in

anticipating food insecurity and developing agro-industry domestic food products.

The ability of rice self-sufficiency is supported by various factors, namely the ability to produce production with inputs (land, production input, etc.) that can be fully controlled at various levels of the production system, the ability to make quick recovery after a production shock that results in reduced availability of food for the community, the ability to anticipate in supply of food reserves (Sumarno, 2015).

Based on the above research results in supporting food independence programs can not be fully met if only dependent on local rice products. However, the extent to which the potential for self-sufficiency in rice in the future is expected to still show a positive direction and the elements that influence it can continue to be sought to be encouraged so that food independence can be realized.

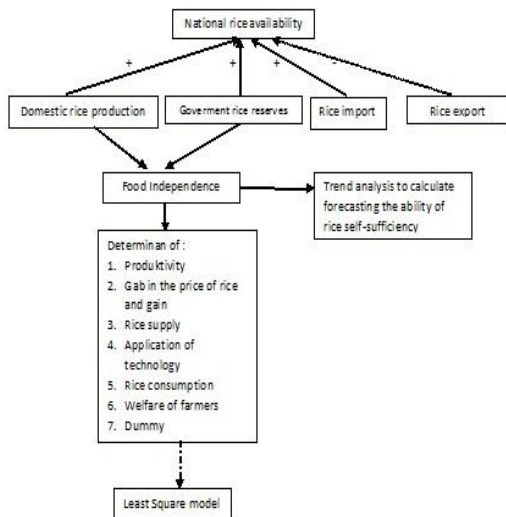
## **RESEARCH METHODS**

### **1. Framework for Thinking**

So that the availability of rice is expected to always be stable to meet people's livelihoods, the most important factor is fulfillment from domestic sources. Fulfillment of rice fulfillment is realized in the form of rice self-sufficiency.

In this study only discusses rice because it is considered the most strategic and crucial commodity for the community. Figure 3: research flow framework

**2. Data Collection**



In this study using secondary data, while the source comes from the Central Statistics Agency (BPS), FAO (Food Agriculture Food) statistics, IIRI (International Rice Research Institute), Ministry of Agriculture. The sample is used for taking the population from 1970 to 2016.

**3. Data Analysis**

This study uses 2 models with the Minitab 15 program, namely:

- a. Trend analysis to calculate forecasting the ability of rice self-sufficiency. To get the best trend analysis model, it is necessary to estimate the 3 existing models, namely the linear trend model, the quadratic model, the growth curve model. Forecasting is close to correct if

the error value is as small as possible. In the Minitab chart the values of MAPE (Mean Absolute Percentage Error), MAD (Mean Absolute Deviation), MSD (Mean Squared deviation) are different for each model. These values are compared and obtained the best best model for forecasting.

- b. Multiple linear regression with the Least Square method to determine the factors that determine rice self-sufficiency. The models used are:

$$MAN = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7$$

information

MAN: Y: Self-sufficiency in rice

x1: rice productivity

x2: the gap between the price of rice and the price of rice

x3: supply stability

x4: application of technology

x5: rice consumption level

x6: the level of welfare of farmers

x7: dummy (New Order and Reform)

The dependent variable that is calculated is:

*Rice self-sufficiency*

$$= \frac{\text{domestic rice production}}{\text{Domestic rice production} + \text{imported rice}}$$

*Rice production*

$$= \text{milled dry grain production} \times 62.74\%$$

*Domestic rice production*

$$= \text{rice production (food / non-food)} \times 3.33\%$$

The independent variables calculated in the study are as follows:

a. Rice productivity

This variable is to determine the ability of natural resources (land) to get optimal results.

$$\text{Productivity} = \frac{\text{Domestic rice production}}{\text{Harvested area}}$$

b. The price gap of rice to the price of grain

This variable illustrates the disparity in grain prices at the farm level and the price of rice in consumers causing a long supply chain. The higher the value of gab illustrates the ineffectiveness of the distribution chain and the smaller the profit received by farmers.

$$\text{Price gap} = \frac{\text{price of rice in consumers}}{\text{Grain prices at farm level}}$$

c. Supply stability

Stability of the supply of goods occurs when they are in sufficient quantities, affordable and ready to be issued at any time in a forceful condition (Kementan, 2016). This variable gives an illustration of the amount of rice stock reserves in the Bulog warehouse.

