

Environmental and Economic Value Studies In the Use of the Tomatoes Production Land

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Abstract

This paper examines the benefits of economic agglomeration in the value of land use in clustering tomato production into a growth center. The economic value of land use in this paper is tomato production per hectare of land cultivated per farmer and costs are calculated including the cost of seeds and fertilizer. The Bukit Sileh region has the potential for tomato plants that have the opportunity to be economically increased. When harvesting crops is better, farmers should not be harmed due to low tomato prices. To overcome the price remains stable and there is already a market guarantee that tomatoes will still be sold at normal prices. For this reason, it is necessary to create related business units. The step to bring together the related business units, the tomatoes are clustered into a downstream business unit of tomato-based tomato commodities. More and more related business units are established in an area, meaning that the parent industry increasingly has the opportunity to produce. The parent business (tomato plantation) will support the birth of related businesses such as; tomato sauce business, tomato candied business, tomato date business and other tomato-based businesses. The result of the research is that there are no strong linkages between input and output between economic activities and in the future it is expected that there will be a parent industry which is the leading sector encouraging economic growth centers that have agglomeration benefits. The advantage of new agglomeration can arise if there is a close link between existing economic activities at the concentration both in the form of linkages with inputs (backward linkages) or linkages with output (Forward Linkages) which will lead to various forms of external benefits for entrepreneurs both in the form of cost savings production, transportation costs of raw materials and production and savings in the use of facilities because the costs can be shared. Suggestions for research on the characteristics of growth centers concentrated in Bukit Sileh location are expected to encourage rural economic growth.

Keyword: growth poles, agglomeration, land use, backward linkage, forward linkages

Introduction

Agriculture is one sector that plays an important role in the economy in Solok Regency in particular and West Sumatra in general. This is due to the relatively large contribution of the Gross Regional Domestic Product (PDRB) of Solok Regency which is 26.9 percent (BPS, West Sumatra 2017).

The urgency of this paper from the side of tomato farmers, how tomato farmers can produce tomatoes is sustainable because there is a market guarantee for each tomato harvest. So that tomato farmers are not disadvantaged when harvest production (over production) is assumed the price will be cheap. The local government supports to establish businesses related to household or tomato-based product processing factories as an effort related to tomato farming business in the form of down streaming or differentiation of tomato products. Furthermore, tomato farmers can do calculations about efficient and effective land use in producing agricultural products according to the needs of integrated tomato production centers. In addition, the side of the district government through the development planning model of the environmentally oriented tomato production center that considers the inter-district linkages in the

agricultural sector in supporting the district's program of sustainable development that is environmentally sound needs to be assessed for its impact (He et al., 2016).

Land use (land use) is an effort in planning land use in an area that includes the division of regions to specialize in certain land functions. Land use (Land Use) is an effort in planning land use in an area which includes the division of regions for the specific functions of certain functions such as the function of tomato plantations (agriculture), settlements, trade, industry and others. Land use planning is a framework that determines related decisions about the location of agricultural land use and new industries / businesses, and other public facilities. Analysis of the carrying capacity of agricultural land can also find out whether an area has or is not self-sufficient in food based on the caloric needs of the population. According to (Moniaga, 2011); The implication of this analysis is that it can find optimal populations that can be supported by existing agricultural land. From this analysis it can be seen that plant area and agricultural productivity can also be classified.

A simple cluster is a group of companies in a sectoral and spatial manner that is dominated by one sector. This definition is widely used by cluster researchers who do developing countries (Schumpeter and Nadvi, 1999). The development of the Kalster definition began with a study of the North Italian success stories of the 1980s. Kalster keywords Schmitz and Musyck, 1994; dosinasi by small businesses in the same sector that are interconnected, collaboration between businesses that are close to various equipment and information, companies compete with each other on product quality rather than reduce costs and production wages, employers are well organized and actively participate in the organization and trust and good relations . To create this can be done by clustering industries. Industrial clusters can consist of core industries (leading industries), industrial suppliers, buyers or consumers, supporting industries, related industries, supporting institutions / industries that ultimately bring agglomeration benefits.

The advantages of agglomeration (agglomeration economies) are basically the main forces of a growth center. The reason is because it provides external benefits both in reducing costs or increasing market opportunities for entrepreneurs operating at the center. According to Sjafrizal, the benefits of new agglomerations can arise if there is a close relationship between economic activities that exist at these concentrations in the form of linkages with inputs (backward linkages) or Forward Linkages with this linkage that will generate various forms of external benefits for good entrepreneurs in the form of saving the cost of production of transportation costs of raw materials and production and saving the cost of using the facility because the burden can be borne jointly. The savings can then also reduce the costs incurred by entrepreneurs, so that competitiveness becomes increasingly decreasing in costs, which is the increase in efficiency and growth of economic activities within the growth center (production centers). In general, according to Isard (1960) states that agglomeration benefits include three main elements: (1) large scale economies, (2) localization benefits (localization economies), (3) urbanization economies.

