Analysis of Plantation Sector Potential on Regional Development in Poleang District, Bombana Regency

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Abstract. Gross Regional Domestic Product (GRDP) is a measurement of productivity that reflects the entire value of goods and services produced by a region including the plantation sector products obtained. This study aims to analyze priority plantation commodities to be developed in the Poleng Kabupaten Bombana area. The analytical method used is Location Quotient (LQ) analysis and Shift Share Analysis. The results showed that plantation commodities which were the commodities of the base plantation were clove with an LQ value of 4.3794, coffee with an LQ value of 3.3723, pepper with an LQ value of 2.6978, patchouli with an LQ value of 1.4400, and coconut with an LQ value of 1.1150. The priority order for the development of base plantation commodities in Poleang District, Bombana Regency is the first priority for coconut commodities with LQ> 1, positive PP and positive PPW. The second priority is the commodity of pepper, coffee and cloves with LQ> 1, negative PP, and positive PPW. Meanwhile, the alternative priority is patchouli commodity with a value of LQ> 1, negative PP, and negative PPW.

1. Introduction
Philosophically a development process can be interpreted as a systematic and continuous effort to create conditions that can provide various legitimate alternatives for the achievement of the aspirations of the humanistic citizens. In other words, the building process is a process of humanizing humans [1]. Development must be seen as a multidimensional process that includes various fundamental changes to the social structure, attitudes of society, and national institutions, in addition to continuing to pursue accelerated economic growth, handling income inequality, and alleviating poverty [2]. So the development of a country can be said to be good, not only seen from its increasing economic growth, but also from other aspects such as those mentioned above. One indicator to see the welfare of the community from material aspects is through the level of economic growth. Economic growth is also one of the targets in the process of economic development. Even the economic development of a country can be said to increase by only looking at its economic growth. If economic growth increases every year, it can be said that economic development also increases [3].

There are several techniques for analyzing regional potential that can be used in the development of coastal and marine areas to help formulate policies and evaluate implementation of policies. The analysis techniques include: Base Economic Models, Input-Output Models, Linear Programs [4]. Dual Purpose Program, Domestic Resource Costs, Shift Share Analysis, Sociogram and Scalogram, and Evaluation of the Process of Development of Coastal and Oceanic Areas. Input-Output
techniques are used to examine the inter-industry linkages in an effort to understand the complexity of the economy and the conditions for maintaining a balance between supply and demand.

Linear Program Engineering is a mathematical technique for finding optimal decisions, subject to certain constraints, in the form of linear inequalities. This linear program is an equation optimization model that deals with the constraints faced. Basically the problem of linear programs leads to the search for optimal values of a linear function in a linear constraint [5]. The purpose of using a linear program is to find several alternative combinations of problem solving. Then the best combination is chosen, in order to develop a limited resource allocation strategy to achieve the desired goals optimally [4]. There are several models for analyzing the comparative advantage of a commodity in an area, one of which is the analysis of domestic resource costs. The use of domestic resource cost analysis (BSD) is one way that can prevent us from misallocation of resources. BSD is one of the criteria for assessing investment, specifically in the field of tradeable goods and services [4].

Scalogram methods can be used to determine residential or regional rankings and institutions or service facilities. While the sociogram method is intended to graphically show patterns of interaction and interdependence through population movements between residential centers in utilizing socio-economic service facilities. The pattern can be shown on maps on the basis of people's preferences from a sub-district (settlement) to service facilities with arrow direction [4]. Evaluation of the implementation of coastal area management can be grouped into 3 types, namely: (a) Performance evaluation, (b) outcomes evaluation, and (c) capacity management (capacity) evaluation. Performance evaluation includes matters relating to the quality and implementation of activities, and the level of achievement of the objectives of the activity. Outcomes evaluation covers the impact of management activities on coastal and community resources in the coastal region. While evaluating management capabilities to determine the adequacy of management structures and processes, relative to international standards and experience [4].

