Impact of PUAP Programs against Rice Farmer’s Income in Kupang District of East Nusa Tenggara Province

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Abstract
The Province of East Nusa Tenggara (NTT) is one of the provinces that is lagging behind with a high poverty rate (20.24%) and a large portion of its population (61.04 percent) earns a living as farmers while the agricultural sector share is only about half of that, which is 34.18 percent (Ministry of Agriculture 2013). Agricultural production in NTT Province is still low where the average consumption of 124.6 kg / capita / year of rice is it need as much as 585,620 tons / year, so in terms of rice production the province of NTT is classified as a deficit of 108,620 tons (NTT Agriculture Service). With a simple simulation capital assistance to strengthen the development of the agricultural sector (13.29 percent), (2) the largest absorption of labor by the agricultural sector (33.9 percent), meaning that the agricultural sector has the burden of absorbing 2.75 times the ability to contribute to GDP and most of the population works in the agricultural sector and lives in rural areas (BPS 2014; Ministry of Agriculture of Indonesia Republic 2015).

The selection of the study sites was done by purposive sampling consideration that based on secondary data obtained, East Penfui Village, Mata Air Village, and Noelbaki Village in Middle Kupang sub-district and Oesao Village in East Kupang District were villages that had received PUAP funds and had managed and had a number of residents earn a living as the largest paddy rice farmers in Kupang Tengah Regency and East Kupang sub-district. To get the results of logistic regression models and multiple linear regression, 97 farmers from each farmer group were taken, consisting of 62 farmers who received PUAP funds and 35 farmers who did not receive PUAP funds. Respondents were obtained randomly, without proportions from each village in each sub-district. Data collection is carried out for two months, namely from June to July 2016.

The impact of the PUAP program on the income of wetland rice farmers was analyzed using different tests, farming analysis, and multiple linear regression models. The data used included the age of the farmer, the level of formal education, the workforce in the family, the status of land tenure, the area of land cultivated, participation outside of rice farming, the number of productive loans, and membership in farmer groups. The data was obtained through direct observation in the field and interviews for two months, namely in June to July 2016. To answer the purpose of measuring the impact of access to PUAP funds on the income of lowland rice farmers using a multiple linear regression model, to estimate the function regression of the entire population based on the existing sample regression function used the ordinary least square (OLS) method. With general forms as follows:

\[ Y_i = \beta_0 + \beta_1X_1 + \ldots + \beta_nX_n + U_i \]

Where: Yi is the dependent variable (farming income), Xi is a vector of explanatory variables, \( \beta \) is the estimation vector of the explanatory variable coefficients (parameters) and ui shows the disturbance variables assumed to fulfill all OLS assumptions (Gujarati 2004). In formulating a model in response to the influence of the PUAP program on farming income, the system of equations used as below refers to the results of the research by Kassa et al. (2014).

1. Introduction
The agricultural sector plays an important role in the Indonesian economy, especially in maintaining food security. The importance of the role of the agricultural sector is indicated by (1) the contribution to Gross Domestic Product (GDP) in 2014 amounting to 11.76 percent and ranked third highest after the manufacturing sector (21.28 percent) in the trade, hotel and restaurant sector (13.29 percent), (2) the largest absorption of labor by the agricultural sector (33.9 percent), meaning that the agricultural sector has the burden of absorbing 2.75 times the ability to contribute to GDP and most of the population works in the agricultural sector and lives in rural areas (BPS 2014; Ministry of Agriculture of Indonesia Republic 2015).

2. Research Methods
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\[ LnFARMINCOME = \beta_0 + \beta_1LnAGE + \beta_2EDUC + \beta_3LnFAMLBR + \beta_4LANDOWN + \beta_5LnLANDSZ + \beta_6LnOFFFARM + \beta_7KREDIT + \beta_8ASSOCI \]

Where:

- LnFARMINCOME : Farm income (Rp).
- LnAGE : Age of Farmers (Year).
- LnEDUC : Duration of Formal Education (Year).
- LnFAMLBR : Number of Family Members (People).
- LANDOWN : Dummy land acquisition status, 1 for those who have and 0 for those who don’t.
- LnLANDSZ : Land area (Ha).
- LnOFFFARM : Income outside of lowland rice farming (Rp).
- KREDIT : Productive Loans accessed by farmers including PUAP (Rp).
- ASSOCI : Farmer Group Membership Dummy, 1 for those who are joined and 0 for those who are not joined.

Increasingly helps farmers to increase productivity and income in rice farming. Based on the explanation above and supported by the absence of studies related to the impact of PUAP funds in NTT Province and other provinces in Indonesia, it is necessary to study the impact of Rural Agribusiness Business Development Program (PUAP) on the income of rice farmers in Kupang Regency. This study aims to analyze the impact of the PUAP program on the income of rice farmers receiving BLM-PUAP in Kupang Regency.

