

PalArch's Journal of Archaeology
of Egypt / Egyptology

**Effect of Rural Agriculture Development through Village Fund Allocation
on Increasing Income and Farmer Welfare**

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Dr. Yohanes Boni, Dr. Muhammad Zamrun Firihu, Dr. H. Hasan Aedy, Dr. Rahmat Sewa Suraya. Effect of Rural Agriculture Development through Village Fund Allocation on Increasing Income and Farmer Welfare-- Palarch's Journal of Archaeology of Egypt/Egyptology 18(4), 1561-1569. ISSN 1567-214x

Keywords: Agriculture, Rural, Village Fund, Welfare, Farmers.

Abstract

This research was conducted in villages receiving village fund budget assistance in Gunung Sari Village, Lahumoko Village, and Karya Mulia Village, North Buton Regency. The research problem was the low productivity of farming due to the not yet integrated farming system and upstream and downstream production, low quality of human resources of farmers, and poor rural transportation infrastructure, resulting in low income and welfare of rural farmers in North Buton Regency. The results show the village fund budget allocation has increased the farm production in Gunung Sari Village to 124.85 percent, Lahumoko Village 105.00 percent, and Karya Mulia Village to 154.11 percent. As a result of increased agricultural production, the income per capita of the population of Gunung Sari Village increased by 113.56 percent, Lahumoko Jaya Village increased by 110.79 percent, and Karya Mulia Village increased by 112.46 percent. The partial test results show that short-term investment (Ii) has a significant effect on every increase of IDR. 1.000 short-term investment to increase farmer's income IDR. 79.16 with a probability of 70%. Each increase of IDR. 1.000 long-term investment to increase farmer's income IDR. 42.42 with a probability of 80%. Every addition of one skilled worker increases the farmer's income by IDR. 147 with a probability of 90%. Analysis (R2 test = 0.94) the real effect of increasing population income is 94 percent, the effect of other factors that are not explained in the 6% model. The results of the F test show that F count (17.29) is greater than F table (FO, 01; 3.11) of 6.22, indicating that the village fund budget allocation for short-term investment (Ii), long-term investment (1j), and expert simultaneously influences the improvement of farmer welfare. The increase in the welfare of farmers in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village, apart from the relatively large increase in farmer's income is also due to the

decreasing dependency ratio for each family from 4.5 to 5.8 in 2015 decreasing to 3.7 - 5.0 in 2019. This research recommends that the budget allocation for village funds in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village should be continued with short-term investments, long-term investments, and investment in human resources for farmers because they have proven to increase farmer's income and per capita income of the population.

1 Introduction

Various simulations of development programs are carried out to tackle economic inequality between communities which results in poverty and social and cultural inequality between community groups needs attention. The diversity of resource characteristics in each region and the lack of budget allocation for rural areas is the tendency for increasing rural poverty and the occurrence of imbalances between economic sectors within a region. The research results in the fields of economy and agriculture show that rural areas in developing areas such as North Buton Regency have limitations to finance themselves to accelerate the improvement of the welfare of their inhabitants. This is due to the limited capital formation (capital) originating from the regions and people of the North Buton Regency (induced investment). The low rate of capital formation is caused by low production and productivity. Low production and productivity are caused by the low level of knowledge and technology used by farmers. Furthermore, low levels of production and productivity lead to low levels of income as well as low savings. Low savings means low capital formation.

To solve this problem, it is necessary to inject capital from outside (autonomous investment) from the central government. The capital injection is needed to provide production facilities and infrastructure. It is to support better farm planning and management as well as the marketing of farm production. The implementation of the Village Fund policy which is sourced from the state revenue and expenditure budget is an injection of outside capital (autonomous investment) intended to prevent high social and economic disparities between villages and be able to realize more equitable and equitable Village development through economic growth and employment of every village. The capital injection of the village fund (autonomous investment) will increase farm production and farmer productivity through good farm management (from planning to post-harvest), improvement of rural infrastructure, and market mechanisms (especially farmer's price guarantees) good, then the income of farmers will increase and in turn, will increase the level of welfare of rural farmers.

2 Concepts and Approaches

The concept used is the concept of growth and welfare. The concept of growth states that increased investment will increase income or output through a short-term or long-run multiplier process. The concept of welfare states that the policies adopted by the government are deemed appropriate if the target community receives greater benefits (better off) than the losses incurred (worse

off). The approach used is sectoral, namely the agricultural sector with the assumption that rural development is identical to agricultural development.

