***STABILITY AND DISPARITY OF GRAIN AND RICE PRICES DURING***

***THE GOVERNMENT PURCHASE PRICE POLICY: CASE STUDY IN LOMBOK ISLAND - INDONESIA***

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*Abstract*

*The objectives of this study were to analyze the price stability of grain at the farmer level and the effect of the implementation of the Government Purchase Price on the price level of grain, to analyze the causes of the disparity between the price of grain and the price of rice, and the process of transmitting the price of grain and rice at the institutional level marketing, and to analyze the effectiveness of Government Purchase Price policy on the price stability of grain. The data used were the secondary data of 2014-2019.Data were analyzed by simple regression-correlation, transmission elasticity, and the variation coefficient analysis.The results of the study showed that the impact of the implementation of the Government Purchase Price policy on the price stability of farmers' grain was relatively stable. The disparity between the price of grain and the price of rice was caused by two factors, namely the pattern of changes of the price of grain and the price of rice and the flexibility of price transmission. The implementation of the Government Purchase Price policy on the price stability of grain was effective.*

***Keywords:*** *Policy, price of grain, stabilization, Lombok Island*

INTRODUCTION

 The program of price-stabilization for rice that the government commonly implemented is inter-temporal price-stabilization (Miranda, Mario J., and Peter G. Helmberger, 1998). This stabilization is divided into two types i.e. price variation between seasons (intra-year) and price variation between years (inter-year) (Yami, Mesay, et al. 2021). Knowledge about the different types of price variations is important to implement policy instruments, i.e. to lead prices whether to extreme or to normal fluctuation (Ito, 2014). Therefore, these two types of price stabilization are still being implemented by the government to intervene in the domestic rice market to realize a more equitable economy in terms of rice (David Dawe, C. Peter Timmer, 2012).

The reason why the government thinks that it is necessary to actively intervene in the domestic grain and rice markets is because the grain and rice markets are highly dependent on: (1) domestic conditions such as rice production, the characteristics of grain and rice, and the characteristics of farmers, and (2) international conditions such as the world rice market, the money market, and the world oil market. The conditions of domestic grain and rice markets are determined by the power of demand and supply. While it is believed that the supply of grain and rice keeps changing throughout the year, the demand is relatively constant. This condition results in the fluctuation of the price of grain and rice throughout the year. Jusar, et al. (2017) states that there are many factors that affect supply and demand in relation to price formation. However, for food or agricultural commodities, the price formation is presumably more influenced by the supply (supply shock) than by the demand (demand shock). It is because the demand tends to be more stable than the supply.

 Additionally, like agricultural products in general, Indonesian rice production is highly dependent on climate and weather. In the rainy season, rice production is generally abundant, and in the dry season, the production decreases. According to the Central Bureau of Statistics of West Nusa Tenggara (2021), rice production in West Nusa Tenggara Province gradually decreased in the last three years i.e. from 2018 to 2020 (about 1,460,338.81 tons, 1,402,182.39 tons, and 1,317,189.81 tons respectively). Meanwhile, rice production in Lombok fluctuated in those years. The amount of production follows the seasonal harvest pattern. The peak harvest occurs between January-April (about 49.25%), the dry-season harvest occurs between May-August (about31.80%), and the lowest production, during the dry season, occurs between September-December (18.95%). The seasonal harvest, the vulnerability of rice to pests and diseases, and natural disasters make rice farming inherently risky. As a result, the supply of rice fluctuates greatly both between seasons and between years.

