INCOME DISTRIBUTION OF CORPORATE FARMING MODEL IN CENTRAL JAVA

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Abstract Corporate farming is an agricultural model carried out with the principle of expanding the planting area by eliminating land boundaries. The aim is to improve group production and productivity. This agricultural model is also a solution to the conversion of functions and increasingly massive land fragmentation. As a result, the income obtained by farmers is limited to subsistence land. This study aimed to determine the income distribution of corporate farming model farmers in Sukoharjo Regency, Central Java. Sukoharjo Regency was chosen as the research location with consideration as a national food barn that implements corporate farming. Sampling using a census of 51 farmers. The study results show that farmers' incomes have reached a prosperous degree according to the World Bank's criteria. The distribution of farmers' income is even with a low level of income inequality.

Keywords: corporate farming, income distribution, farming

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INTRODUCTION

Rice is the leading commodity of the people of Sukoharjo Regency and even Central Java. It is evidenced by the Central Java Province occupying the third position as a provider of national rice production (BPS, 2018). The practice of this achievement is the actualization of the government's strategic plan for national food self-sufficiency. Thus, it is necessary to increase production by farmers with full support for production factors. Moreover, the availability of production factors currently needs to be improved. Production increases that have been carried out include extensification, diversification, intensification and rehabilitation (Moervitasari, 2018). These efforts have not shown their existence in increasing production.

One of the strategies to increase farmer production in the Sukoharjo Regency is applying corporate farming models. Corporate farming is a farm whose land management is carried out in an agribusiness institution under the auspices of a manager with an agreed economic agreement, in this case, the farmer becomes a shareholder following the area of land owned (Coulter et al. 1999). Kurnia (2004), defines corporate farming as combining farming land to be managed jointly by farmers and integrated into one management. The process of merging this land will run well if farmers with narrow land holdings have the opportunity, ability, and willingness to find other alternative jobs that provide better welfare.

In the future, forecasting of demand for rice will increase along with the increase in public consumption. Considering several considerations, including unstoppable population growth, narrow land area, difficult to obtain production factors, homogeneous consumption patterns, rising per capita income, limited availability of substitute products and even people who do not change consumption patterns. So placing rice is still the main source of carbohydrates. Therefore, an increase in population must be followed by an increase in production and productivity.

Statistically, rice production and productivity in Sukoharjo Regency fluctuated in the 2010-2016. A significant increase in production
started in 2012 by 16.32%. The increase in production was due to an increase in harvested area, productivity, and improvements in agricultural systems. In addition, high production is efficiency in the use of balanced production factors by farmers. However, it can be seen that after 2012 it decreased, although it systematically increased in 2013-2016 (Table 1).

Table 1. Land area, production and productivity of rice in Sukoharjo, 2009-2015

<table>
<thead>
<tr>
<th>Years</th>
<th>Land Area (Ha)</th>
<th>Production (Ton)</th>
<th>Productivity (Ku/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>45.083</td>
<td>261.358</td>
<td>57.97</td>
</tr>
<tr>
<td>2011</td>
<td>35.082</td>
<td>190.411</td>
<td>54.28</td>
</tr>
<tr>
<td>2012</td>
<td>52.041</td>
<td>346.039</td>
<td>66.49</td>
</tr>
<tr>
<td>2013</td>
<td>47.783</td>
<td>328.967</td>
<td>68.85</td>
</tr>
<tr>
<td>2014</td>
<td>49.028</td>
<td>310.276</td>
<td>63.29</td>
</tr>
<tr>
<td>2015</td>
<td>49.764</td>
<td>374.546</td>
<td>75.26</td>
</tr>
<tr>
<td>2016</td>
<td>54.339</td>
<td>391.675</td>
<td>72.08</td>
</tr>
</tbody>
</table>

Source: BPS (2018)

The productivity of corporate farming farmers has decreased due to low annual production. It is the impact of the limited availability of water as a basic fulfillment of plant growth. In particular, the downstream part of Subak only gets water supply from upstream farmers. As a result, the efficiency of land providing full production becomes less good. Even farmers who originally planted 2-3 times a maximum of 2 planting seasons. Farmers' incomes also follow rice productivity. Productivity has an active effect on income. The rise and fall of productivity is a measure of success in rice farming.