Large-scale profit is the profit obtained in the form of a decrease in the average production cost of the unit because production is carried out on a large scale. So that each component with the model $SEt = AC0 - AC1$ with the understanding if $SEt > 0$ or $AC0 > AC1$ then the choice of the location of the company in the center of growth will benefit because of the average production costs that must be issued by the company if located outside the growth center is greater than in and vice versa if $SEt < 0$ or $AC0 < AC1$. Where $AC0$ is the average production cost when located outside the growth center and $AC1$ is the average production cost if it is located within the growth center.

The advantage of localization is the advantage in the form of cost savings, both for raw materials and production, which arise because it is located concentrated with other related companies in a growth center. The measurement of the amount of localization profit according to Sjafrizal produced is done by using the formula $LEt = TR0 - TR1$ with the understanding that $LE1 > 0$ or $TR0 > TR1$ means that the choice of company location in a growth center is more profitable because the cost of transportation must be issued by a company located outside the concentration of the growth center larger than in it and vice

versa where TR_0 = transportation costs that must be incurred to be located outside the growth center and TR_1 = transportation costs if located in the center.

The benefits of agglomeration are the benefits arising from the use of facilities in a growth center together such as electricity, warehousing, telephone, drinking water, and other utilities that support the company's operational activities in the center of growth. Urbanization can be done using the UEt formula = $\{(C / U)_0 - (C / U)_1\}$ where $UEt > 0$ or $(C / U)_0 > (C / U)_1$ means the selection of the company's location in the center of profitable growth because of the amount facility usage costs that must be incurred by the company if it is located outside the growth center is greater than if it is located within the growth center and vice versa where $(C / U)_0$ is the facility usage fee if it is located outside the growth center and $(C / U)_1$ if the facility usage fee located within the center of growth.

The growth poles were first put forward by Francois Perroux, a French economist in 1955. This idea was originally from the thinking of Casel (1927) and Schumpeter (1951) who argued that the transfer of growth between regions generally went smoothly, so that population development, production and capital is not always proportional between times, so that changes in time occur smoothly but there is a tendency for concentration in certain regions that have location advantages according to Perroux "Growth does not grow".

This view was later also supported by Hirschman (1958) who identified the existence of certain regions that grew very fast (growing points) and there were also certain regions that grew very slowly (lagging regions). This happens because in the development process there are trickling-down effects and polarization effects that differ from one region to another. Therefore, Friedman and Alonso (1964) said that decision making about where economic activities should be located is a very important investment decision. This thought was further elaborated by Hansen (1967) to find out more concretely about the economic structure contained in a growth center.

Perroux's thinking about the concentration of industrial activities in certain regions which can then encourage national economic growth, then developed into a concept of a growth center which in French was called Pole de Croissance. Furthermore, Richardson (1978) provides the following definition of growth centers: "A growth pole was defined as a set of industries capable of generating dynamic growth in economy, and strongly interrelated to each other via input-output linkages around a leading industry (Propulsive Industry)". From this definition it can be seen that there are four main characteristics of a growth center, namely; (a) the presence of a group of economic activities concentrated in a particular location; (b) the concentration of economic activity is able to encourage dynamic economic growth in the economy; (c) there is a strong linkage between input and output between economic activities at the center; and (d) in the economic activity group there is a parent industry that encourages the development of economic activities at the center. This picture in the center of growth there is a concentration of economic activity in which there is an economic activity that functions as a parent industry and several other activities that are interrelated with each other in terms of input and output. In agricultural activities the growth center (growth poles) basically adheres to the concept of agribusiness which involves production, processing and product marketing activities.



Picture of the Economic Structure of the Growth Center. Sjafrizal, p. 143

Results

a) Land use planning in building tomato production centers integrated in District Bukik Sileh District Lembang Jaya Regency Solok.

In preparing a land-use economic study plan in building an integrated tomato production center, it is necessary to provide information on the area of land in the Bukit Sileh area.

Table 1 Number of households and residents of Salayo Tanang Bukik Sileh District District Lembang Jaya Kabuapten Solok According to Gender in 2017

NO	Name of district	KK	Population		Total
			Man	Women	
1	Simpang	255	449	504	953
2	Data	183	379	379	760
3	Rumah Panjang	137	253	251	504
4	Lembang	97	206	186	392
5	Lakuak	80	142	165	307
6	Pasar	175	290	316	606
7	Kopi	170	348	341	689
8	Taratak Paneh	92	169	180	359
9	Taratak Baru	97	198	210	408
	Total	1286	2434	2532	4969

Source: District Data in 2017

Table 2 Production, Land Area, Total Costs and Costs of Tomato Plant Fertilizers in Bukik Sileh Region, Solok Regency, 2017

Information	production X19*X20	land area (Ha) X3	total cost X910	fertilizer X13AB	costs
Mean	29.038	0,459	489.325	1.350.800.	
Median	24.500	0,375	400.000	1.110.000.	
Maximum	104.000	2,000	1.800.000.	3.400.000.	
Minimum	9.800	0,200	50.000	500.000	
Std. Dev.	15324.63	0,3305	279.150.	604.863	
Skewness	2.1916	2,6223	2.1533	1.1436	
Kurtosis	9.1283	11,359	9.0544	3.7368	

Source: District Data 2017

Table 2 above shows that the highest production of tomato Bukik Sileh was 104.000 tons with an average of 29.038 tons with an average land area of less than half a hectare (0,459 ha) per farmer. To get that much production requires a total cost of IDR 489.325 and requires a minimum fertilizer of IDR 500.000, with an average of IDR 1.350.800 per hectare. Tomato farmers cover a maximum land area of 2.000 ha and a minimum of 0,200 ha.