 Generally, the farmers have inadequate facilities to process the grain, for example, they do not have a drying floor and warehouse to dry and store it. Maulana and Rachman (2011) state that, in general, farmers’ position in marketing their grain is weak because (a) farmers usually sell their rice immediately after harvest in the form of dry-harvested grain, and even selling it while it is still in the rice field, (b) farmers need cash to cultivate the next crop, and (c) the supply of rice is not elastic and the rice market is locally segmented. Another common problem is the bad quality of grain. During the rainy season, the grain is not well-dried because it is often cloudy thus not enough sunlight to dry it. The failure of the local grain market is the main reason why the government’s intervention in the market is necessary. Hermanto (2017) states that it is important for the government to control the stability of the supply and price of rice through a policy, both protective and promotive, which brings a direct or indirect impact on the farmers' welfare. The current grain/rice price policy is aiming at a price policy that takes into account the differences in shape, type, quality, and level in the market chain, but it does not consider the harvest time. Moreover, the price policy is still regulated in separate rules and regulations. To improve the efficiency and effectiveness of the implementation of rice price stabilization, a comprehensive grain/rice price policy is required. Consequently, it is necessary to formulate a policy that harmonizes the relationship amongst the farmers, processing industries, distributors, and the consumers in a supply chain and added-value chain that is efficient and provides considerable profits for each party (Rachman et al. 2019).

 To overcome this problem, the government issued a policy to minimize the price fluctuations by establishing a policy for; 1) the minimum price of grain which is referred to as the Government Purchase Price, 2) the maximum price for rice through market operations, imposing rice import tariffs, and adjusting the rice import schedule. To support the program of price stabilization for grain and rice, the government has set a minimum price policy for grain which i.e. the Government Purchase Price and according to Suryana, et al. (2014). This policy has been applied since 2000.

 The objectives of the study were to analyze (1) the impact of the Government Purchase Price on the price level and price stability of grain at the farmer level, (2) the causes of the disparity between the price of grain and the price of rice, the process of transmitting the price of grain and rice at the distributor level, and (3) the effectiveness of Government Purchase Price policies.

 This research contributes to the development of agriculture i.e. the sustainability of rice commodity i.e. from the process of production to the result of production which is affordable to buy and safe to consume. Therefore, the stability of food price (rice) must be well maintained, and by recognizing the factors causing the disparity between the prices of grain and the price of rice, the future price policy for grain and rice can be determined appropriately. This means that the contribution of this research to the field of science, i.e. policy and agricultural development, can be a finding and additional insight and technology in education.

RESEARCH METHODS

 The scope of this research was Lombok Island consisting of four districts and a city, namely West Lombok, Central Lombok, East Lombok, North Lombok, and the city of Mataram. The study used secondary data collected from various sources i.e. the Logistics Affairs Agency (BULOG), the Central Bureau of Statistics (BPS), and the Department of Agriculture of West Nusa Tenggara. The data collected were series of monthly data from 2014 to 2019. It included the price of rice at the consumer level, the price of grain at the farmer level, the minimum price of grain, and the production of rice. The data were analyzed to find out three main points i.e. the stability of the price of grain and rice, the disparity between the price of grain and the price of rice, and the effectiveness of the implementation of the Government Purchase Price policy on the stability of grain price. The discussion for each section consisted of the results of empirical studies of the previous research and the supporting theories.

1. **The stability of grain price and the effect of the implementation of Government Purchase Prices on grain price**

 The level of the stability of the price of grain and rice, two indicators were used i.e. the interval between the highest and lowest price, and the variation coefficient. First, using the ratio of the highest and lowest price (the difference between the highest and lowest monthly price index), the index number of the monthly price was determined by creating a base index (100) in January each year. The difference between the highest and lowest index number in a year was the fluctuation level of the price of grain and rice. To get this price index number, the following procedure can be employed: for example, if the base index of the price of grain in January is 100, then the multiplier of the coefficient (c) is:

 ………………………………………………………………………….... (1)

In which: PGP1 is the price of grain in the first month (January). To get the index number for the following months i.e. from February (I2) to December (I12), the following formula can be employed:

 ……………………………………………. ……………… ……… .... (2)

 ……………………………………………………. ……………… .. (3)

The difference between the highest and the lowest index numbers is referred to as the interval which is the level of fluctuation of grain price. The same procedure is also performed to find out the fluctuation of the rice price at the consumer level.

Second, the Coefficient of Variation, in general, can be determined by employing the formula for the standard deviation of monthly prices every year divided by the average price (Hasan, 2017).

