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Income and Food Security Land Tenure System in Regional Center of Rice

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Abstract: ***Changes in the structure of agricultural land tenure will affect agricultural production activities both in terms of farm efficiency and in terms of farm income. To meet food sufficiency, the government continues to encourage agriculture through intensification and crops extensification program. Pinrang regency as one of the centers of rice production in South Sulawesi very supportive and supportive of the program. Therefore, strengthening food security policy a central issue and is the main focus in the development of agriculture. The purpose of this study was to compare the amount of production and the income of farmers in various land tenure status, and comparing the level of household food security of farmers in various land tenure status with the approach of the share of food expenditure. The method used is descriptive and quantitative analysis of food security with the share of food expenditure approach. The results showed that production and household incomes of farmers working on their own land (farmers tilling owner) is greater than the households of farmers working on other people's land (sharecroppers and pawn) with average of production and revenues in the first plant season higher than in the second plant season. Household food security of farmers working on their own land (farmers tilling owners) are more resistant than the farmers working on other people's land (sharecroppers and pawn).***

Keywords : Income; Food Security; Land Tenure

1. Introduction

The availability of natural resources, especially land and human resources related to employment played a role in agricultural development. Agricultural land should be maintained because it serves as a major production to farming (Saridewi *et al*. 2014). t stands to reason, since most of the population working in agriculture live in rural areas and depend on the availability of land as a source of livelihood. Agricultural development in rural areas that depend on land resources is very important, both for farmers and for the development of agriculture and the national economy as a whole. Therefore, the role of land is very important as a factor of production and the economy (Rivai dan Anugrah, 2011; Sampelling *et al*. 2012; Arifin, 2012).

The role of land tenure institutions that are dynamically able to influence land tenure on condition of unequal distribution of land narrower, resulting in the use of new technology package components are less efficient and will be more efficient in the control of large tracts of land. Land tenure can serve as an overview of equity control of the main factors in the agricultural sector (Susilowati dan Maulana, 2012). Changes in the structure of agricultural land tenure will affect agricultural production activities both in terms of efficiency in terms of farming and farm income (Arifin, 2012).

Paddy has long been an indicator of the Indonesian economy. This means that the price of rice is a reflection of a country's ability to manage its economy (Aji *et al*. 2014). Policies to improve the welfare of rice farmers have a very strategic, given the role of rice in Indonesia's economy is still quite large (Muttaqin dan Martianto, 2009). There are four indicators that can be used to assess the role of these are: (1) to support rice farming family farmers and farm workers, as well as being the lifeblood of the rural economy; (2) the demand for rice continues to increase along with the number of people, because the program has not been successful food diversification; (3) the production of rice in Indonesia is still tending to fluctuate due to natural disasters, pest attack, and the rise in prices of fertilizers and pesticides; and (4) of rice farming is still a mainstay in employment in rural areas (Suryana *et al*. 2008).

In Indonesia, the food sector is the sector of determining the level of welfare of the majority of the working population in the off-farm located in rural areas that consist of small farmers and farm workers, who are mostly poor people (Sukandar *et al*. 2009; Tanziha, 2011). No less important food also determine the welfare of poor consumers largely urban portion of income is spent on food (Purwantini, 2014). Strengthening food security policies became a central issue in development and is a major focus in agricultural development (Suryana, 2014; Suyastiri, 2008; Mustika *et al*. 2008).

Food security has a strategic position in the government as one of the pillars towards national economic resilience and stability (Rachmat *et al*. 2011; Darwis, *et al*., 2014). To meet adequate food, both central and local governments continue to encourage agriculture in the village as one of the spearheads a provider of food through the intensification and extension program crops. Efforts undertaken include the provision of inputs, provision of technology, water supply, marketing results and others that allow for a more stimulating farmers to farm more optimal, so that eventually there will be an increase in production and productivity. The purpose of this study was to compare the amount of production and the income of farmers in various land tenure status, and comparing the level of household food security of farmers in various land ownership with the share of food expenditure approach.

