Cocoa Competitiveness Analysis in Pinrang District

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Abstract. Cocoa is one of Indonesia's leading plantation commodities which plays an important role in the Indonesian Economy, namely as foreign exchange earner, a sources of income for farmers, creating job opportunities, encouraging agribusiness and agroindustry and regional development. Therefore, cocoa commodity continues to be develop in Pinrang District considering the potential for land and area of 19,623.44 ha and average production of 11,443.75 t. The problems in this area are knowing how the level of competitiveness in this region, so it is hoped that this commodity can have a significant impact on the economy and community development in Pinrang District. This study aims to determine the level of competitiveness of cocoa commodity. This research use the type of secondary data obtained from Central Statistics Agency and South Sulawesi Province. The analytical method used in this research is Location Quotient (LQ). The LQ value of Pinrang District is greater than one, indicating that the cocoa commodity is a superior commodity or has comparative competitiveness in the region. Based on the results of this study, the average value of LQ in the last five years (2016–2020) is 1.41, which means it has the potential to be develop in Pinrang District.

Keywords: Cocoa · Competitiveness · Pinrang District · Location Quotient (LQ)

1 Introduction

The cocoa bean is one of the most important agricultural export products of Indonesia. In the past 25 years, the Indonesian cocoa sector has experienced massive growth, driven by rapid expansion of smallholder farmer participation. Indonesian smallholders contribute - by far - most of the national production, thus outperforming big state plantations and large private estates. The country currently has approximately 1.5 million hectares of cocoa plantations.

As one of the important sub-sectors in the agricultural sector, the plantation sub-sector has traditionally had a significant contribution to the Indonesian economy. In this case cocoa commodity, the area of cocoa commodity in 2015 was 1,724,092 Ha. In general, the average increase in cocoa area in the period 1980–2016 was 11.48% per year. The development of cocoa productivity in Indonesia during 2006–2016 tends to fluctuate. In 2006 Indonesia's cocoa productivity was 849 kg/ha, then in 2015 it fell to

797 kg/ha and in 2016 it was estimated by the Directorate General of Plantation to be 799 kg/ha or an increase of 0.25% compared to 2015. Regarding cocoa exports in 2015 it reached 355,32 thousand tons. Total cocoa exports in the last five years have fluctuated, increasing ranging from 7.31 to 7.53 percent per year [1].

The region that contributes to cocoa exports in Indonesia is South Sulawesi. This is supported because of the large area and supportive agro-climatological conditions. Cocoa production centers include North Luwu, Bone, Luwu, and Pinrang Regencies. Especially for the Pinrang Regency area, considering the large area and high production, the cocoa commodity has the potential to continue to be developed because it contributes to people's income and regional income.

The area and production of cocoa commodities in each district of South Sulawesi are presented in Table 1.

Table 1. Area and Production (tonnes) of Cocoa Commodities in South Sulawesi 2020

No	District/City	Area (ha)	Production (tons)
1.	Kepulauan Selayar	591	165
2.	Bulukumba	7.419	2.706
3.	Bantaeng	5.313	3.689
4.	Jeneponto	103	29
5.	Takalar	26	4
6.	Gowa	3.801	1.247
7.	Sinjai	4.315	270
8.	Maros	1.585	171
9.	Pangkep	302	63
10.	Barru	759	273
11.	Bone	16.805	8.159
12.	Soppeng	10.537	4.111
13.	Wajo	14.819	10.114
14.	Sidrap	6.897	4.560
15.	Pinrang	19.584	11.091
16.	Enrekang	6.509	2.124
17.	Luwu	33.845	22.000
18.	Tana Toraja	4.126	1.322
19.	Luwu Utara	40.701	27.942
20.	Luwu Timur	13.792	6.055
21.	Toraja Utara	1.548	297
22.	Kota Makassar	0	0
23.	Kota Pare-pare	0	0
24.	Kota Palopo	2.603	190
South Sulawesi		**195.980**	**106.582**

Source: Central Statistics Agency of South Sulawesi, 2021

Table 2. Total and Average Land Area and Production (tonnes) of Each Commodity in the Plantation Sector of Pinrang Regency 2016–2020

Commodity	Total		Average	
	Large land(ha)	Production (tons)	Large land(ha)	Production (tons)
Coconut	38.705,63	16.048,60	7.741,13	3.209,72
Coconut Hybrid	6.729.00	1.456,11	1345.80	291,222
Cocoa	98.117,18	57.218,75	19.623,44	11.443,75
Robusta Coffee	18.947.00	13.406.10	3.789.40	2.681,22
Arabika Coffee	2659	1.249,34	531,8	249,87
Cashew	6.401.40	511,08	1.280,28	255,54
Hazelnut	5981,9	1.281,47	1196,38	256,29
Clove	3331	197,30	666,2	39,46
Kapok	1027,5	51,30	205,5	10,26
Pepper	499,4	48,91	99,88	9.782,00
Vanilla	285	0,40	57	0,08
Aren	1977	759,36	395,4	151.872
betel nut	305,77	67,10	61,154	13,42
Nutmeg	674,69	0,30	134,938	0,06
Palm Oil	4465,8	6.068,60	893,16	1.213,72
Patchouli	6	0,00	1,2	0,00

Source: Central Bureau of Statistics of Pinrang Regency, 2017–2021 (processed)

Until now, the agricultural sector is still the driving force for the economy of the people of Pinrang Regency and is still the backbone of increasing regional income. In 2019 the agricultural sector. contributed 8,839.08 billion to the GRDP of Pinrang Regency [2]. Especially in the plantation sector of Pinrang Regency, cocoa is a commodity that is quite possible to continue to be developed by looking at the average area and average production each year.