 .. …………………………………………………………… ……………… (4)

In which: CV is the coefficient of variation, S is the standard deviation of the variable, and X is the mean of the variable. In determining the coefficient of variation of the price of grain and rice at the consumer level, the formula employed is as follows:

 CVgp= ………………………………. …………………… … ………..… .. . (5)

 CVrp= ……………………………………………… ........................................ (6)

in which:

 = coefficient of variation of the grain price

 = coefficient of variation of the rice price at consumer level

 SDgp= standard deviation of grain price

 SDrp= standard deviation of rice price at consumer level

 = average price of grain

 ****= average price of rice for consumers

The simple linear regression model is used to measure the effect of Government Purchase Prices on the price level of grain by deploying the following equation (Saludin, 2017):

GPt = b0 + b1 GPPt + et …………………………………………. ……………………………. (7)

In which: GP = grain price (IDR / kg)

 GPP = government purchase price (IDR / kg)

 b0 = constants

 b1 = coefficient of regression

 t = time (month)

 e = error term

The results of the regression coefficients (b0 and b1) were obtained, a statistical test was carried out using the overall test (F-test) and partial test (t-test)

1. **The disparity between the price of grain and the price of rice**

 The correlation analysis and the flexibility of price transmission flexibility are used to analyze the causes of disparities between the price of grain and the price of rice. The price transmission is measured using the simple regression between the two prices at two market levels, Mathematically, the price transmission elasticity (Et) can be formulated as follow, Kusumah (2018):

 Pf = b0 + b1 Pr ……………………………………………………………………. .. (8)

Transformed in linear form into:

 Ln Pf = ln b0 + b1 ln Pr ……………………………………………………………… (9)

 or : Ln GPt = ln b0 + b1 ln RPt + et ………………………………………..………. (10)

 where: b0 = intercepts

 b1 = Coefficient of elasticity of price transmission

 GP = grain price (IDR/kg)

 RP = rice price at retailer level (IDR/kg)

 b0 = constants

 b1 = regression coefficient

 t = time (month or year)

 e = error term

The results of the regression coefficients (bo and b1) were obtained, a statistical test was carried out using the overall test (F-test) and partial test (t-test)

1. **Effectiveness of Farmers' Grain Price Stabilization Policy**

The effectiveness of government policy (BULOG) through the deployment of government purchase prices on the price stability of grain, three analysis approaches were used; first, the simple linear regression model (included the price of grain as the dependent variable and the government purchase price as the independent variable); second, vertical integration analysis using the simple linear regression model (included the retail rice price at the consumer level as the independent variable and the grain price as the dependent variable); and third, descriptive analysis. The general formula is as follows:

The impact of Government Purchase Prices and rice price on the level of stability of grain price, multiple linear regression analysis is used which formula is as follows (Saludin, 2017):

GPt = b0 + b1 GPPt + RPt + et …………………………… …………………………………. (11)

Where: GP = grain price (IDR/kg)

 GPP = government purchase price (IDR /kg)

 RP = retail rice price (IDR/kg)

 b0 = constants

 b1 and b2 = regression coefficient

 t = time (months)

 e = error term

The results of the regression coefficients (bo and b1) were obtained a statistical test was carried out using the overall test (F-test) and partial test (t-test)

**RESULTS AND DISCUSSION**

1. **The Impact of Government Purchase Price on Price Level and Price Stability of Grain at Farmers Level**

 On the one hand, the role of the Logistics affairs Agency is to market domestic rice through activities of pure market operation. These activities were executed to control the price of domestic rice so that it is not too expensive thus affordable for the consumers. On the other hand, Logistics Affairs Agency plays a role as the provider of grain or domestic rice to keep the price of grain not too low thus profitable for the producers. As a matter of fact, the price of grain and rice fluctuated each year which can be observed in table 1.