2. Methodology

This research was conducted in Pinrang in two sub-districts and Cempa Patampanua the Planting Season I (PS I) and the Planting Season II (PS II) in 2014. Pinrang selected as a test site, with the consideration that is one of the central areas of

rice production where the vast wetland berpengairan largest among the other districts in South Sulawesi. The data collected in this study included primary data and secondary data. To collect the data used three different techniques, namely observation, recording and interviews. This study covers aspects of production and incomes and food security.

Population and Sample

The research population is farmers who undertake rice farming in two districts (Patampanua and Cempa). The number of samples of farmers who used the respondent was drawn 100 people. To get the number of samples that is using proportional random sampling method on each of the land ownership status (owner, mortgage, and tenants).

Methods of Analysis

Analysis of production and farmers income derived from rice farming by calculating production, costs and revenues can be used in rice farming nominal approach. Nominal approach without taking into account the value of money over time but that is used is at current prices (Suratiyah, 2008). The model calculates the revenue equation is as follows.

$I = R - (VC + FC)$
$R = P_q.Q$
Keterangan :
I = income (Rp)
R = earning (Rp)
P_q = production price (Rp/kg)
Q = production quantity (kg)
VC = variable cost (Rp)
FC = fixed cost (Rp)

Analysis of the farm household food security can be measured by the share of household expenditure approach. To determine the share of food expenditure of households used the following equation :

$$SFE = \frac{\text{Household Food Expenditure}}{\text{Total Expenditure}} \text{ X } 100\%$$

Information :
SFE = Share of Food Expenditure

To determine the level of food security indicators, it can be approximated by the following criteria :

a. The share of food expenditure < 60% of total spending is household food security.
b. The share of food expenditure ≥ 60% of total spending is not food secure home.

3. Results and Discussion

Production and Income

a. Use of Rice Production Factor

Production and the income of farmers in rice farming relies on a combination of factors that support to obtain maximum results. The level of production depends on the decision of farmers, how many resources (inputs) to be used, how much land is used, how many seeds, fertilizers, pesticides, and labor. Basorun dan Julius (2012), stated that the amount of production and income depending on the area of land under cultivation, the availability of the rice market, the number of workers involved in the production and use of agro-chemicals. Effendy (2010); Moses dan Adebayo (2007) declare variables that influence on rice production are land area, number of seeds, fertilizer, and labor. Mudakir (2011) declare the use of improved seed can increase the production farm. The land area has positive influence on results or production, the broader wetland higher results.

Inputs used by farmers in the areas of research include seeds, fertilizers, drugs and labor. To get fertilizer and medicine farmers bought at a kiosk saprodi or at a retail store on the market. While the seed, there are two ways to get the farmers are farmers who buy and farmers make their own seeds in a way to sow the crop. For purchased seeds, farmers can buy in the shop farm or at a retail shop on the market.

Fertilization is one way to increase production in rice farming. The type of fertilizer used by farmers as fertilizer urea, KCl, and Phonska. Fertilization is done three times in one season of harvest, where fertilization first performed at the age between 21-25 days after planting, fertilizing II performed at the age of 45-50 days after planting, and fertilizing III performed at the age of 65-70 days after planting.

Pest and disease control carried out by farmers is a part for preventing and free the rice plants from pests and diseases. There are several kinds and types of pesticides used by farmers to reduce pests and diseases in rice plants include Billy, Cliffer, Lindomind, DMA 6, Score, Rumpas, Arrivo, Decis and Furadan.

Labor is one of the most important parts of doing rice farming. Labor used is engine power and human power that comes from within and outside the family. In the research area farming is done manually using human labor and the use of engine power. Counting the number of workers is the working men's day are converted based on the level of wages.