3. Data Analysis
The impact of the PUAP program on the income of wetland rice farmers was analyzed using different tests, farming analysis, and multiple linear regression models. The data used included the age of the farmer, the level of formal education, the workforce in the family, the status of land tenure, the area of land cultivated, participation outside of rice farming, the number of productive loans, and membership in farmer groups. The data was obtained through direct observation in the field and interviews for two months, namely in June to July 2016. To answer the purpose of measuring the impact of access to PUAP funds on the income of lowland rice farmers using a multiple linear regression model, to estimate the function regression of the entire population based on the existing sample regression function used the ordinary least square (OLS) method. With general forms as follows:

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3. Result and Discussion

3.1. Characteristics of Respondents

The number of respondents of rice farmers who received PUAP were 62 farmers and non-PUAP as many as 35 people. The average age of paddy farmers is still in the productive age of 48 years because the population is classified as productive age. The education taken by the respondent farmers consisted of elementary, junior high, high school, bachelor, master, but also non-school graduates. The average length of education of farmers chosen as respondents is nine years. The average number of farmer family members is four people for PUAP recipients and three for non-PUAP recipients. The farmer's arable land is an average of 0.8 ha for recipients of PUAP funds and 0.6 ha for non-PUAP is mostly arable land with a profit sharing system. According to Suratya (2011), the area of land affects income. The wider the arable land, the higher the income received. The average farming experience of rice farmers is 28 years for recipients of PUAP funds and 21 years for farmers who do not accept. Next can be seen in Table 1.

Table 1. Descriptive statistics of respondents of lowland rice farmers in Kupang Regency

| Factors that influence the level of PTT implementation | PUAP Recipient | Non-PUAP |
|-------------------------------------------------------|----------------|----------|
| Age                                                   | Average S. Dev | Average S. Dev |
| 45.69                                                 | 9.11           | 45.97    | 10.95 |
| Formal Education                                      | 9.67            | 3.77     | 9.34   | 3.23  |
| Farmer Experience                                     | 26.74           | 8.61     | 19      | 11.37 |
| Dummy Membership of farmer groups                    | 0.98            | 0.12     | 0.77    | 0.42  |
| Dummy Participation outside of farming               | 0.27            | 0.44     | 0.02    | 0.16  |
| Family labor                                          | 4.37            | 1.48     | 3.14    | 1.71  |
| Dummy Land ownership                                  | 0.46            | 0.50     | 0.48    | 0.50  |
| Land Size                                             | 0.84            | 41.04    | 0.61    | 30.02 |
| Extension                                             | 1.38            | 0.49     | 0.54    | 0.81  |
| Distance of farming location                          | 16.12           | 12.59    | 11.71   | 6.29  |
| Dummy planting Season                                 | 0.79            | 0.41     | 0.45    | 0.5   |
| Productive Loans                                      | 1000000         | 4.19     | 0       | 0     |

3.2. Lowland Rice Farming Income

To answer the goal of measuring the impact of access to PUAP funds on the income of lowland rice farmers, using multiple linear regression models, to estimate the regression function of the entire population based on the existing sample regression function Ordinary Least Square (OLS) is used. Comprehensively, a linear regression model that uses the results equation where the variables included are factors that are thought to influence the income of rice farming, the results of parameter testing are simultaneously by showing the feasibility of the model by testing classical assumptions.

Based on the results of farm analysis, the R / C ratio of farmers receiving PUAP funds was higher, which was 2.08 compared to farmers who did not receive PUAP funds worth 1.75. This means that for farmers who receive PUAP funds and non-PUAP farmers their farming is equally profitable because everyone rupiah the costs incurred will result in revenues greater than one rupiah. But greater profits are obtained by farmers who receive PUAP assistance funds, this is due to the use of appropriate inputs and more efficient expenditure. The full results can be seen in Table 2.

Based on the cost structure of paddy production (Table 2), labor is the largest cost component for farmers not recipients of PUAP funds, followed by land leasing because the average rice farming in the land is not own property with a profit sharing system. For input costs such as fertilizers and seeds, the percentage is not too large for total costs.

In addition to using R / C ratio analysis and multiple linear regression one method used to analyze the impact of the PUAP program on farm income is the real difference test. After a real difference test was obtained, respondents of lowland rice farmers who obtained PUAP BLM funds had an average income of Rp. 13,303,873, - while farmers who did not receive PUAP BLM funds received income from rice farming for an average of Rp. 6,137,464, -. To see the difference in income between PUAP recipient farmers and those who did not receive PUAP, see the Paired t-test table in the Sig. Obtained P value (P-value) of 0.00 smaller than the real level of 0.05, which means rejecting H0, so the conclusion drawn is that there are significant differences between the two groups, namely between the recipients of PUAP funds and those who do not.