 During the period of 2014 and 2019, the price of grain at the farmers’ level in Lombok fluctuated in which the coefficients of variation ranged from 4 percent to 10 perent. These coefficients of variation were relatively small which means the price of grain and rice was relatively stable. Ekowati at al. (2020)was stated that Price fluctuations in the study area did not causem price volatility. This is indicated by the CV value lower than 9, which means that the price of paddy is in a stable condition. This was in accordance with Proborini, et al (2018) and Jusar, et al (2017) who stated that the coefficient of variation which was smaller than the minimum standard of CV value set for the price stability according to the Ministry of Trade (2010 and 2015) i.e. less than 10 percent indicated that the condition was relatively stable. Suryana, et al (2014) emphasized that the average value CV below 10 percent indicated a relatively stable condition. In fact, as opposed to the stability of other commodities, grain and rice were more stable. This was in accordance with Abubakar (2009) who argued that the value of the price instability of rice, compared to the other four food commodities i.e. wheat, soybeans, oil, and corn, was the most stable. Moreover, the results of the research conducted by Nuraeni, et al (2015) for the period of 2005-2014 showed that the stability of shallot prices at the producer level in West Java was relatively unstable providing that the coefficient of variation was 24.15 percent.

Table 1. The Fluctuations and Coefficients of Variation of Price of Grain and Rice in Lombok for the Period of 2014-2019

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Interval of Price (Grain) | Months with Highest – lowest price (Grain) | Coefficient of Variation of Grain Price | Coefficient of Variation of Rice Price |
| 2014 | 8 | December-April | 0.04 | 0.06 |
| 2015 | 26 | December-May | 0.10 | 0.07 |
| 2016 | 18 | February-April | 0.07 | 0.05 |
| 2017 | 33 | December-January | 0.08 | 0.07 |
| 2018 | 18 | December-April | 0.06 | 0.06 |
| 2019 | 24 | December April | 0.10 | 0.06 |

Source: Processed data

 In general, the price of grain peaked in December and hit the bottom from April to May. It was predictable that in October, November, and December, the beginning of the rainy season, rice production began to decrease which in turn reduced the supply of grain thus increased the price of grain. However, in April and May, rice production increased because it was harvest time. Consequently, the supply of rice increased thus the price of grain decreased. The result of the study conducted by Setiawan, AF. And Hadianto, A. (2014) in Banten Province claimed that, approximately, the modification of price of rice had a positive value by 7.99 percent and recurred the same pattern every single year. It was estimated that the seasonal pattern in rice price data was affected by harvest season, the price is going up when it is drought and it is going down when the harvest time is just around the corner. The lowest price reached the amount of IDR 6,439/kg in April 2011. The highest price reached IDR 8,805/kg in December 2014.This was supported by the Central Bureau of Statistics (2021) which stated that the amount of rice production followed the seasonal harvest pattern, the peak harvest occurred between January-April at 49.25 percent, the dry season harvest occurred between May-August at 31.80 percent, and the lowest production occurred between September-December at 18.95 percent.

 Generally, it can be concluded that the fluctuation of the rice price is smaller than the fluctuation of the grain price. This showed that the government's rice policy was biased towards cities. The government was more concerned about increasing the price of rice at the consumer level than decreasing the price of grain at the farmer level. The policy instruments the government used to minimize the fluctuations of rice prices at the consumer level included: guarantee of rice distribution for budgeting groups, subsidies for the disadvantages, and market injection; on the other hand, the government only employed one policy instrument to reduce the decline in grain price i.e. the market operation. The amount of grain purchased was adjusted to the need. This policy was oftentimes ineffective. This condition was exacerbated by the seasonal or short-term price of grain and the annual or long-term price of rice.

 To maintain the price stability of grain, the government made a policy by setting a minimum price for grain which was referred to as the government purchase price. This minimum price is set in the Instruction Precident (*Inpres)* every year with a different value in each region each year depending on the production conditions on that year. By the minimum price, it was expected that the price of grain would be stable all year round.