Along with the increase in land area and production, it should increase farmers' income even though the increase in production is not followed by the productivity of corporate farming rice farming. However, the price of wet and dry grain production fluctuates and can occur at any time. It means that the low price of high production, low farmer's income, on the other hand, the high price of low production, high farmer's income. The size of the farmer's income illustrates the welfare of corporate farming farmers (Siringoringo, Tety, and Yusri 2020). Expanding the planting area through corporate farming will make a difference in the cost and acceptance of farmers. Differences in rice farming revenues lead to income distribution. The income distribution arises due to land area, production, and productivity gap. Differences in income distribution cause inequality in welfare ratios. Thus, it is necessary to study the distribution of farm income with the corporate farming model. The aim is to estimate the income of rice farming and the income distribution from the corporate farming model in the Sukoharjo Regency.

**RESEARCH METHODS**

The research location was determined purposively, namely Sukoharjo Regency, taking into account the center of lowland rice production and the national food barn that implements corporate farming. The sample is limited to farmers who are members of corporate farming. Sampling used a census on each farmer group in the Dalangan Independent Farmers Group Association, including 7 farmers for the Ngudi Rahayu Farmer Group, 16 farmers for the Asri Rata Farmers Group, 13 farmers for the Ngudi Rejeki Farmer Group and 15 farmers in the Ngudi Mulyo Farmer Group, total sample as a whole 51 samples of farmers. The data structure to measure production risk and farmer's behavior towards risk includes farm inputs and outputs collected during two growing seasons. It is collecting data with structured interviews with all members of corporate farming.

The income of the corporate farming model of rice farming is estimated using the following formula (Soekartawi, 2002).

\[ P = TR - TC \]  
\[ P = Y \cdot P - (TVC + TFC) \]  
\[ P = Y \cdot (P_1 + P_2 + \ldots + P_n) \]

Note: 
P = profit (Rp/year)  
TR = gross income (Rp/year)  
TC = production cost (Rp/year)  
TVC = total variable cost (Rp/year)  
TFC = total fixed costs (Rp/year)  
Y = total production (kg/year)  
P = production price (Rp/kg)  
Xi = factor of production (i = 1, 2, 3, ..., n)  
Pxi = price of factors of production (Rp)

The farmer's poverty line is measured using the criteria. Income distribution is measured using the Gini ratio index and the Lorenz Curve approach to obtain income inequality as follows (Widodo, 1990).

\[ GR = 1 - \sum_{i=1}^{n} fxi(Yi - 1 + Yi) \]

Note: 
GR= Gini number ratio  
Yi=proportion of total household income/cumulative land area  
Fxi = proportion of the number of households  
I = index indicating sample number
The Gini ratio value lies between 0-1 where the closer to zero the better the income distribution and vice versa closer to the number one, the more crippled the income distribution. The criteria for inequality in income distribution, and the Gini ratio according to Tadaro (2000) are as follows.

a. Gini <0.35% is a low or mild inequality
b. The Gini number 0.3–0.4 is a moderate inequality
c. The Gini number 0.4 is a severe inequality

In addition to using the Gini ratio criteria to determine the level of inequality in income distribution, the World Bank criteria are also used. The level of inequality in income distribution as measured by the World Bank (World Bank) criteria is obtained by calculating the percentage of income from the 40% of the population with the lowest income to the total income of the entire population (Heryanah 2017). The criteria that the World Bank has determined are as follows.

a. If the income received by farmers is < 12%, income inequality is high.
b. If the income received by farmers is 12-17%, income inequality is moderate.
c. If the income received by farmers is > 17%, the level of income inequality is low.

Meanwhile, the Lorenz curve approach estimates the income distribution of corporate farming farmers. The Lorenz curve depicts the relationship between the percentage of population/farmers and the percentage of income received. The vertical axis describes the cumulative percentage of income. The horizontal axis shows the cumulative percentage of the population. The further the Lorenz Curve is from the diagonal line, the higher the degree of inequality in the income of corporate farming farmers. On the other hand, the closer the diagonal line, the smaller the inequality shown.

RESULTS AND DISCUSSION

A. Respondent Profile

The average age of farmers in the corporate farming model is 59 years, this shows that the agricultural sector, especially lowland rice, tends to be less attractive to villagers of productive age (age > 50). Farming activities cause the high percentage of elderly farmers carried out for generations, and most do not have jobs outside the agricultural sector. Meanwhile, the productive age population mostly work in the industrial, service and tourism sectors, assuming that they are more promising than the agricultural sector.