The labor needs on average that tillage and harvest. In tillage farmers using hand tractors to plow the field are processed. Therefore, when converted to the use of human power, the energy equivalent of 20 hand tractors manpower. While the harvest also requires a lot of manpower, which is a tool used threshing machine and have 25 people as helpers who participated in the threshing machine.

b. Income of Farming Based on Land Tenure

The final goal is to obtain income farmers or maximum profit from farming activities are done. Advantages of rice farming is the difference between the total farm receipts with total expenditure/costs of farming. Total farm receipts rice is the product of the total production (kg) generated by the price per unit of production (Rp/kg) received by farmers, while expenditure is the total cost is the cost of variable and fixed costs. The result of the calculation of income from rice farming is obtained based on land ownership status is presented in Table 1 and Table 2.

Table 1: The Average Income of Farming per Hectare Land Tenure PS I in Pinrang 2014

Commentary	PS I		t-count
	Land Work Alone (Rp)	Working Land Others (Rp)	
The value of production	11.597.432,43	10.697.692,31	1,126 **
Total variable cost :			
• Seed cost	326.756,76	287.019,23	
• Cost labor of outside the family	1.242.160,26	802.026,48	
• Cost urea fertilizer	328.378,38	323.941,31	
• Cost KCl fertilizer	108.557,43	112,163,46	
• Cost phonska fertilizer	196.655,41	192.500,00	
• Cost pesticides	214.831,08	179.134,62	
Total fixed cost :	133.033,78	139.807,69	
• Tax cost	68.344,76	51.503,05	
• Depreciation cost appliance	2.618.717,86	2.412.035,15	
Total variable dan Fixed			
Income	8.978.714,57	8.285.655,16	0,439 *

Table 2: The Average Income of Farming per Hectare Land Tenure PS II in Pinrang 2014

Commentary	PS II		t-count
	Land Work Alone (Rp)	Working Land Others (Rp)	
The value of production	11.484.864,86	10.424.230,77	1,266 **
Total variable cost :			
• Seed cost	326.540,54	286.634,62	
• Cost labor of outside the family	1.884.215,06	1.734.868,13	
• Cost urea fertilizer	324.020,27	309.326,92	
• Cost KCl fertilizer	111,935,81	129.423,08	
• Cost phonska fertilizer	198.902,03	192.500,00	
• Cost pesticides	197.979,73	163.007,69	
Total fixed cost :	133.033,78	139.807,69	
• Tax cost	68.344,76	51.503,05	
• Depreciation cost appliance	3.244.971,98	3.007.071,18	
Total variable dan Fixed			
Income	8.239.892,88	7.417.159,59	0,538 *

Information : * = significant α : 10%
** = significant α : 5%

The calculation result of rice farming in Tables 1 and Tabel2 based on land ownership (peasant owner-tenants/work on their own land with farmers sakap and lien/working on other people's land) in PS I and PS II shows that, the value of production or proceeds from rice farming highest farmers working on their own land. T test results, the average difference indicates that the value of production of paddy farmers working on their own land is higher than the value of farm production of rice crop farmers working on other people's land.

Costs incurred to paddy farmers cover fixed costs and variable costs. The fixed costs consist of the cost of the payment of taxes and depreciation tool. The variable cost consists of the purchase cost of factors of production and labor costs. The total cost of the highest paddy farmers working on their own land, and the lowest total cost to the farmer working on other people's land in the second season.

Farm income is the highest rice farmers working on their own land and the lowest income for farmers working on other people's land in the second season. T test results, the average difference shows that the total income of paddy farmers working on their own land is greater than the farmers working on other people's land. Hermawati (2015) stated that based on the broad classification of farmland tendency increasingly narrow area of land farming, the less income from farming received by farmers. According Sumarno and Kartasasmita in Cahyono and Tjokropandojo (2013) that poverty rice growers and farmers of other commodities are rooted in the scarcity of arable land or narrowness of mastery. As a result of the narrow arable land tenure effect on the income of farmers lower than the farming is done. Rice farmers in Indonesia ownership of his farm on average just 0,5 hectares.