 The effect of the Government Purchase Price policy on the price level of grain can be observed from the results of the statistical test. (Table 2). The results showed that the Government Purchase Price had a significant effect on the Price of Harvested Dry-Grain (at the 99% of certainty level). Furthermore, the effect of the independent variable on the dependent variable was relatively insignificant i.e. 50.90 percent (coefficient of determination = R2), and the correlation between the two variables was considerably strong i.e. 71.30 percent (coefficient correlation = r). This means that there were other factors affecting the price of grain. However, the regression coefficient of 1.878 showed that every time the government purchase price increases by IDR 1,000 per kilogram, the price of harvested dry-grain also increases by IDR 1,878 per kilogram. Therefore, the government's policy to increase the price of grain through the Government Purchase Price policy had a significant effect. This means that farmers and sellers gave a good response to the policy.

Table 2. Results of Regression Analysis of the Effect of Government Purchase Price (GPP)

 on Grain Price (GP) in Lombok for the period of 2014-2019.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Unstandardized Coefficients | Standardized Coefficients | t | significance |
| B | Std. Error | Beta |
| Constants | -2777.131 | 739.996 |  | -3.753 | .000 |
| GPP | 1.878 | .204 | .713 | 9.213 | .000 |

coefficient determination, R2 = 0,509 dan coefficient correlation, r = 0,713

1. **Causes of the disparity between the price of grain and the price of rice, the transmission process of grain and rice price**

 The disparity between the price of grain and the price of rice could be the result of marketing costs that occurred during the production process and the distribution process. Since harvested, grain was given series of processes including threshing, cleaning, drying, and milling. These processes expended costs including the distribution costs. This was then used to determine the retail price of rice at the consumer level. The disparity between the price of grain at the farm level and the retail price of rice at the consumer level was the cost of processes that the farmers gave to transform grain to rice.

Table 3. The Disparity between Price of Grain and Retail Price of Rice from 2014 to 2019

|  |  |
| --- | --- |
| Month | VALUE OF DISPARITY (IDR/Kg) |
| YEAR |
| 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| January | 5525 | 6152 | 6096 | 6452 | 6788 | 5934 |
| February | 5730 | 6038 | 6079 | 6795 | 6895 | 6150 |
| March | 5744 | 6085 | 6559 | 5671 | 6212 | 6735 |
| April | 5092 | 4988 | 5762 | 4990 | 5927 | 6240 |
| May | 4958 | 4900 | 5767 | 5575 | 5462 | 5535 |
| June | 4930 | 5262 | 5904 | 5439 | 5350 | 5467 |
| July | 4933 | 5083 | 5963 | 5300 | 5654 | 5439 |
| August | 5218 | 5429 | 5988 | 5396 | 5613 | 5538 |
| September | 5415 | 5600 | 5827 | 5521 | 5829 | 5662 |
| October | 5725 | 5358 | 5993 | 5727 | 6193 | 5862 |
| November | 5888 | 5162 | 6350 | 5946 | 6096 | 5873 |
| December | 6085 | 5827 | 6655 | 6186 | 6073 | 5827 |

 *Source: Processed secondary data*

Figure 1. Patterns of Disparity between the price of grain and the price of rice

during the 2014 – 2019 period

 During the 2014 - 2019 period (Table 3 and Figure 1), the price of grain fluctuated in almost the same pattern. It decreased in March, April, and May while experiencing an increase in the next following months. The same pattern of changes also occurred in the retail rice price. The changes in grain price and rice price also gave disparity between the price of grain and retail rice price with the same pattern which decreased in March, April, and May while rising in the next following months.