Base economic theory states that the main determinant of economic growth in a region is directly related to the demand for goods and services from a region. The production process in the industrial sector in an area that uses local production resources (SDP), including labor and raw materials, and exported output will result in economic growth, increased per capita income, and the creation of employment opportunities in the area. Base economic theory is used to find out whether a sector is a base or non-base sector. There are several measurement methods in basic economic theory, namely direct measurement methods and indirect measurement methods [5]. The direct measurement method can be by direct survey to identify which sector is the base sector. This method determines the base sector correctly. However, this method requires a lot of money, time and labor. Given the above, most regional economists use indirect measurement methods. Some indirect measurement methods, namely: (1) methods through an assumption approach; (2) Location Quotient method; (3) combination method 1 and 2; (4) minimum requirement method [4]. Location Quotient is a technique used to expand shift share analysis [6]. This technique helps us to determine the export capacity of the regional economy and the degree of self sufficiency of a sector. In this technique the economic activities of a region are divided into 2 groups, namely industrial activities that serve markets in the region itself and outside the area concerned (basic industry), and economic or industrial activities that only serve markets in the area (non basic industries / local industry).

Diversity in industrial structure raises differences in the growth of production output and employment opportunities. A fast-growing region is due to the support of the industrial structure / sector in other sense, most sectors have a rapid growth rate. As for regions with slow growth, most of the sectors have a slow growth rate. To identify sources or components of regional growth it is commonly used Shift Share analysis [4]. Shift share analysis is a technique that is very useful in analyzing changes in regional economic structure compared to the national economy. The purpose of this analysis is to determine the work performance or productivity of the regional economy by comparing it with a larger area (regional or national). This analysis provides data on economic performance in 3 fields related to each other, namely economic growth, proportional shifts and differential shifts [4]:
Regional / regional analysis is the main activity in the development planning process or regional development. Shiftshare analysis is one of the techniques used to analyze regional statistical data, both in the form of per capita income, output, labor and other data. Determination of superior commodities can be explained using shift-share analysis. Determination of superior commodities is characterized by differential shift (D) and proportional shift (P) components. This component is used as a commodity performance criterion in the first stage. Positive component D shows the superiority of certain commodities compared to similar commodities in other regions, while the positive component p shows the composition of the industry which is relatively good compared to the national.

2. Methods

This research was conducted in Poleang District, Bombana Regency in Southeast Sulawesi. Determination of the research location was determined purposively considering that in the region there were many people who made farming in the plantation sector as their main source of income. The data used in this research is secondary data. The secondary data includes data on plantation commodity production and data on the value of plantation commodity production in Poleang and Bombana Districts.

2.1. Analysis of plantation-based commodities

The analysis used to determine plantation commodities in Poleang District, Bombana Regency, included in the base or non-base plantation commodities is an analysis of Location Quotient (LQ). The LQ value is obtained from the following equation:

\[ LQ = \frac{k_i^p/k_i^p}{k_i^p/k_i^p} \]

Description:

- \( LQ \): Location Quotient Index of plantation commodity in Poleang District, Poleang District.
- \( k_i^p \): The value of plantation commodity production i in Poleang District (Rp.)
- \( k_i^p \): Value of total production of plantation commodities in Poleang District (Rp)
- \( K_i^p \): Production value of plantation commodity i in Poleang District (Rp)
- \( K_i^p \): Value of total production of plantation commodities in Poleang District (Rp)

With the criteria as below:

If score of \( LQ > 1 \) it means that the plantation commodity is a commodity of base plantation. The plantation commodities not only meet the needs of the region itself, but can also be exported outside the region.

If score of \( LQ = 1 \) it means that the plantation commodities are classified as non-base plantation commodities. The production is only enough to meet the needs of the region itself and not be able to be exported.

If score of \( LQ < 1 \) it means that the plantation commodities include non-base plantation commodities. Its production cannot meet the needs of its own area so it needs to supply or import from outside.