$$\text{Supply stability} = \frac{\text{distribution of rice at the Bulog warehouse}}{\text{Domestic rice production}}$$

d. Application of technology

According to Wasono in Nurmala (2012), applied technology used in

aquaculture includes 3 aspects, namely the use of better methods, the use of appropriate tools and the addition of inputs to farming (fertilizers, seeds).

$$\text{Application of technology} = \frac{\text{Amount of subsidized fertilizer in circulation}}{\text{Amount of fertilizer needed}}$$

e. Rice consumption level

Calculated by comparing the amount of rice consumed to the total population.

$$\text{Rice consumption level} = \frac{\text{Number of rice consumed}}{\text{Total population}}$$

f. The level of welfare of farmers.

Calculated from Farmer Exchange Rate (NTP) which gives an illustration of the level of competitiveness of agricultural products against other products. The higher the value is indicated the greater the welfare of farmers.

$$\text{Farmers' welfare level} = \frac{\text{index of price development of products}}{\text{price development index needed by farmers.}}$$

## RESULTS AND DISCUSSION

### 1. Trend Analysis of Rice Self-Sufficiency

To get forecasting results with the best results, estimation stages are measured by measuring three types of models, namely linear, quadratic and growth curves. The MAPE, MAD, and MSD values for the 3 trend analysis models are as follows:



Table 2. MAPE, MAD and MSD values in the Analysis of Food Independence Trends

Model Type	MAPE	MAD	MSD
Linear	2,6198	0,02305	0,00077
Quadratik	2,60718	0,02294	0,00075
Kurva pertumbuhan	2,61619	0,02303	0,00077

Source: Processed by the Minitab Program 15

Based on table 2 above for the three measurements (MAPE, MAD, MSSD), the quadratic model gives the smallest value. The best model for forecasting data uses a quadratic model.

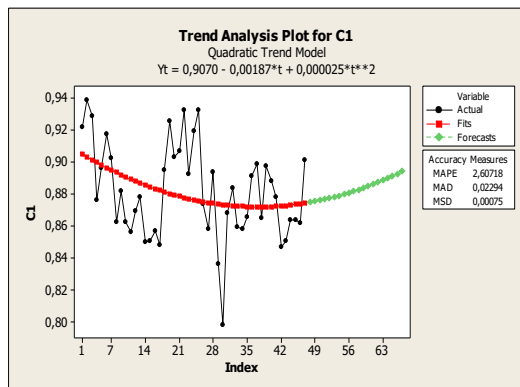


Figure. 3 Quadratic Model trend analysis of Rice Self-sufficiency.

Source: Processed by the Minitab Program 15

The trend equation model for rice self-sufficiency analysis is

$$Y_t = 0.9070 - 0.00187 * t + 0.000025 * t^{**} 2$$

Information:

Y<sub>t</sub> = the predicted value

T = time

Based on the above equation, it can be seen forecasting the value of rice self-sufficiency for the next few years

Table 2. Forecasting Rice Self-Sufficiency from 2018 – 2027

Year	Y <sub>t</sub> (Forecast value)
2018	-0,93916
2019	-0,93861
2020	-0,938
2021	-0,93735
2022	-0,93664
2023	-0,93584
2024	-0,93508
2025	-0,93432
2026	-0,93332
2027	-0,93237

Source: Processed by the Minitab Program 15

Based on table 2, the trend of rice self-sufficiency for the future tends to increase even though the current achievement of rice self-sufficiency is still far below the conditions of the New Order. The upward trend was triggered by the possibility of increasing rice productivity by optimizing the application of appropriate technology so as to achieve incentive agriculture, expanding paddy fields outside Java and supporting government policies by reducing rice imports so that it could gradually reduce dependence on external products.

## 2. Determinants of rice self-sufficiency

Rice self-sufficiency provides an illustration of the ability to produce food, especially local rice, in accordance with the natural potential in the region so that it is sufficient to meet the fulfillment of food. In this study the factors that determine rice self-sufficiency are determined by 7 independent variables,

namely rice productivity, the price gap of rice to grain, the stability of rice supply, the application of technology, the level of rice consumption in the community, the welfare of farmers and dummy during the New Order (1970-1998) and the Reformation (1999-2016).