 It seems that in March, April, May, the harvest season for rice was quite higher which had an impact on the decline of grain price and rice price. Meanwhile, in the next following months (9 months), the production of grain began to decline and affected the rising price of grain and rice. The price disparity that occurred during the period ranged from 111 percent (November 2015) to 165% (March 2019). This price disparity was considered peculiar because it was extremely high. Analysts were generally more concerned with the dynamic dimensions of the disparity of grain price and rice price because, before the 1998 reform, the margins of grain and rice price were still low (around IDR 400 per kg). After the reforms to the present, the price margin was getting bigger. If the inflation factor and the wages of agricultural laborers were taken into account, the price disparity even represented a worse interval. This means that the added value of rice processing and trading did not benefit the farmers and consumers, but the traders, rice mills, and other actors, including Logistics Affairs Agency, who had been assigned by the government to maintain the national food stock. The results of Sobichin’s research (2013) showed that the highest marketing margin occurred in rice mills by 47.4 percent, collectors by 4.9 percent, wholesalers by 4.2 percent, and retailers by 3.3 percent of the total value of grain and rice marketing margins. The result of a study conducted by Idris, M. (2017) affirmed that the height of the price disparity became an issue because the distributors gained more profit and force the retailers to sell the rice at a high price. Ironically, this brought more disadvantages to the farmers’ welfare. Therefore, one of the attempts to do in the future is to reduce the profit margin in middlemen.

 Furthermore, the post-harvest system and distribution of rice in the country were inefficient which led to the phenomenon of market asymmetry which became a serious obstacle in economic development. That’s why the farmers must optimize the role of farmer groups in post-harvest activities and rice harvest marketing in an integrated and coordinated manner. In short term, the government should encourage the farmers to sell the grain in the form of milled dry rice, so that the commodity has added value and the price does not fall during the peak harvest. The government can also set the highest price of rice to keep it from rocketing too high. This will shorten the marketing chain in order to minimize the disparity between the price of grain and the price of rice. As a consequence, the government has to set a policy of purchase price and rice sales from the producers to the consumers that benefit the government as the guideline to reduce the price disparity on the farmers, rice distributors, and the consumer. In addition, the government can legalize the highest rice price (HET) in order to stabilize the rice price, preventing it from the high-pitched price increase. This may shorten the trade chain as it is expected to decline the disparity between the price of grain and rice. In this matter, the government needs to set the purchase price and rice sale policy for the distributors to the consumers with the purpose of subsiding the price disparity in the farmers, distributors, and consumers.

 The second cause of the disparity between the price of grain and the price of rice could be observed from the rapidity of price during the process of transforming grain into the rice. This could be examined from the linear relationship between the price of grain and the price of rice. The results of the simple linear regression analysis showed that the retail price of rice had a positive correlation with the price of grain. It means that there was a perfect transmission of the price of rice to the price of grain because the elasticity of the transmission was greater than 1 (Et = 1.162). Kusumah (2018) stated that the elasticity of transmission (Et)> 1, then the rate of change in prices at the merchant level was greater than the rate of change in prices at the producer level. This also means that every 10 percent increase in rice price would be followed by an 11.62percent increase in grain price. The effect of an increase in retail rice price was significant on grain price and reached 80.40 percent (Table 4). Moreover, the relationship between the retail price of rice and the price of grain was extremely strong, namely 89.80%. This displayed that this price disparity was caused by the pattern of changes in the two prices. The higher the price of rice, the higher the price of grain. The patterns of change in grain and rice prices went hand in hand.

 It could be explained that during the period of 2014-2019, the sale and purchase of grain continued to raise because of the indication on the grain production in Lombok Island was not only needed for the local consumers but also needed for other regions, such as Bali, Java, and East Nusa Tenggara. The province of NTB, especially Lombok Island, is one of the central rice production regions in Indonesia, therefore it should be distributed to regions with deficit rice production to meet the needs of rice in those areas.

 The flexibility of price transmission in a marketing analysis usually reflected the different points of view between the grain producers (farmers) who want to have high grain prices and buyers (traders), on the other hand, who require low prices with the utmost profit. Therefore, an efficient institution must be able to accommodate these two different interests at all costs.