Farmers' average level of education is more than 64% elementary school (SD), 17% graduated from high school and the rest have no education. The educational background of the majority of farmers are elementary school graduates, it can be understood that farming activities do not require special expertise and skills. Education is not an indicator of the success of farming. This paradigm causes farmers always to experience setbacks. Especially in running a business, risk and uncertainty cannot be predicted in advance. Improper decision making will result in material and non-material losses for them.

The gender of farmers is 96% male and the remaining 4% are female. The female farmer is a widowed farmer who continues the farming legacy of the head of the family. The average experience of farming as a whole is more than 11 years (>90%). Young experience in farming is possible for them to start running their business after receiving an inheritance from their family from generation to generation (land fragmentation). The long experience of farmers is a learning process to achieve production efficiency, especially the allocation of the use of production factors. In general, in carrying out their farming, they take advantage of empirical experience for several periods, especially for local superior commodities.

B. Use of Factors of Production

Use of Factors of Production

Land is a production factor that plays an important role in increasing the production and income of farmers. The average land tenure of corporate farming farmers is 1 stake (land size in Sukoharjo Regency) equivalent to 0.42 ha. Susilowati and Maulana (2012) explained that the land area for farmers to achieve their welfare is at least 0.65 ha. It means that land tenure is getting wider, of course, their production and income are also high. On the other hand, the narrow area of land has low production and income is also small. Based on land tenure status, 96% of the land is self-owned and the rest is leased. The current distribution of land tenure is the fragmentation of several land parcels into an (integrated) corporate farming model. The hope is that through corporate farming it can increase production and reduce the level of risk in farming.

The varieties of seeds used by corporate farming farmers are Mikongga, IR 64, Inpari 32, Sunggal, Bagendit, Ciherang, Pak Tani, PP 64 and Denok. The average use of rice seeds is 64.2 kg/ha per growing season. This amount is higher than the recommendation, which is 20 to 25 kg/ha. The reason for the high use of seeds is that farmers generally apply 1 stake of 5 bags of rice seed equivalent to 25 kg per 4,000 m2. In addition, it is customary for farmers to use large quantities of...
seeds as supplies for embroidering dead rice plants. The most widely planted varieties in the first and second planting seasons, were Cihera and IR 64. The average price range for seeds used by farmers was Rp. 60,000,00- per bag (5 kg).

Most corporate farming farmers use three types of macro fertilizers: Urea fertilizer, SP-36 fertilizer, and NPK fertilizer. The average use of urea fertilizer is 263.01 (kg/ha), SP-36 fertilizer is 233.73 (kg/ha) and NPK fertilizer is 322.30 (kg/ha). The average use of inorganic fertilizers exceeds the recommended dose of the Tawangsari District. The recommended dose of Urea fertilizer is 250 (kg/ha), SP-36 fertilizer 75 (kg/ha) while NPK fertilizer is 50 (kg/ha) (Ministry of Agriculture, 2007). Farmers’ habit of using fertilizer in large quantities is adjusted to the condition of the plant. Generally, farmers do fertilization twice per growing season. If the growth of rice plants is not good, fertilizing is done again but at a lower dose.

Farmers use pesticides to maintain rice plants against plant pests that cannot be predicted in advance. Corporate farming farmers’ pesticides types include Spontan, Megahrizo, Dharmabas, Trisula, Dupont, Prevaton, Virtako, Starban and Gemari. Spraying is carried out 3 to 5 times per growing season according to plant conditions. The average use of pesticides by farmers is 2.5 liters/ha. However, the distribution of the average use of pesticides fluctuates depending on the intensity of pest and disease attacks.

Labor has an important role in farming because labor is the operator of all activities. There is a variant of the use of labor between conventional agriculture and corporate farming. Generally, conventional agricultural labor is used manually by male and female workers. The number of workers required is relatively more. Meanwhile, in corporate farming, labor can be reduced by using agricultural tools and machines such as seeding, land processing, planting, and harvesting. The average of all HOK for corporate farming in Sukoharjo Regency per planting season is 14.81 HOK with an average allocation of 2.73 HOK or 19% for semi-corporate activities and the remaining 81% is corporate.