To see the effect of the seven independent variables used multiple linear regression analysis with the following results:

Predictor	Coef	SE Coef	T	P	VIF
Constant	0,92661	0,07921	11,70	0,000	-
Productivity	0,00265	0,0007982	3,33	0,002	4,580
Price Gap	-0,03559	0,02961	-1,20	0,237	1,427
Suply stability	-0,005499	0,001356	-4,06	0,000	2,528
Application of tech	0,0002637	0,0002188	2,21	0,035	2,808
Rice consumption	-0,004265	0,006870	-0,62	0,538	4,703
Welfare of farmers	-0,0003158	0,0005224	-0,60	0,549	1,791
Dummy	0,04582	0,01176	3,90	0,000	3,998

S = 0,0197857

PRESS = 0,0228017

R-Sq = 61,8%

R-Sq(pred) = 42,94%

R-Sq(adj) = 54,9%

### Analysis of Variance

Source	DF	SS	MS	F	P
Regression	7	0,0246935	0,0035276	9,01	0,000
Residual Error	39	0,0152675	0,0003915		
Total	46	0,0399609			

Based on the results of the study, there was no serious relationship or multicollinity between the 7 independent variables because the VIF value of each variable was less than 5. The value of R-Sq or (R<sup>2</sup>) was 61.8 percent meaning that the seven independent variables used could explain the dependent variable (Y) of 6.8 percent while the remaining 38.2 percent is explained by other variables not included in this study.

The equation model for rice self-sufficiency is:

$$Y = 0.927 + 0.00266 \text{ productivity} - 0.0356 \text{ price gap} - 0.00550 \text{ stab. Supply} - 0.000264 \text{ technology} - 0.00426 \text{ tk. Consumption} - 0,000316 \text{ welfare of farmers} + 0.0458 \text{ dummy}$$

The constant in the above equation is 0.927 meaning that if all free variables are zero then the Y value is 0.927. This can illustrate that without productivity, price gaps, supply stability, technology application, consumption levels and farmers' welfare, rice self-sufficiency can still be a surplus of 0.927 tons from other factors outside the research variable.

F test obtained a result of 9.01 with a p value of 0.00 so that the significance value is smaller than the real level ( $\alpha = 5$  percent), H1 is accepted and H0 is rejected. This means that the independent variables together have a significant effect on rice self-sufficiency (Y).

The relationship of each individual variable to Y can be seen as follows:

a. Rice productivity

In this study the p value of the partial t test is 0.002 with a level of  $\alpha = 5$  percent so that H1 is accepted and H0 is rejected, productivity variables have a significant effect on Y. Regression coefficient = 0.0026 A positive sign on the coefficient indicates that if rice productivity experiences increase then rice self-sufficiency will rise.

b. Rice price gap against the price of grain

The p value of the partial t test is 0.237 with a level of  $\alpha = 5$  percent so that H1 is rejected and H0 is accepted as a price gap variable that does not have a significant effect on Y. The

value of the regression coefficient = -0.03559. The negative sign on the coefficient indicates that the price gap is inversely proportional to rice self-sufficiency. When there is a large gap between the price of rice and grain, rice self-sufficiency will decrease. The high gap reflects the stability of rice prices in consumers and unhulled rice prices in farmers. The tendency of high grain prices has led to the reluctance of farmers to grow rice so that domestic production is shrinking. High price disparities that do not benefit farmers certainly hamper government programs to increase rice productivity.

c. Supply stability

The p value of the partial t test is 0,000 with a level of  $\alpha = 5$  percent so H1 is accepted and H0 is rejected, so supply stability has a significant effect on Y. Coefficient value = -0.00549 Negative sign on the coefficient indicates that supply stability is inversely proportional to self-sufficiency rice. This is understood because one of the fulfillment of government food reserves is taken from the production of farmers' rice so that increased supply stability will reduce the ability of domestic production to supply national rice supplies. With these results it can be seen that the

main source of government reserve stock in the Bulog warehouse is originating from the procurement of grain from farmers rather than being fully fulfilled from imported rice.

d. Application of technology

The p value of the partial t test is 0,0325 with a level of  $\alpha = 5$  percent so that  $H_0$  is accepted and  $H_1$  is rejected, the technology application variable has a significant effect on Y. The value of the regression coefficient = 0,00026