From the point of view of the economic value of land use for tomato production not only in terms of the tomato plantation area, but how to utilize the existing land can produce multiple tomato production. This means that there is no guarantee if a large area of land will produce a lot of tomato production, this is in line with the findings (Sita & Hadi, 2016).

The study of the economic value of land use will save land management costs, seed costs and medical expenses. The impact of the use of artificial fertilizers and pesticides will be minimized, when compared to the large area of exposure to pesticides will disturb the lives of more and more species such as worms, eels and so on.

Furthermore, the findings of Azhar's research, et al, economically the average total tomato production in one planting period in Nagayo Salayo Tanang Bukik Sileh was 9,74 tons and was equivalent to the monetary value of IDR. 10,17 million. So this means that farmers in one planting period for 3-4 months will get income between IDR. 9,77 million - IDR. 10,60 million. So, the income in one month is between IDR. 2,44 million - IDR. 2,65 million. Therefore, tomato farmers Selayo Tanang Bukik Sileh still need to improve their production capabilities, so that economically profitable and increase income will further improve the welfare of farmers.

Tomato production at harvest time is production that exceeds market needs, so that very large amounts of production are not utilized, because the average tomato production at harvest time reaches 16,74 tons per farmer in one planting period. In connection with that, a downstream plan from more production (over production) is needed. In this case there is still a lot of land (shrubs) that have not been optimized for the community while this area has the potential for tomato plantations.

If the guarantee of the tomato market already exists, farmers can increase production, even the area of land to be cultivated for tomato land (Esengun, Erdal, Gündüz, & Erdal, 2007) because in Bukit Sileh there are still many shrubs and land potential for tomato plants in the side of a vast rain fed rice field has not been optimized.

b) Formation of the form of down streaming or differentiation of tomato products in building an integrated tomato production center in Bukik Sileh, Lembang Jaya District, Solok Regency.

To get the formation of downstream tomato products as a basis for making decisions in building a tomato production center in the Bukit Sileh area, researchers used experts in addition to the theory. So to get this information the researcher collected the tomato farmer's house to give explanations and received information directly from the farmers in the form of farmers' complaints and their hopes as tomato farmers.

To get information downstream of tomato products, the expert instructor asked to provide downstream forms of commodity of tomatoes to tomato sauce, candied tomatoes, tomato dates and various types of tomato-based crackers. So with this information the tomato farmers are getting excited because tomatoes are not just for vegetables.

Based on the number of business forms from downstream tomatoes that can make differentiation of tomato products. If established in a tomato production center area accompanied by related businesses, then there is a guarantee of input from related businesses. The parent business is the center for the production of tomatoes (tomato plantations) as the leading sector, the related businesses (tomato sauce industry, tomato candied industry, tomato dates industry and so on are not hesitant in running a business because there are already guaranteed inputs (Ozkan, Ceylan, & Kizilay, 2011) This means that there are related efforts between the parent and other businesses that have been classified, such as the results of research (Wijaya, 2015).

This is what helps farmers to improve welfare because there is already a guarantee of a large good tomato market and small tomatoes can be used up for tomato industry input. If the industrial business is in a smooth process, then there is no decaying tomatoes, so flies will damage the environment.

It is hoped that the tomato farmers will focus on increasing tomato production from day to day because there is a guarantee of the tomato market, finally it can improve the welfare of tomato farmers.

Conclusions

Based on the study of economic land use agglomeration in clustering tomato production for planning tomato production centers in the Bukit Sileh region it was concluded that; (i) the existence of market guarantees from tomato production will be able to mobilize farmers to increase production based on the economic value of cultivated land per individual profitable farmer. (ii) with the existence of related industries that support leading industries, the benefits of economic agglomeration will be obtained. (iii)

through the downstream cluster of tomato products in opening related businesses based on tomato inputs, the center of economic growth will be born. (iv) The center of economic growth will develop if more and more related businesses need each other to be interrelated. In a cluster, the center of economic growth has many benefits and advantages of economic agglomeration. As transportation costs can go down, general costs can be shared such as building infrastructure, public facilities, shared electrical substations and shared services.

Suggestions for regional governments to accommodate infrastructure development to Nagari Bukit Sileh region because this region has the potential to accelerate rural economic growth. If Bukit Sileh is realized as the center of economic growth based on tomato plantations, then it can support the welfare of tomato farmers in particular and the people of this region in general. Macro economically will be able to reduce poverty and unemployment through employment and increase the economic growth of Solok district.

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