3 Analysis Method

The data analysis used the following models and analysis methods:

3.1 Multiple regression

$$Y = a + B_1X_1 + B_2 X_2 + \dots + B_nX_n + E_1$$

with the terms E_1_0

The model application uses multiple regression equations as follows:

$$Y_1 = a + b_1X_1 + b_2X_2 + b_3X_3$$

Annotation:

Y_1 = Target agricultural production

Y_2 = Average income of the population.

X_1 = Short term investment

X_2 = Long term investment

X_3 = Experts

a = Constant

b_i = Regression coefficient ($i = 1,2,3$)

3.2 Consumption Function

$$C = f(Y)$$

$$C = a + cY$$

where c = farmer consumption

Y = Farmers' income

c = The magnitude of the trend in consumption per rupiah increases in income (marginal propensity to consumer = MPC)

a = the amount of consumption when $Y = 0$

APC = C / Y , where $C = a + cY$ then

$$APC = a / Y + c$$

where APC = Average propensity to consumer.

3.3 Farming Margin

$$M = TR - TC$$

Where:

TR = selling value of farm commodity per hectare/planting season.

TC = total production and marketing costs per hectare/planting season.

4 Research Results

4.1 Farm Production

The results of in-depth interviews in three sample villages show that the ability of farmers to increase farming production is largely determined by the area of the farm, farming skills, and work ethic of the farmers. If the farm area is large, farmers have farming skills and a high work ethic, supported by good farm management. It ensures high levels of production, high quality of production, and farmers get high levels of income. Table 1 shows an increase in the number of farm production and productivity of farmland per hectare in 2015, the allocation of the village fund program, and after five years the village fund program was implemented in 2019 for three sample villages receiving the village fund budget program in North Buton Regency.

Table 1. Increased agricultural production in 2015 and 2019

No.	Farming commodity	Gunung Sari Village, Production/Ha (ton)			Lahumoko Jaya Village, Production/Ha (ton)			Karya Mulia Village, Production/Ha (ton)			
		2015	2019	Increase (%)	2015	2019	Increase (%)	2015	2019	Increase (%)	
1.	Field rice	1,04	2,54	144,23	0,9	1,5	66,67	1,1	2,68	143,64	
2.	Corn	1,53	2,82	84,31	1,22	2,74	124,59	1,4	2,69	92,14	
3.	Peanuts	0,8	1,9	137,50	1,1	2,12	92,73	0,6	1,9	216,67	
4.	Soybeans	0,6	1,4	133,33	0,4	0,96	140,00	0,5	1,32	164,00	
Average increase				124,85				105,99	154,11		

Source: Primary data processed, 2019

Table 1 shows an increase in agricultural production in four mainstay commodities of farmers from 2015 to 2019. Gunung Sari Village, Bonegunu Subdistrict, increased field rice production by 144.23 percent, corn production increased by 84.31 percent, peanut production increased 137.50 percent, and soybean production increased 133.33 percent. Lahumoko Jaya Village, Kambowa Subdistrict, an increase in field rice production by 66.67 percent, corn production increased by 124.59 percent, peanut production increased by 92.73 percent, soybean production increased 140.00 percent. Karya Mulia Village, West Kulisusu Subdistrict, field rice production increased by 143.64 percent, corn production increased by 92.14 percent, peanut production increased by 216.67 percent, and soybean production increased 164.00 percent. Thus, the average increase in production in Gunung Sari Village was 124.85 percent, the average production increase in Lahumoko Village was 105.00 percent, and the average production increase in Karya Mulia Village was 154.11 percent. The results of interviews with farmers indicated that the increase in production was the impact of the allocation of village funds which affected the better road infrastructure for farming, improvement of village markets, increased land area for farming, increased skills of farmers in farming, and good farm management.