C. Income Analysis of Corporate Farming

The total cost results from the sum of all costs sacrificed by corporate farming farmers (TVC + TFCexplicit). Acceptance of the corporate farming model of rice farming is obtained by multiplying the production (Q) with the price (P). Meanwhile, revenue is generated by subtracting revenue (TR) and total cost (TC).

Table 1 shows that the average cost of rice farming per planting season in 2022 is Rp. 3,328,503.50. Farmers' income per planting season after production is multiplied by the price of Rp. 8,503,729.41. The price used is the price of harvested dry grain so the average income per season is Rp. 5,175,225.91. This figure shows that the income is quite high for farmers. If the planting is carried out three times, the farmer's income is more than 15 million. At the research location, a minimum of two planting seasons should be carried out. The remaining three planting seasons depend on the availability of sufficient water.

Source: Primery data, 2022

The average cost sacrifice is still high issued by corporate farming farmers to the workforce. The distribution of farmers' expenditures includes land cultivation using a four-wheel tractor Rp. 371,446 per ha, planted with rice transplanter Rp. 635,294 per ha and harvesting using a harvester machine are Rp. 847,059 per ha.

With this amount of income, each farmer can know, including farmers who are poor or not. The World Bank provides the criteria for the farmer poverty line with the concept of GKWB (USD x 1.90)*30 so that the index of each farmer can be obtained. Table 2 shows that all farmers are included in the non-poor category based on the World Bank's criteria. The lowest farmer's income is Rp. 917,000 per capita per month. It means that the corporate farming model provides a fairly good income in improving the economic welfare of farmers. In line with the findings of Nurjihadi (2017) that rice farmers are already prosperous, which is indicated by an income index exceeding the World Bank's criteria.

Source: Primery data, 2022

Table 3. Poverty line of corporate farming

<table>
<thead>
<tr>
<th>Description</th>
<th>Farmers</th>
<th>GKWB</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>900.000-1,000.000</td>
<td>2</td>
<td>828.723</td>
<td>Not poor</td>
</tr>
<tr>
<td>1,001.000-2,000.000</td>
<td>29</td>
<td></td>
<td>Not poor</td>
</tr>
<tr>
<td>&gt; 2,001.000</td>
<td>21</td>
<td></td>
<td>Not poor</td>
</tr>
</tbody>
</table>

Source: Primery data, 2022
D. Income Distribution of Corporate Farming

Income distribution is a measure used to see the income inequality of farmers. It means that through income distribution, farming producers' economic condition can be known. Is the income received following the actual conditions of the farmer or is it in a less favorable position. The unequal income of farmers can be reflected in the income and distribution of ownership of production factors (Siringoringo et al. 2020).

The percentage of farmers' income is divided into four layers, namely the first layer 40% with the lowest income, the second layer 40% with moderate income, the third layer 40% moderate income and the fourth layer 20% with the highest income (Table 3).

Table 4. Income distribution of corporate farming as World Bank

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Income (Rp)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First 40 % layer</td>
<td>82,660,750</td>
<td>19.06</td>
</tr>
<tr>
<td>2</td>
<td>Second 40 % layer</td>
<td>108,582,800</td>
<td>25.04</td>
</tr>
<tr>
<td>3</td>
<td>third 40 % layer</td>
<td>111,114,650</td>
<td>25.62</td>
</tr>
<tr>
<td>4</td>
<td>Four 20 % layer</td>
<td>131,332,000</td>
<td>30.28</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>433,690,200</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primery data, 2022

Table 3 can be seen that the lowest layer of the corporate rice farming model with income is Rp. 82,660,750 is equivalent to 19.06 percent. Forty percent of the second layer earns Rp. 108,582,800 or 25.04 percent. Forty percent of the third layer with an income of Rp. 111,114,650 or 25.62 percent. Income 20 percent of the last income Rp. 131,332,000 or 30.28.

According to the World Bank's criteria, the income distribution of corporate farming farmers is at a low level of inequality, because the income received by the lowest forty percent of the farmer is greater than 17 percent. It means farmers running a corporate farming model have obtained an even income or small inequality. The even distribution of income shows that production factors are well available in the implementation of rice farming. Thus, farmers' production is at its full efficiency level. In line with the findings (Hartati, 2020), farmers running organic rice farming have achieved a low inequality index or income.