Table 4. Transmission Elasticity of Rice Price to Grain Price

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  Variable | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
| B | Std. Error | Beta |
|  | (Constant) | -2.364 | .576 |  | -4.101 | .000 |
| Rice Price | 1.162 | .063 | .898 | 18.495 | .000 |

Note: coefficient of determination (R2)=0.804, and correlation coefficient (r)= 0.898

3. Effectiveness of Government Purchase Price Policy

 The government purchase price policy could be implemented effectively as it was reflected on the influence of changes in the government purchase price and price of retail rice on changes in the price of grain for farmers. The purpose of this Government purchase pricepolicy was to maintain the price stability of grain to avoid the high price fluctuations in the hope of the price of grain that would not drop down, preceding losses to the farmers. To determine the effectiveness of government policy on the price stabilization of grain, a statistical test was carried out, namely testing the effect of Government Purchase Price Policy and Rice Prices on Harvested Dry Grain.

 The overall test results illustrated that all rice price variables and government purchase prices had a significant effect on the price of grain (Table 5). This means that the role of these two variables was very important in influencing the price of grain. The amount of the influence of this variable was 82 percent, that the rice price and the government purchase price mutually affected the price of harvested dry grain by 82 percent. If judged by the amount of influence, it could be said that it was enormous, and the effect was also extremely significant. The individual test showed that the retail price variable and the purchase price had a significant effect on the price of grain. In the retail price variable, the regression coefficient was 0.402. It means that if other variables were considered constant, every IDR 1,000 per kilogram increase in the retail price of rice would escalate the grain price by IDR 402 per kilogram. Meanwhile, in the government purchase price variable, the regression coefficient was 0.596. It explained that if other variables were assumed to be constant, any increase of IDR 1,000 in the government purchase price would increase the price of the grain by IDR 596. The next essential point was the sign of the regression coefficient in that both regression coefficients were positive. This implies that the two independent variables, both Government Purchase Price and rice price, had a positive effect on the price of the grain. Furthermore, the effect of setting a government purchase price policy was in line with the expectation of boosting the price of grain to a level above the government purchase price (Figure 2).

Table 5. The Analysis of Variance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
|  | Regression | 1.633E7 | 2 | 8167376.507 | 185.027 | .000a |
| Residual | 3575470.546 | 81 | 44141.612 |  |  |
| Total | 1.991E7 | 83 |  |  |  |

Note: Predictor is constant, The Government Purchase Price (GPP), Price of Retail Rice. The dependent variable is the Price of Grain (GP).

The result of the research conducted by Maulana, M. and Rahman, B (2011) described that the increase of the government purchase price of harvested dry grain and milled dry rice was able to rise the actual price of harvested dry grain and milled dry rice in the suppliers. In 2009, approximately, the selling price of harvested dry grain reached IDR 2,708/kg which was higher than the government purchase price i.e. IDR 2,400/kg.

Table 6. The Results of Regression Analysis of Grain Price (GP), Retail Rice Price (RP), and

The Government Purchase Prices (GPP)

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Unstandardized Coefficients | t | Sig. |
| B | Std. Error |
|  | (Constant) | -2026.690 | 454.535 | -4.459 | .000 |
| RP  | .402 | .034 | 11.859 | .000 |
| GPP  | .596 | .164 | 3.626 | .001 |

Coefficient of determination (R2 ) = 0.82, Correlation coefficient ( r ) = 0.906

 The effectiveness of the government purchase price policy could also be interpreted to the extent of the price of harvested dry grain was higher than the government purchase price. The results described that during the period of 2014 to 2019, there were only 5 times in 72 months that the price of harvested dry grain was less than the government purchase price or around 6.94 percent. Looking at the main harvest season every year, there were 33.3 percent (twice in 6 years) the price of harvested dry grain was under the government purchase price from 2014 to 2019. The price of harvested dry grain was below the government purchase price in April, May, and June 2015 and March and April 2017. Therefore, there was 93.06 percent of the price of harvested dry grain which was over the government purchase price or about 95 times (Figure 2). In line with the results of research by Maulana, M. (2012) who stated that the price of grain in the rainy season was generally lower than in the dry season, and the main harvest in each rainy season occurred commonly in March and April. The government purchase price policy since 2009 has succeeded in keeping the price of grain decreasing during the peak harvest. In 2011, the grain price in March and April was atop of the GPP, namely 15.6 percent in March and 20.7 percent in April. The result of the study conducted by Nainggolan and Soetjipto (2016) also stated that the government purchase price policy was effective to give an impact on the grain price that directed to the improvement of farmers’ welfare. Moreover, it also brought positive results in one-time-lag rice production because the grain price, like the transmission, significantly prompted rice production.