2.2. Analysis of the determination of priority for base commodity development in plantation

The analysis used in determining the priority of development of base plantation commodities in Poleang District is a combined analysis of LQ and Shift Share (in this study only the PP and PPW components) with the following criteria as table 1.
Table 1. Determination of plantation-based commodity development priorities

| Priority          | LQ | PP     | PPW     |
|-------------------|----|--------|---------|
| First priority    | < 1| Positif| Positif |
| Second Priority   | < 1| Negatif| Positif |
| Alternative Priority | < 1| Negatif| Negatif |

3. Results and Discussions

3.1. Commodity analysis of plantations-based

Location Quotient Analysis (LQ) is used to find out economic sectors in GRDP which can be classified into base and non base sectors. LQ is a comparison about the size of a role sector in Kediri to the magnitude the role of the sector is at the level East Java Province whole [7]. Determination of commodity base plantations in Poleang District, Bombana Regency is carried out using the Location Quotient (LQ) index method.

The basic logic of the LQ index is the theory of the economic base, which in essence is because the base commodity produces output to accommodate the market inside and outside the subdistrict, then the sales out of the district will generate income for the region concerned. Furthermore, the flow of income from outside this area will lead to an increase in consumption (Consumption) and investment (Investment) in the area, which in turn will increase income and create new employment opportunities. The increase in income not only increased demand for the base plantation commodity, but also increased the demand for non-base (local) plantation commodities. This increase in demand (Demand) will encourage an increase in investment in the relevant plantation commodities and other commodities. The LQ value of each plantation commodity is presented in the following table 2.

Table 2. LQ value of plantation commodities in poleang district, Bombana Regency, From 2016 to 2018

| No | Plantation Commodities | LQ Score 2016 | LQ Score 2017 | Average LQ Score |
|----|------------------------|---------------|---------------|------------------|
| 1. | Patchouli              | 2.0675        | 0.8125        | 1.4400           |
| 2. | Coffee                 | 4.7859        | 1.9587        | 3.3723           |
| 3. | Clove                  | 6.2087        | 2.5410        | 4.3749           |
| 4. | Pepper                 | 3.8287        | 1.5669        | 2.6978           |
| 5. | Cashew                 | 0.0336        | 0.0194        | 0.0265           |
| 6. | Cocoa                  | 0.2765        | 1.1478        | 0.7122           |
| 7. | Coconut                | 1.2015        | 1.0284        | 1.1150           |

Table 2 shows that there are seven plantation commodities cultivated by the community in Poleang District, Bombana Regency, namely patchouli, coffee, clove, pepper, cashew, cocoa and coconut. Based on the LQ analysis, it is known that in the last two years, namely 2017 until 2018, there are 5 plantation commodities included in the commodity base plantation category, namely patchouli, coffee, clove, pepper and coconut, which are characterized by an average value more than one LQ average (LQ > 1). Whereas plantation commodities which are not included in the base plantation commodity are cashew and cacao, which are characterized by an average LQ value of less than one (LQ < 1), which is caused by the production value produced by these two commodities far compared to the total production value in Poleang District. For cocoa commodities, in 2017, they are included in the commodity base category, but on average between 2016 and 2017 have a LQ value of less than 1, so in this study not included in the commodity base.
3.1.1. **Patchouli commodity**

Patchouli commodity is one of the basic plantation commodities, with an average LQ value of 1.4400. The LQ value is obtained from a comparison between the value of patchouli commodity production multiplied by the total value of plantation commodity production and then compared to the value of patchouli production in Poleang District as a whole. This value indicates that patchouli commodities have a relatively larger role than the relative role of patchouli commodities in the economy in Poleang District as a whole, or in other words patchouli commodities are able to meet the needs of the local market and make deliveries outside the region. Patchouli commodity in 2016 was a base plantation commodity, although in 2017 patchouli commodities did not become a base commodity due to a decrease in the value of production, but on average from 2017 to 2018, the LQ value for patchouli commodities was more than one (1, 4400), which means that patchouli commodities are included in the commodity plantation base category. Patchouli commodity can be a base plantation commodity because it is supported by suitable land for growth and development of patchouli plants. In addition, most people make patchouli farming activities as a source of livelihood, and are supported also by Bombana District government policies that make the plantation sector (including patchouli commodities) a priority for regional development.

