Do the state and market affect the farmer's sovereignty? Study of organic agriculture in Indonesia

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Abstract. Many studies reveal organic farming as an environmentally friendly way compared to conventional agriculture. However, there is a lack of social issues discussed, such as farmer sovereignty, which has a significant impact on farmers' sustainability in running their organic business and their social welfare in the long term. This paper aims to analyze whether government policies and market interventions affect the farmers' sovereignty as defined in the Nyéléni declaration. We use organic farmer surveys in 4 provinces in Indonesia, which represent coconut, nutmeg, sorghum, and rice farming. By using the Partial Least Square (PLS), we concluded that government intervention has significantly influenced the condition of farmers' sovereignty but not for market intervention. This result indicates that organic agriculture grows naturally based on nature and community. The implication is the government needs to provide capacity building for organic communities rather than by subsidizing organic fertilizers, organic seeds, and machinery as in conventional agriculture and needs to legitimate organic label guarantees from the farmer's community.

Keywords: Organic Farming, Sustainable Agriculture, Food Sovereignty

1. Introduction

As a summary of organic farming discussions, we have attended an interesting issue to explore organic farming, whether it supports farmer sovereignty or not. In cultivation practices, organic farming is considered an effective way to protect the environment because it does not use chemicals compared to conventional agriculture. Organic farming practices use biological processes in plants and animals to build soil fertility and control pest disease towards ecological-based agriculture [1]. Besides being
environmentally friendly, organic farming can also provide healthy food for consumers. With organic certification labels, organic products have a higher selling value in the market.

In the past two decades, organic agriculture has opened a network of local farmers (producers) with local consumers, which has become a network with global consumers regulated in the global trading system, which has linked the locations of production and consumption socially and spatially [2]. Environmental sustainability, healthy food, and an open global market are points that are discussed in many studies in the social studies of organic agriculture [3]; [2]; [1]; [4]. The principles of organic agriculture, in line with the global market, have bounded the organic farmers to organic principles in International Federation of Organic Agriculture Movements (IFOAM). To access the global market, the farmer also highly depends on organic certification from the third party. This new system has brought up debates on sovereignty or organic farmers. White criticizes that the food issues are not only on the availability of food but also included the social, economical, and political structures of food systems that produce food [5]. White argues food sustainability, in the long run, depends on those who provide food and maintain the environment. In this paper, the authors highlight whether government policies and market interventions affect the farmers' sovereignty.

The authors adopt the concept of food sovereignty from farmer organization called Nyéléni [6]:

"the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their food and agriculture systems. It puts the aspirations and needs of those who produce, distribute, and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers and users. Food sovereignty prioritizes local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, pastoralist-led grazing, and food production, distribution, and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just income to all peoples as well as the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage lands, territories, waters, seeds, livestock, and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes, and generations."

Based on this definition, we identified eight elements that should be fulfilled to achieve sovereignty. They are; (1) The right to determine food and its agricultural system, (2) Prioritize people who produce, distribute, and consume food as the core of food systems and policies, (3) Defend the interests of future generations, (4) Promoting a transparent trading system, (5) Ensuring equitable income for everyone, (6) Ensuring the right of everyone to be able to control food consumption and their nutritional value, (7) Ensure the right to use and managing land, territory, water, seeds, livestock, and biodiversity in the hands that work to produce food, and (8) new social relations that are free from pressure and inequality between men and women, people, race, social class, and generations.

Although the concept of Nyéléni Declaration is implied to all kinds of agriculture, organic farming can also apply this concept to analysis sovereign conditions. We divided the idea into four sovereignty aspects, including land, cultivation, labor, and markets. In this globalization era, farmers are integrated with other actors such as community, private business, and state regulator [7]. A large private company can control or intervene farmers through price control in the market. The state intervenes a farmer
through regulations that dwarf the freedom of farmers to cultivate as they did during the green revolution.

2. Methodology

In our framework, the farmers do not stand alone in the system but connect with other large actors such as private businesses and government. The private industry in the agriculture sector has significant capital and can dominate the agricultural market. Further, farmers are as producers that supply cheap agrarian products to large private businesses. Besides farmers are as consumers buy agricultural cultivation materials such as fertilizers, pesticides, and seeds with a considerable high price.

Meanwhile, the government, as the regulator, has many interests with private business such as getting taxes and higher employment rates. Van de Ploeg calls the condition as a vast empire. In the current era of globalization, farmers do not the only aim for subsistence but connect with one vast empire [7]. The higher the market and the state intervening aspects of farmer sovereignty, the lower the sovereignty of farmers. The underlying reason is because of the freedom and control of farmers on their natural resources to co-produce agricultural activities, which are decreasing (blue line in figure 1). Conversely, when farmers can influence the country and the market on the food and market policy system the sovereignty of farmers is greater (dashed black line in figure 1).

The state uses its power to make rules and the market with the capital owned to create farmer dependence on the market system. The hypothesis that the authors have built is that the more farmers depend on the state and the market in carrying out organic agricultural production, ranging from cultivation to markets, the smaller the sovereignty of farmers.