4.2 Housing Conditions

The village fund budget has increased farming production, facilitated the distribution of agricultural production facilities and the marketing of farm production, thereby increasing farmer income, especially in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village. The increase in farmer's income is marked by the development of emergency farmer houses to semi-permanent and from semi-permanent to permanent houses. Likewise, housing facilities such as clean water sources and facilities. Most of the toilets have met health requirements. The survey results in the research location showed in Gunung Sari Village, Bonegunu District, the percentage of emergency houses in 2015 was 17.33 percent, in 2019. It decreased to 11.17 percent. Lahumoko Jaya Village, Kambowa District, emergency housing in 2015 as much as 46.5 percent, in 2019. It decreased to 41.09 percent. Likewise, Karya Mulia Village, West Kulisusu Subdistrict, emergency houses in 2015 amounted to 54.17 percent, in 2019. It decreased to 45.18 percent.

4.3 Income Level

Based on the results of data analysis, it shows that during the 2015 to 2019 village fund allocation period, there has been an increase in the average income of farmers and an increase in per-capita income of the population. The average income of farmers in Gunung Sari Village, Bonegunu District increased by 124.37 percent, Lahumoko Jaya Village, Kambowa District increased by 113.76 percent, Likewise in Karya Mulia Village, West Kulisusu Subdistrict, the farmer's income increased by 113.90 percent. The results of the analysis show during 2015 to 2019, the per-capita income of the population in Gunung Sari Village, Bonegunu District increased by 113.56 percent, Lahumoko Jaya Village, Kambowa District increased by 110.79 percent, Likewise, Karya Mulia Village, West Kulisusu District increased by 112, 46 percent. For details, see the following Table 2.

Table 2. Increasing in average income of farmers and per-capita of the population

No.	Village	Average income of farmers			Income per capita of the population		
		2015	2019	Increase (%)	2015	2019	Increase (%)
1.	Gunung Sari Village	3.972.000	8.911.791	124,37	1.840.000	3.929.464	113,56
2.	Lahumoko Jaya Village	3.326.000	7.109.790	113,76	1.790.000	3.772.934	110,79
3.	Karya Mulia Village	3.170.000	6.780.516	113,90	1.740.000	3.696.818	112,46

Table 2 shows the effect of agricultural development through the village fund budget allocation has increased the average income of farmers and increased per-capita income of the population in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village. This increase has exceeded the income level per-capita of North Buton Regency of IDR. 2,980,000 (year 2019). Thus, the village fund budget allocation has been able to increase the income of farmers and the income of the surrounding population. This is confirmed by the results of multiple regression analysis which shows that the village fund budget allocation has a significant effect on the increase in farmer income by 86% (R^2 test result = 0.86) so that the effect of other factors that are not explained in the model is only 14%. This result is in line with the results of the F test (F count = 6.238) which is greater than the F table value ($F_{0.01, 3.11}$) of 6.22 which means that the village fund budget allocation is through short-term investment (Ii), long-term investment. (Ij), and experts (KS) simultaneously have a significant effect on increasing farmer's income at the 99% confidence level.

Likewise, the partial test results (student test) show that the village fund budget allocation through short-term investment (ii) has a significant effect on the confidence level of 70%. In this case each increase of IDR. 1.000 short-term investment will increase farmer's income by IDR. 79.16 with a probability of 70%. Likewise, the effect of long-term investment shows that every IDR. 1.000 long-term investment will increase farmers' income by IDR. 42.42 with a probability of 80%. Likewise, every addition of one skilled worker increases the farmer's income by IDR. 79.16 with a probability of 90%.

The analysis results show that the village fund budget allocation has a significant effect on the increase in population income by 94% (R^2 test = 0.94) so that the effect of other factors that are not explained in the model is only 6%. Likewise, the F test results show that the F count (17.29) is greater than the F table value ($F_{0,01; 3,11}$) of 6.22, this shows that there is a Village Fund budget allocation through short-term investment (Ii), Long-term investment (Ij) and experts (KS) simultaneously have a significant effect on increasing farmer income and income per capita population. Thus, the statistical test results can be interpreted that the village fund budget allocation in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village has had a relatively large effect on increasing farmer's income and the income of the surrounding population.

4.4 Expenditure Structure

The structure of family expenditures is largely determined by the level of income, for families with relatively high-income levels, the allocation of expenditure for consumption needs will be relatively low, while the allocation for saving and investment will be higher. Agricultural development through the village fund budget allocation has increased farmer income in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village. The increase in farmer income has resulted in a decrease in the allocation of household consumption expenditures for farmers and an increase in the allocation of expenditures for investment activities in the agricultural sector. The survey results show that household consumption expenditure of farmers has decreased from an average of 69.31 percent in 2015 to 45.50 percent in 2019.