3.1.2. **Coffee Commodity**

Coffee commodity is one of the basic plantation commodities, with an average LQ value of 3.3723. The LQ value is obtained from a comparison between the value of coffee commodity production multiplied by the total value of plantation commodity production and then compared with the value of coffee production in Poleang District as a whole. This value shows that the coffee commodity has a relatively larger role compared to the relative role of coffee commodities in the economy in Poleang District as a whole, or in other words the coffee commodity is able to meet the needs of the local market and make deliveries outside the region. Coffee commodities in 2017 and 2018 continue to be base plantation commodities, although in 2017 the coffee commodity has decreased production value, but the value of LQ produced is still more than one. The LQ value for coffee commodities is more than one (3.3723), which means that the coffee commodity is included in the commodity plantation-based category.

3.1.3. **Clove commodity**

Clove commodity is one of the basic plantation commodities, with an average LQ value of 2017 to 2018 which is 4.3749, and is a plantation commodity with the highest LQ value. The LQ value is obtained from the comparison between the production value of clove commodities multiplied by the value of total plantation commodity production and then compared with the value of clove production in Poleang District as a whole. This value shows that clove commodities have a relatively larger role than the relative role of clove commodities in the economy in Poleang District as a whole, or in other words clove commodities are able to meet the needs of the local market and make deliveries outside the region. Clove commodities in 2016 and 2017 continue to be a base plantation commodity, although in 2017 the clove commodity has decreased production value, but the LQ value produced is still more than one and is a plantation commodity with the highest LQ value in Poleang District. LQ value for clove commodities is more than one (4.3749), which means that clove commodities are included in the commodity plantation base category.

3.1.4. **Pepper Commodity**

Pepper commodity is one of the basic plantation commodities, with an average LQ value of 2017 to 2018 of 2.6978. The LQ value is obtained from a comparison between the value of pepper commodity production multiplied by the total value of plantation commodity production and then compared with the value of pepper production in Poleang District as a whole. This value shows that pepper commodity has a role in the economy is relatively larger compared to the relative role of pepper commodity in the economy in Poleang District as a whole, or in other words pepper
commodity is able to meet the needs of the local market and can still deliver outside the District. The pepper commodity in 2017 and 2018 continues to be a plantation-based commodity, although in 2017 the pepper commodity experienced a decline in production value, but more than one LQ value was produced. LQ value for pepper commodity is more than one (2.6978), which means that pepper commodity is included in the commodity plantation base category.

3.1.5. Coconut commodity
Coconut commodity in Poleang District has become a prime commodity and is one of the main commodities in meeting the economic needs of the community. Coconut commodity is one of the base plantation commodities, with an average LQ value of 2017 to 2018 of 1.1150. The LQ value is obtained from a comparison between the value of pepper commodity production multiplied by the total value of plantation commodity production and then compared with the value of pepper production in Poleang District as a whole. This value shows that the coconut commodity has a role in the economy is relatively greater than the relative role of the coconut commodity in the economy in Poleang District as a whole, or in other words the coconut commodity is able to meet local market needs and still be able to deliver outside the region. Coconut commodity is one of the basic plantation commodities because the condition of the area is the same as most of the areas in Kabupaten Bombana which are very suitable with the characteristics for the growth and development of coconut plants. Coconut commodities in Poleang Subdistrict in 2016 and 2017 continue to be a base plantation commodity, although in 2017 coconut commodities experienced a decline in production value, but more than one LQ value was produced. LQ value for coconut commodities in Poleang District is more than one (1.1150), so coconut commodities are included in the commodity plantation-based category.