The calculation result of rice farming Table 3 on average (PS I + PS II) is based on land ownership (peasant owner-tenants/work on their own land with farmers sharecropper and mortgage/working on other people's land) shows that, the value of production or proceeds from rice farming The highest is the farmers working on their own land. T test results depending on average, indicating that the value of production of paddy farmers working on their own land is higher than the value of farm production of rice crop farmers working on other people's land.

Table 3: The Average (PS I + PS II) Income of Farming per Hectare Land Tenure in Pinrang 2014

Commentary	Land Work Alone (Rp)	Working Land Others (Rp)	t-count
The value of production	11.541.148,65	10.560.961,54	1,198 **
Total variable cost :			
– Seed cost	326.648,65	286.826,92	
– Cost labor of outside the family	1.563.187,66	1.268.447,30	
– Cost urea fertilizer	326.199,32	316.634,62	
– Cost KCl fertilizer	110.246,62	120.793,27	
– Cost phonska fertilizer	197.778,72	192.500,00	
– Cost pesticides	206.405,41	171.071,15	
Total fixed cost :	133.033,78	139.807,69	
– Tax cost	68.344,76	51.503,05	
– Depreciation cost appliance	2.931.844,92	2.547.584,00	
Total variable dan Fixed			
Income	8.609.303,73	8.013.377,54	0,627*

Information : * = significant α : 10%
** = significant α : 5%

Costs incurred to paddy farmers cover fixed costs and variable costs. The fixed costs consist of the cost of the payment of taxes and depreciation tool. The variable cost consists of the purchase cost of factors of production and labor costs. Based on calculations, farmers working on their own land greater than the total cost of paddy farmers working on other people's land.

Farm income is the highest rice farmers working on their own land is Rp. 8,609,303.73, and the lowest income for farmers working on other people's land is Rp. 8,013,377.54. T test results depending on average, show that total farm income of rice farmers working on their own land is greater than the farmers working on other people's land.

Based on the calculation second cropping season (PS I and PS II) showed that, the value of production or proceeds from the highest rice farming to the farmers working on their own land in the PS I. While the lowest production values obtained by farmers working on other people's land in the PS II. T test results, the average difference shows that the production of rice farming to the farmers working on their own land is higher than the value of farm production of rice crop farmers working on other people's land in the second season. For the total cost of the highest rice production is PS I of farmers working on their own land. While the lowest total cost is PS II on farmers working on other people's land.

The highest paddy farming income earned PS I farmers working on their own land is Rp. 8,978,714.57. While the lowest income is the PS II on farmers working on other people's land is Rp. 7,417,159.59. T test results, the average difference shows that the total income of paddy farmers working on their own land is greater than the farmers working on other people's land in the second season. If calculated based on the growing season alone (without distinguishing farmers working on their own land and farmers working on other people's land), the highest income from rice farming is on PS I.

From the analysis of income, it can be interpreted that, the value of production of rice farming with land ownership of farmers working on their own land is higher than rice farming on land ownership of farmers working on other people's land in the second season. Judging total costs incurred for rice farming by planting regardless of tenure status (farmers working on their own land and work on other people's land), then PS II is greater than PS I. This is due to the cost of seed, cost/labor outside family, KCl fertilizer costs, and the cost of fertilizer Phonska higher in PS I comparison with PS III.

Household Food Security Status of Farmers Based on Land Tenure

Efforts to see the condition of food security is important at this time. the share of food expenditure can be used as a composite indicator that reflects household food security. Household expenditure on food is synonymous with food consumption, mainly influenced by the income received from both farming and non farming. Farm crops (rice) has a large multifunctional role and the success of the development will provide significant effect on the achievement of food security and farmers' welfare (Sudaryanto dan Rusastra, 2006). Farmers are the spearhead as the guardian of food security.