The positive sign on the coefficient shows that the application of technology is directly proportional to rice self-sufficiency. This means that the provision of subsidized fertilizer to farmers to the overall fertilizer demand affects rice production proportionally. The policy of fertilizer subsidies turned out to have a large impact as expected especially in increasing rice production.

e. Rice consumption level

The p value of the partial t test is 0,538 with a level of  $\alpha = 5$  percent so that  $H_0$  is rejected and  $H_1$  is accepted the level of rice consumption has no significant effect on Y. Regression coefficient = -0.00426 Negative sign on the coefficient indicates that the level of rice consumption inversely proportional to rice self-sufficiency. This means that the fulfillment of rice consumption in the community is not

solely supplied from local rice production, but the shortcomings are met from imports. With the high demand for rice consumed and part of the fulfillment obtained from imported procurement, it is difficult to achieve food independence.

f. Farmer's welfare

The p value is 0.549 with a level of  $\alpha = 5$  percent so that  $H_1$  is rejected and  $H_0$  is accepted, the welfare variable of farmers does not have a significant effect on Y. Regression coefficient = -0,00035 The negative sign on the coefficient indicates that farmers' welfare is not in line with rice self-sufficiency. Land ownership is relatively narrow, high production costs and demands to meet daily needs that must be borne by farmers causes planting rice is not an alternative to improve the welfare of farmers' lives.

g. Dummy

The value of p value is 0,000 with a level of  $\alpha = 5$  percent so that  $H_1$  is accepted and  $H_0$  is rejected, the dummy variable between the New Order and the Reformation has a significant effect on Y. Regression coefficient = 0.0458 Negative signs on the coefficient indicate that rice self-sufficiency during the Reformation (1999-2016) has decreased. This is supported by the large difference in the price of rice and

grain at the farm level and the welfare of farmers who were lacking, both during the New Order and Reformation, so that it became a big dilemma to realize food independence.

## **CONCLUSIONS AND SUGGESTIONS**

### **1. Conclusions**

To determine the supply of local rice production to meet the availability of national rice observed through rice self-sufficiency variable. Based on rice self-sufficiency research is significantly affected by productivity, rice supply stability, and the application of appropriate technology. The condition of the ability to achieve self-sufficiency in rice occurred a significant difference between the New Order and the Reformation. Variables that did not have a significant effect on rice self-sufficiency were rice price gaps on grain prices, the level of rice consumption in the community and the welfare of farmers.

The difference between rice self-sufficiency during the New Order (1970-1998) and the reform period (1999-2016) was due to an increase in population as rice demand continued to increase but was not matched by rice productivity and significant agricultural technology support. This proves the government's partiality towards the development of the agricultural sector is inconsistent so that

rice self-sufficiency has not been able to be overcome by relying only on local rice production.

Based on the analysis of trends towards rice self-sufficiency there is a tendency to continue to increase in the future. This is inseparable from the determinants of rice self-sufficiency (productivity and application of technology) which are still being pursued to increase.

The welfare of farmers has not gone hand in hand with the achievement of food independence. Ironically, even the increase in rice self-sufficiency has decreased the welfare of farmers. This is due to the low bargaining power of farmers, as evidenced when the price of rice on the market has increased, not followed by an increase in grain prices at the farm level. Thus those who can enjoy the benefits of the rice trade system are big traders.

### **2. Suggestions**

In order to be able to achieve self-sufficiency in rice there are things that need attention:

1. Government support to subsidize farmers' needs in increasing rice productivity continues. Because farmers are unable to fund the massive intensification of farming.
2. Ensuring a stable supply of government rice reserves through the purchase of

grain / rice at farmers, especially during the harvest season, thereby reducing dependence on rice imports.

3. The Government Purchase Price Policy (HPP) of grain and rice must always be reviewed along with developments in the dynamics of rice prices at the market level so that the HPP policy becomes a reference and is not left behind by the rice market players.
4. Improve the welfare of farmers by increasing the purchasing power of farmers through providing certainty that the products harvested are bought at high prices so that farmers are able to buy basic necessities at affordable prices, reducing the gap between farmers and consumer prices.

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