While the estimation results using the Gini ratio or Gini coefficient, the distribution of farmer's income is 0.000. The Gini ratio value ranges from 0-1, the smaller the Gini ratio, the lower the income inequality. On the other hand, the Gini ratio value is closer to one. The income distribution is at a high level of inequality. It means that each corporate farming farmer has perfect equality in terms of income. The findings of Winarti and Permadi (2019) stated that income distribution was even in lowland rice farming. The same thing is explained by Dini, Noor, and Yusuf (2020) that the distribution of household income of lowland rice farmers is at a low inequality, meaning that the distribution of farmers' income is quite good. In line with Sukiyono, Windirah, and Melia (2019) findings, rice farmers' poverty line and income inequality are at a moderate level. Thus, special treatment is needed in achieving an equitable income distribution through sustainable agriculture in terms of labor, production factors, and appropriate agricultural technology. According to Bou Dib, Alamsyah, and Quim (2018), the income inequality of farmers in Indonesia occurs due to a decrease of the ability land to produce, and narrow access to labor, due to changes in people's lifestyles who prefer services and industry as family economic land.

The ultimate goal of farming is maximum income. Income is an indicator of success in farming. The better the production and productivity of the farm that is run, the higher the income. Through income, farmers' profits can also be measured. Nevertheless, the fact is that in the field, farmers' income is always fluctuating and can happen at any time. The production factor is the main key to the success of rice farming in addition to the ability factor in managerial. The availability of production inputs is scarce and productivity is limited. Once the factors of production are abundant, the price received by farmers is also high. However, farmers always behave as risk takers, especially using production factors. It is done as a response to subsistence because farmers essentially feel a loss, but their farming is still run based on long experience (Iskandar and Jamhari 2020).

In increasing the income of each farmer has the ability and opportunity to obtain a higher income distribution. The problem is that it is beyond farmers' control, which cannot be estimated, such as increases in production factor prices, plant pests that cannot be predicted in advance, improper combination of production factors, further farming capital and fluctuating production prices. Furthermore, this becomes the dividing variable between high-income farmers and low-income farmers. This problem can be solved properly if the management of farming, especially the groups, is improved and the integrated agricultural system between sub-sectors is revived.

E. Curve Lorenz Approach

The Lorenz curve visually depicts income inequality from the lowest to the highest (horizontal axis) with the cumulative percentage of farmer expenditure (vertical axis). The farther the Lorenz curve is from the diagonal line, the higher the level of inequality in the distribution of farmers'
income. On the other hand, the distance shown is getting closer to the diagonal line of low-income inequality (Heryanah 2017, & Ayu et al. (2021), & Hartati 2020). The Lorenz curve of corporate farming farmers is as follows.

Figure 1. Curve Lorenz income distribution

The Lorenz curve approach manifests the Gini ratio or Gini coefficient. From the total number of farmers in corporate farming, the income distribution is following their respective portions. The Gini ratio value shown is 0.000 explaining the income earned by the average farmer. The wider the farmer's land, the higher the income obtained. In implementing corporate farming model agriculture, farmers work with each other corporately (together) to increase rice production. So that external factors that can reduce production can be minimized properly. As a result, farmers' production during the first planting season reached the target, although the plant disturbing factors were still present, they could still be anticipated. In addition to the support of field facilitators as production support, the management of rice farming for corporate farming farmers is quite good. It is evidenced by the implementation of joint cultivation such as land processing, seeding, planting, and harvesting the rest is semi-corporate. The goal is to create modern agriculture with the concept of sustainable agriculture both in terms of the availability of production factors that support national rice production

**CONCLUSION**

Corporate farming can be an alternative to increase production and productivity in the era of increasingly high land conversion. In addition, the unstoppable land fragmentation makes land distribution small and narrow. Production and productivity also decreased. It also has an impact on the income of corporate farming farmers. The smaller the area of arable land, the lower the income of farmers, on the contrary, the area of arable land produces much high income. According to the World Bank index, farmers' income is at the level of prosperity. The distribution of farmers' income based on the Gini ratio or Gini coefficient is evenly distributed. It is also explained by the Lorenz curve that in a diagonal line farmers achieve a low degree of inequality.

**REFERENCES**