Food security for farm households related to the size of the share of food expenditure, where every household has a certain pattern in spending and spending it on consumption of food and non food needs. When productivity and farmers' income increase, it will affect the good and positive contribution to food security. If the increased farm productivity, mean increased food supply and increase the level of food availability. Food production is highly dependent on the level of productivity and harvest area (Purwaningsih, 2008). Also the result of farmers from farming business is able to provide high income, means increasing farmers' access to food. To increase national food production in addition to wetland optimized, also need to be optimized dry land through increased productivity of existing farmland. Likewise, the expansion of crop lands by utilizing dry land abandoned (Abdurachman *et al.* 2008). The following table describes the food security conditions of farmers based on land tenure.

Table 4: Distribution of Household Expenditure Share of Food Tani According By Number Each Respondent Status Land Tenure in Pinrang 2014

Commentary	Hold Food (< 60%)	Not Hold Food (≥ 60%)	Total
Working on their own land (person)	52 (70,27%)	22 (29,73%)	74 (100,00%)
Working on other people's land (person)	10 (38,46%)	16 (61,54%)	26 (100,00%)

Table 4 shows that for land ownership on the owner (farmer-tenants owner/ working on their own land) the proportion of farm household food security is greater than not food secure. The large proportion of food security related to the production obtained from farms that can be wholly owned, so as to fulfill and meet some of the needs of food and reduce food expenditure. For non-owners (farmers pawn and sharecropper/working on other people's land), where the proportion of food can not stand more than food secure. This is due in particular to farmers sharecropper, farm production results obtained should be shared with the landowners. Decreased production results obtained penyakap farmers, the impact on the less able to meet or meet some needs for food and increasing food expenditure.

Table 5: Distribution of Household Expenditure Share of Farmers According to the Food Based on Number of Respondents Overall Status Land Tenure in Pinrang 2014

Commentary	Hold Food (< 60%)	Not Hold Food (≥ 60%)	Total
Working on their own land (person)	52 (70,27%)	22 (29,73%)	74 (100,00%)
Working on other people's land (person)	10 (38,46%)	16 (61,54%)	26 (100,00%)
Total	62 (62,00%)	38 (38,00%)	100 (100,00%)

Table 5 illustrates the proportion of food security in terms of the combined land ownership in which the owner (farmer-tenants owner/working on their own land) and non owners (farmers pawn and sharecropper/working on other people's land), still more food secure than not food secure. Employer contributions to food security is greater than the non-owners. While the contribution of non-owners to hold no more food compared with landowners.

Table 6: The average share of spending Food Status Land Tenure in Pinrang 2014 Based on t test

Commentary	Share of Food Expenditure	t-count
Working on their own land (person) Working on other people's land (person)	74 (54,85 = TP) 26 (60,98 = TTP)	3,481 *

Information : * = significant α : 10%

According to Table 6 explains that there is a difference the share of food expenditure over land ownership between peasant proprietors (owner farmer-tillers/ working on their own land) with non-owner farmers (farmers pawn and sharecropper/ working on other people's land). T test results showed farmers who own smaller share of food expenditure compared with non-owner farmers. Means farmers who own more food secure than non-owner farmers. The difference is caused farmers to allocate more non-owner income obtained from farming and non farming to meet food consumption. The greatest contribution of farmers penyakap cause non-owner farmers become food secure. Farmers penyakap mostly farmers who are less capable and more hope of farming as a staple. Likewise, the production of farming results obtained should be halved penyakap farmers with landowners, thus impacting the shortfall in meeting the needs of food consumption.

4. Conclusion

Based on these results it can be concluded that production and household income of farmers working on their own land (farmers who own tenants) is greater than the households of farmers working on other people's land (farmers sakap and pawn) with average production and revenues in PS I higher than the PS II. Household food security of farmers working on their own land (farmers tilling the owners) are more resistant than farmers working on other people's land (farmers sharecropper and pawn).

Additional production facilities from government subsidies and farming easy access to capital, especially for farmers who are less able to finance farming, both farmers and peasants tilling owner sakap and pawn. Need to diversify their businesses to increase revenue, in order to achieve food security and livelihoods both at the farmer owners and tenants or farmers sharecropper pledge.

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