The increase in the welfare level of farmers in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village is not only caused by the relatively large increase in farmer's income but also due to the decreasing dependency ratio for each family from an average of 4.5 - 5.8 in 2015 decreasing to 3.7 - 5.0 in 2019. Public health and education degrees also tend to increase. This is indicated by an increase in the allocation of spending on education from 2.77% to 9.49%. The expenditure allocation for health increased from 1.21% to 2.21%. The expenditure allocation for participation in village development from 1.94% increased to 8.54%. Thus one of the objectives of the budget allocation in Gunung Sari Village, Lahumoko Jya Village, and Karya Mulia Village has been achieved.

4.5 Consumption Pattern

The function of the average consumption in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village is shown by the equation: $C = 750,792 + 0.4972 Y$. Thus, MPC figure is 0.4972 and MPS ($1 - MPC$) is 0.5028. These figures can be interpreted as an increase in the income of IDR. 1,000 will be used for the consumption of IDR. 497.20 and the rest of IDR. 502.80 can be used to save or invest in productive economic activities, both in the agricultural sector itself and in other sectors.

If the average income of farmers in 2015 is IDR. 3,600,699 is substituted for the consumption function equation, then the income break-even (when $Y = C$), is IDR. 2,541,060. That is when the income is IDR. 2,541,060 then this income is only sufficient to finance consumption needs, so that $S = 0$, the break-even

figure of income can be used to estimate the average consumption trend (APC). Where $APC + C / Y$ or $= a / y + MPC$, then the ratio of $APC = 0.7057$ and $APS (1-APC) = 0.2943$. The ratio shows every IDR. 1.000 income will be spent on consumption of IDR. 705.70 and the rest of IDR. 294.30 will be saved or invested to obtain additional income.

There is a tendency that most of the excess income is used for investment outside the agricultural sector. Therefore, the progress of the agricultural sector in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village has had an impact on other economic sectors. If the total savings are used for investment ($S = I$), the average investment multiplier ($KI = I / MPS$) in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village is 1.99. This means that each investment will increase income by IDR. 1,995. This figure also shows the income elasticity of investment activities is still at the stage of increasing return to scale of investment. The implication is that the areas of Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village still need quality investment assistance in the form of human capital assistance (*man made capital*).

4.6 Farming Margin

Farming margins in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village increased by an average of 295 percent, from 12.25 percent in 2015 to 48.51 percent in 1996. The increase in farming margins was due to (a) farm production scale which is getting bigger so that the average production cost is getting lower; (b) better physical and infrastructure facilities such as road facilities and infrastructure that support the smooth flow of farm product transportation to sales points, including farm roads, and (c) relatively stable farmer selling prices throughout the year. Thus, the program targets for increasing production and farmer income through the Village Fund budget allocation, especially in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village have been achieved well, although there are still unresolved obstacles in the context of increasing farmer production and productivity, especially the problem of eradicating rat pests which greatly affects the increase in farmer production.

5 Conclusion

According to the results of the obtained analysis, it can be concluded that agricultural development through the village fund budget allocation in Gunung Sari Village, Bonegunu District, Lahumoko Jaya Village, Wambona District, and Karya Mulia Village, West Kulisusu District affects the increase in farmer income and the welfare of the population of the three sample villages in North Buton Regency.

6 Recommendation

- 1) The village fund budget allocation needs to be continued because it has been proven to have increased farmers' income and per capita income for the rural population.
- 2) The management of the village fund planning in Gunung Sari Village, Lahumoko Jaya Village, and Karya Mulia Village needs to be adopted by other villages that have potential in the agricultural sector. This is not only an effort to accelerate the process of transforming the agricultural system in North

Buton Regency but also as an effort to create an equal increase in farmer income and increase per capita income of the population in North Buton Regency.

3) Obstacles in increasing farm production and farmer productivity that have not been resolved, such as the eradication of pests, need to be included as one of the main programs in the implementation of farm management activities.

4) To ensure the sustainability of the implementation of rural agricultural development, it is necessary to guide and control short-term investment (improvement of farming skills and mastery of appropriate technology) and long-term investment (maintenance of agricultural infrastructure in rural areas) so that the results that have been achieved can be guaranteed sustainability.

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