Figure 2. The Development of Grain Price (GP) and The Government Purchase Price (GPP) in

period of the 2014- 2019

 The domination of the harvested dry grain price was exceeding the government purchase price as a result of the application of the grain base price policy and purchase grain policy by the government. It is in accordance with the results of the regression analysis in Table 6. which showed that the government purchase price had a positive and significant effect on the price of harvested dry grain. The results of this analysis were in accordance with Suryana, et.al (2014) who stated that the grain protection in the Government Purchase Price policy also had a positive impact on market behavior, characterized by the level of grain price that was always atop the Government Purchase Price.

 During the period, the trend of distance changes between the price of harvested dry grain and the government purchase price followed almost the same pattern every year. The price difference between the two would increase in the dry season or the third planting season (July to September) and the first planting season or the rainy season (November to January). The price difference declined in the second planting season (April to May) (figure 3). It drew attention to find out that this trend of price disparity had been improving from 2014 to 2019. This condition was related to the seasonal patterns in Indonesia, wherein the rainy season, almost all agricultural land was planted with rice, including Lombok. During the rainy season, the second and third planting areas of rice began to drop off. The similarity between the seasonal pattern and the rice harvest pattern also directed to the same changes in the price range. Thus, the government had anticipated reducing the uplift of fluctuations in grain price by establishing a government purchase price policy every year.

Figure 3. The Trend of Disparities between Grain Price and the Government Purchase Price

 in the period of 2014-219

 Likewise, there was an additional policy called the gain purchase performed by the government every year. However, the government's capacity to buy the grain was still limited to around 10 percent. The procurement of grain by Logistics Business Entity in Lombok Island was inconstant throughout the period of 2014 to 2019; in 2018 the amount of grain procurement was 796,340.8 tons or 14.85 percent of the total grain production, and in 2019 the procurement decreased to 774,520.7 tons or 8.79 percent of total production. Sawit (2011) stated that the national procurement of grain by the Logistics Affairs Agency ranged from 6 percent to 8 percent. In 2018, Logistics Affairs Agency succeeded in realizing the rice procurement of 1,488,584 tons or equivalent to 2,290,129.23 tons of grain (Logistics Business Entity, 2019). This proves that Logistics Affairs Agency had only been able to fulfill the procurement of rice as much as 4.05 percent of the national rice production by 36,704,330.67 tons or equivalent to a grain of 59,200,533.72 tons (BPS, 2021). The procurement of grain by the Logistics Affairs Agency in Lombok was still higher on the national scale. However, the purchase of the grain was relatively small, the purchase of grain should have reached up to 20 percent.

CONCLUSION AND RECOMMENDATION

 Based on the results and discussion in this study, it can be concluded that; The effect of the implementation of government purchase price policy on the price stability of grain (harvested dry grain price) in Lombok during the period of 2014 - 2019 was positive and significant; The level of price stability of the grain in Lombok was relatively stable; The disparity between the price of grain and rice was still high, in which the disparity in the price of grain from farmers and the retail price of rice was caused by the pattern of changes in grain prices and retail rice prices, and price transmission flexibility. The implementation of the government purchase price policy on the price stability of the grain during the period of 2014-2019 was effective.

 As for the recommendations the government can consider ways to stabilize the price of grain, namely by strengthening the farmer groups to have the bargaining position by changing the sale of harvested dry grain to milled dry grain. It is necessary to have an adequate drying floor for each farmer group, it is still necessary to determine the minimum price of grain at the level of harvested dry grain and milled dry rice, the grain purchase policy needs to be increased by 20%, to reduce the disparity in the price of grain and rice, it is necessary to set the highest retail price of rice.

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