![Figure 1. Relationships of State, Market, and farmer in achieving peasant sovereignty](image)

In this study, the authors conduct a survey of 191 farmers in 4 districts in Indonesia in 2018. The Data in Kulonprogo district was carried out on 50 organic coconut farmers, in Sanggau, 34 organic rice farmers, in East Flores, 57 organic sorghum farmers, and in Sangihe, 50 organic nutmeg farmers and secondary crops. Based on eight indicators of farmer sovereignty, according to Nyéléni Declaration definition, the researchers detailed them into 16 indicators as a dependent variable. State intervention and market intervention are the independent variables in this study.
Table 1. Indicators for dependent and independent variables

| Variables                                         | No | Indicators                                                                 |
|---------------------------------------------------|----|-----------------------------------------------------------------------------|
| Organic farmer sovereignty (dependent variable) --- FS | 1  | Land tenure right                                                           |
|                                                   | 2  | Land size                                                                   |
|                                                   | 3  | The farmer ability to produce seeds                                         |
|                                                   | 4  | The farmer ability to produce fertilizer                                    |
|                                                   | 5  | The farmer ability to get fund                                              |
|                                                   | 6  | Involve women in cultivation                                                |
|                                                   | 7  | Farmers can determine their cropping patterns                               |
|                                                   | 8  | The existence of communal farming activities                                |
|                                                   | 9  | Involvement of family members in organic farming                            |
|                                                   | 10 | Transfer knowledge of organic farming to children                            |
|                                                   | 11 | Land inheritance to children                                                |
|                                                   | 12 | The existence of communal farming activities                                |
|                                                   | 13 | The farmer ability to determine buyers                                      |
|                                                   | 14 | Adequacy of yields to meet the living cost                                  |
|                                                   | 15 | An alternative market for the farmer                                         |
|                                                   | 16 | Adequacy price information for the farmer                                   |
| State intervention in organic agriculture (independent variable) --- SI | 1  | Access to state land                                                        |
|                                                   | 2  | There are farmer groups formed by the government                            |
|                                                   | 3  | Farmer's access to natural resources such as water                          |
|                                                   | 4  | Policy to engage youth in agriculture                                       |
|                                                   | 5  | Price protection due to import                                              |
|                                                   | 6  | Farmer involvement in food policy                                            |
| Market intervention in organic Agriculture (independent variable) --- MI | 1  | Trade in organic fertilizers, seeds, and pesticides on the market           |
|                                                   | 2  | Effect of organic certification on market access                            |

Measurement, the effect of state, and market intervention to organic farmer’s sovereignty used the Partial Least Square (PLS) [8]. We used PLS because it does not require multivariate normal distribution and can be implied for all data scales, not only for data with interval or ratio scales. Steps to using PLS include conceptualizing the model, making path diagrams, converting path diagrams into system equations, estimating model parameters, evaluating measurement models, evaluating structural models, and testing hypotheses using data. The PLS's structure includes five latent variables, which consist of two exogenous variables, namely State Intervention (SI) and Market Intervention (MI), and one endogenous variable, namely Farmer Sovereignty (FS). It assumes that FS depends on SI and MI. Mathematically it can be written in equation 1:

\[ FS = f(SI, MI) \] (1)
3. Result and analysis

3.1 Land, cultivation, labor, and market for organic farming

Most respondents work on land less than one hectare, and as sharecroppers, see Table 1. The lack of land is no different from conventional agriculture situation. Agriculture census in 2013 recorded that 56.4 percent of farmers worked on a half hectare of land.

Table 2. Land size and tenure right for organic farmers

| Land Size   | Sharecropper | Owned by farmer + Sharecropper | Owned by farmer |
|-------------|--------------|--------------------------------|----------------|
| <= 0.5 ha   | 24           | 2                              | 52             | 59%           |
| > 0.5 - 1 ha| 45           | 9                              | 20             | 23%           |
| > 1 – 2 ha  | 4            | 2                              | 10             | 11%           |
| > 2 ha      | 15           | -                              | 6              | 7%            |

Source: Primary Data

In farm labor aspect, 81 percent of farmers in our survey have involved the family members, especially their children. However, the agricultural workforce faces challenges due to the reduced interest of young people to work on agriculture. Although the Indonesian government claims to have the policy to attract young people to agriculture eighty-five percent of farmers’ survey mentioned that there was no policy involving rural youth into organic farming activities, both in terms of cultivation and post-harvest. Government policy that is considered to ensure the availability of labor in agriculture is to engage youth in agriculture. Loss of interest among young people to return to the fields would be a threat, which creates a crisis in farmer regeneration. It could jeopardize the future of rural farming. In such conditions, food sovereignty is threatened as well [9]

In the market aspect, most organic farmers sell their harvest to only existing single buyers. The data shows that 87% of farmers are still dependent on established markets, as shown in the following Table 3:

Table 3. Farmers’ ability to determine the market

| There is an alternative market for farmers? | Amount | %  |
|-------------------------------------------|--------|----|
| Yes, there is                             | 24     | 13%|
| No, there is no                           | 165    | 87%|
| n/a                                       | 1      | 1% |
| Total                                     | 190    | 100%|

Source: Primary Data

The aspect of cultivation is the only indicator that distinguishes organic and conventional agriculture, such as the use of organic seeds, organic fertilizers, anti-organic pests, processing of soil, and non-polluted irrigation which are essential differentiators. This agricultural system also serves as an effort to re-peasantize the farming systems that damage the environment [7]. Families and communities inherit knowledge and skills in conducting organic farming. However, this does not mean that the organic cultivation system is independent of the state and market intervention. For example, with the current policy, the state seems to fill the market with private corporates’ subsidized organic seeds and fertilizers product in agricultural shops that become barriers for the farmer’s effort to produce by theirself [10].
3.2 Statistical model

Table 4 presents the estimation result from bootstrap coefficient value and $T_{resampling bootstrap}$ for 500 times replications.

|          | Original Sample (O) | Standard Error (STERR) | $T$ Statistics ($O/STERR$) | P Values |
|----------|---------------------|------------------------|---------------------------|----------|
| SI → FS  | -0.760              | 0.233                  | 3.262                     | 0.001**  |
| MI → FS  | -0.422              | 0.325                  | 1.297                     | 0.095    |

** Significant with alpha 0.05

The model shows that state intervention influences farmer sovereignty. It can see from the P-value of 0.001, and the effect of the relationship is -0.760, which means that state policy intervention will reduce the level of organic farmer sovereignty. This result is different in market interventions that do not influence statistically significant the level of farmers’ sovereignty.

According to the model, the state can intervene the organic farmer through the indicators as can be seen on the Table 1, such as of cultivation, land, labor, and price protection. In terms of cultivation aspect, the state can provide intervention in the form of subsidies in fertilizers, seeds, and organic pesticides. That subsidy will reduce the ability of farmers to produce their organic fertilizers, seeds, and pesticides. In reality, the farmer produces agriculture input from their land without any inputs purchased outside, as in the concept of agroecology [11]. Furthermore, organic certification from third parties is an instrument that is burdensome for farmers because it requires a high cost.

The dependence of organic farmers on land tenure, labor control, and market control is relatively high. In other words, the autonomy of organic farmers is relatively low in the three aspects. This condition is almost no different from the dependence of farmers on conventional farming systems. The only distinguishing indicator is the cultivation system. In organic farming, the farmers use their self-production of organic seeds, fertilizers, pesticide, and uncontaminated irrigation. However, this does not mean that the organic cultivation system is independent from the state intervention, as mentioned earlier.

Market interventions in this study only sees the indicators from the availability market which quickly provides organic inputs and market access when farmers get organic certificates. Survey results from small farmers show that the indicator does not affect the sovereignty of farmers. In Indonesia, in general, small farmers are still oriented towards production activities and nevertheless neglect the benefits of post-harvest activities. The supply chain of organic agricultural products is complicated and lengthy, thus efficiency is always challenging to be achieved. In some cases, there have been young farmers who have began to use the e-market platform to promote and sell their self-production of organic products, although it is still rarely possessed by the most farmers.

4. Policy implication

This organic farmer sovereignty model provides a discourse in looking at the direction of organic farming policies. Not only it does not merely focus on organic certificates and environmental friendly farming, but also does not ignore the farmers’ sovereignty who produce organic farming. For policies purpose, this idea is expected to provide a recommendation to protect farmers from the existence of market traps. The government should get attention from the reduction of organic meanings and access inequality in organic agriculture. The role of business people lies in the distribution of organic products so that it is essential to influence policies that directly affect trade mechanisms. This problem is like repeating the mistake that occurred almost half a century ago when the green revolution policy occurred.
In line with the green revolution policy, organic agriculture policy now also provides more significant opportunities for the large corporation through third-party organic certificates that are difficult to access by small organic farmers. This biased policy towards business actors has created inequality of access from the entire organic chain, leading to new inequalities [10].

In the aspect of land sovereignty, the government should open access for farmers to be able to use state land because most farmers do not have enough land. From the aspect of cultivation, the current government policy can increase its sovereignty in terms of cultivation, such as being able to make seeds, fertilizers, and organic pesticides themselves. With the result that the subsidizing organic program to production input does not provide strong sovereignty, subsidies are likely to cause dependence for the farmer. The policy options for strengthening capacity for organic communities are more important. Some policies provide livestock assistance, higher access for the farmers to utilize forest and water resources, and legalize the farming community for issuing organic certificates rather than from the organic certificate from private company.

Other than that, the government needs to engage youth in agriculture. In market sovereignty aspect, farmers still have a high dependence on established market chains. Farmers have no power to be involved in pricing, including the lack of information about the market price of their products.

In conclusion, these four sovereignty elements are essential to support the IFOAM’s principles, including health principles, ecology principles, fairness principles, and care principles [12].

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