Table 2. The costs and income of paddy rice farming per hectare in Kupang District in the first planting season of 2014

| Price/Units (Rp) | PUAP Recipient Farmers | Non-PUAP Farmers |
|------------------|-------------------------|------------------|
|                  | Vol. Value (Rp) | Percentage (%) | Vol. Value (Rp) | Percentage (%) |
| A. Revenue (Output) | 100000 | 2152.78       | 2152785.00     | 1590.6 | 15906300 |
| B. Cost           |            |                |                |            |            |
| B1. Cash Fee      |            |                |                |            |            |
| Seeds (kg)        | 9000       | 26.27          | 236430         | 2.54   | 25        | 241200   | 2.95   |
| Organic fertilizers (kg) | 500      | 264.51         | 132255         | 1.28   | 97.14    | 45870    | 0.53   |
| Chemical fertilizers (kg) | 85387.67  | 7.33           | 707652         | 8.74   |            |            |        |
| Urea              | 1800       | 175.8          | 473196.7       | 1.92   | 160       | 291088   |        |
| NPK               | 2300       | 205.73         | 316440         | 126.56 | 288000   |            |        |
| Total Cost (B1+B2) | 103167      | 6832550.9      | 9073749.1      | 100    | 114280   | 320000   |        |
| Income from Cash Fees (A-B1) | 11563532 | 7102259.5    | 6832550.9      |        |            |            |        |
| R/C Cash Fee      | 2.16       | 1.80           |                |        |            |            |        |
| R/C Total Cost    | 2.08       | 1.75           |                |        |            |            |        |

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Table 3. Factors that influence the income level of wetland rice farming in Kupang Regency in 2016

| Variable | Coefficient | Sig. |
|----------|-------------|------|
| Farmers age | 0.15 | 0.19 |
| Formal education duration | -0.03 | 0.97 |
| Family labor | 0.13 | 0.22 |
| Land ownership | 0.07 | 0.47 |
| Land size | 1.18 | 0.00 |
| Off farm Income | -0.10 | 0.17 |
| Productive loans accessed | 0.05 | 0.41 |
| Membership of farmer groups | 0.07 | 0.41 |
| Constant | 10.86 | 0.00 |

Description: *** significant at α = 1%
production is directly proportional to the area of land where the addition of land area will increase rice production. This shows that there has been no application of innovative technology that enables increased land productivity, because the increase in rice production is achieved through the addition of land area (extensification) not through increasing the number of production per land area (intensification). The results of the study state that land-owning farmers generally cultivate larger amounts of land that are generally owned by farmers with good welfare tend to have a higher level of technology adoption. The extent of influential land related to the output productivity produced is also related to the level of trust of formal financial institutions, Hodgdon's (1966) study reports that Madhya Pradesh Central Bank in India will not provide loans or credit assistance to farmers who are under 3 acres, supported by Desai (1971) and Gotsch (1972) who found that cooperative credit was more available to farmers with large arable land than those who worked on small-sized land.

The wider the area cultivated indicates the economy of scale, the number of inputs used, farmers who seek large land can be easier to adopt technology and efficiency in the workforce and the use of the number of inputs such as fertilizers and seeds that can be adapted to the PTT component. The duration of formal education does not affect the income of farmers, because most are at the junior secondary level. According to the research of Adiwiyana et al (2016) indicates that formal education does not have a significant influence, while non-formal education has a significant level of participation at the monitoring and evaluation stage. Rice fields for productive workers who are highly educated. Membership of farmer groups is also ineffective because workers do not come from within farmer groups but laborers are hired with profit sharing systems, membership groups are only a forum for fertilizer distribution and protection assistance without having a strong impact on agricultural activities. Zahri and Febriansyah (2014) identified that business diversification has increased the participation of farmer household workers but is still indicated by a low rate of 37%. The use of farmer household labor in productive economic activities occurs due to the risks and uncertainties in rice farming as a result of low water conditions that cannot be controlled, rice farming activities carried out once a year and income from rice farming do not meet the needs of farmer households, supporting why income outside of rice farming has no significant effect can even reduce the farm income coefficient.

4. Conclusion

From the research that has been done, it can be concluded that PUAP Fund Access has a positive impact on the income of lowland rice farmers in Kupang Regency. It is proven by the higher R / C value of farmers who receive PUAP funds compared to farmers who do not access. Different tests also found a significant difference in the income of wetland rice between the recipient farmers and non-PUAP farmers. The factors that positively influence the income level of paddy farmers in Kupang Regency are the area of land and the amount of productive loans that are accessed.

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