3.2 Priority of Plantation-Based Commodity Development
Plantation commodities that are prioritized to be developed in an area should have an advantage compared to other commodities, so that the plantation commodity can show characteristics and provide characteristics of the region in question. Based on the Location Quotient (LQ) and Shift Share Analysis (SSA) approach, priority commodities for development in this study are divided into 3 groups, namely first priority commodities, second priority commodities, and alternative priority commodities. Base plantation commodities which are the first priority to be developed are plantation commodities with LQ> 1 values, positive PP, and positive PPW. Base plantation commodities which are the second priority to be developed are plantation commodities with LQ> 1, negative PP, and positive PPW or LQ> 1, positive PP and negative PPW.

While the basic agricultural commodities that are the alternative development are plantation commodities with LQ> 1, negative PP, and negative PPW. The priority of developing base plantation commodities based on the LQ, PP and PPW approach in detail is presented in the following table. In the prime commodity and is one of the mainstay commodities in meeting the economic needs of the community. Coconut commodity is one of the base plantation commodities, with an average LQ value of 2017 to 2018 of 1.1150. The LQ value is obtained from a comparison between the value of pepper commodity production multiplied by the total value of plantation commodity production and then compared with the value of pepper production in Poleang District as a whole.

This value shows that the coconut commodity has a role in the economy is relatively greater than the relative role of the coconut commodity in the economy in Poleang District as a whole, or in other words the coconut commodity is able to meet local market needs and still be able to deliver outside the region. Coconut commodity is one of the basic plantation commodities because the condition of the area is the same as most of the areas in Bombana Regency which are very suitable with the characteristics for the growth and development of coconut plants. Coconut commodities in Poleang Subdistrict in 2016 and 2017 continue to be a base plantation commodity, although in 2017 coconut commodities experienced a decline in production value, but more than one LQ value was produced.
LQ value for coconut commodities in Poleang District is more than one (1.1150), so coconut commodities are included in the commodity plantation-based category as table 3.

Table 3. Priority of plantation-based commodity development based on the approach LQ, PP and PPW in 2018

| Priority | Commodity  | LQ    | PP         | PPW         |
|----------|------------|-------|------------|-------------|
| First    | Coconut    | 1.1150| 218,677,192| 6,661,818,739|
| Second   | Pepper     | 2.6978| -11,219,853| 0,000       |
|          | Coffee     | 3.3723| -15,308,935| 0,000       |
|          | Clove      | 4.3749| -1,158,104,292| 0,000 |
| Alternative| Patchouli  | 1,4400| -666,161,717| -73,080,000|

Table 3 shows that the plantation-based commodity which is the first priority for development is coconut commodity, with LQ> 1, positive PP and positive PPW. The data indicates that coconut commodities in Poleang Sub-district can not only fulfill the domestic market, but also meet market demand outside the Poleang District. In addition, coconut commodities have a fast growth compared to other commodities in the Poleang District, and coconut commodities in Poleang District have better competitiveness than coconut commodities in other regions in Poleang District. Base plantation commodities which are the second priority to be developed in the District are pepper, coffee and clove commodities which are characterized by LQ> 1, negative PP, and positive PPW. Meanwhile, the plantation-based commodity as an alternative development is patchouli commodity which is characterized by LQ> 1, negative PP, and negative PPW.

4. Conclusion
Plantation commodities which are the commodities of base plantations are clove commodities with LQ value of 4.3794, coffee commodities with LQ value of 3.3723, pepper commodity with LQ value of 2.6978, commodity value with LQ value of 1.4400, and commodities coconut with an LQ value of 1.1150. The priority order for the development of base plantation commodities in Poleang District, Bombana Regency is the first priority for coconut commodities with LQ> 1, positive PP and positive PPW. The second priority is the commodity of pepper, coffee and clove commodities which are characterized by LQ> 1, negative PP, and positive PPW. Meanwhile, the alternative priority is patchouli commodity with LQ> 1, negative PP, and negative PPW.

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