Especially in the plantation sector of Pinrang Regency, cocoa is a commodity that is quite possible to continue to be developed by looking at the average area and average production each year. Table 2 presents data on the total and average land area and production of each commodity in the plantation sector of Pinrang Regency 2016–2020.

Among the plantation commodities that have a good enough opportunity to continue to be developed in Pinrang Regency is cocoa by looking at the potential of the average land area in the last five years (2016–2020) is 19,623.44 ha and the average yield production in the last five years (2016–2020) amounted to 11,443.75 t. Based on the description above, the formulation of the problem in this study is as follows: How is the

level of competitiveness of cocoa commodities in Pinrang Regency? Based on the background and problems that have been described previously, the objectives of this study are: To find out how big the level of competitiveness of cocoa commodities in Pinrang Regency. This research is expected to provide benefits for related parties, including: 1). This research can be used as one of the considerations for the government and the private sector to formulate and implement policy instruments, especially the agricultural sector in Pinrang Regency. 2). It is expected to increase knowledge about the problems that have been described. As a study material to add insight and reference for further research.

2   Methodology

This research was conducted in Pinrang Regency. The research was conducted in Februari until May 2021. The type of research is quantitative research because the implementation includes data, analysis and interpretation of the meaning of the data obtained.This study uses secondary time series data in the period 2016–2020. Secondary data is data obtained from agencies or institutions related to research. Secondary data sources were obtained from the Central Statistics Agency of Pinrang Regency and the Central Statistics Agency of South Sulawesi and other sources of information were obtained from previous studies.

Analysis of LQ (Location Quotient). LQ analysis can be used to determine the concentration and or distribution of production activities in an area. LQ is used to describe the comparative advantage of producing a commodity in the region [3].

The analysis used is quantitative analysis. Quantitative analysis to explain the level of competitiveness of comparative advantage is carried out by using LQ (Location Quotient) analysis. LQ is one of the indirect approaches used to determine whether a sector is a basic/non-basic sector and whether a commodity is the flagship of a region. In other words, the LQ value will give an indication of the ability of a region to produce a commodity, whether it has the potential to supply other regions, bring in from other regions, or is in a balanced state. Mathematically, the LQ formula is as follows [4].

$$LQ = \frac{\frac{pi}{pt}}{\frac{Pi}{Pt}}$$

Description:

pi = Production/area of commodity i at the district level of Pinrang
pt = Production/area of total commodity at Pinrang Regency level
Pi = Production/area of commodity i at South Sulawesi level
Pt = Production/total commodity area at South Sulawesi level

Criteria:

1. If LQ > 1, it means that the commodity in a region has a comparative advantage or is a basic sector. The potential of these commodities can not only be developed for needs in the area itself but can also be met in the surrounding area.

2. If LQ = 1, it means that commodity i in a region is not a non-base sector. The potential of these commodities can only meet their own area without fulfilling the surrounding area.
3. If LQ < 1, it means that commodity i in a region is not a non-base sector or commodity i in a region does not have an advantage so that commodity i is not suitable to be developed in that region.

3 Results and Discussion

From the results of interviews with palm sugar craftsmen and facilitators of palm sugar production development, there are several production factors that affect the amount of palm sugar production. The factors that influence the development of palm sugar production identified by the matrix of internal and external strategies are:

3.1 Location Quotient (LQ) Analysis Results

There are three stages to apply this LQ method:

Insert data on total production of cocoa commodities and all plantation sub-sectors at the district level and at the South Sulawesi level. The data on total production of cocoa commodities and all plantation sub-sectors at the district level and at the South Sulawesi level It can be seen in Table 3.

Table 3 shows that the amount of cocoa commodity production in Pinrang Regency in 2016 was 12,281.00 t, 2017 was 11,067 t while in 2018 it fell to 10,556.00 t and in the following year 2019 had the same production in 2017 which was 11,067 t. In 2020 it was 11,091.00 t with an average production in the last five years (2016–2020) of 11,212.40 t. The total production of the plantation sub-sector at the Pinrang Regency level in 2016 was 19,083.00 t.

In 2017, 18,142.48 t, in 2018 there was a decrease from the previous year, which was 16,922 t, in 2019 it was 18,073 t, an increase from the previous year and in 2020 it decreased again, namely 17,606 t with an average production within five years. The last one (2016–2020) was 17,965.30 t.

Especially for the amount of cocoa production at the provincial level of South Sulawesi, in 2016 it was 151,392.00 t. In the following year 2017 experienced a decrease of 122,887.24 t. Next, in 2018 there was another change of increase, namely 124,332.00 t and in the following years there was a decrease in 2019 is 118,775.00 t and in 2020 is 106,582,00 t with an average production in the last five years (2016–2020) which is 124,793.65 t. The total production of the plantation sub-sector at the South Sulawesi level in 2016 was 309,670.00 t.

In 2017 it was 2,314,775 t, then in the following year 2018 it became 323,025.00 t and in 2019 it decreased by 292,422 t, and in 2020 it was 441,906 t with an average production in the last five years (2016–2020) which was 38,603.00 t. In the last five years the number of cocoa production in Pinrang Regency has fluctuated. The lowest production amount was in 2018 which was 10,556.00 t and the highest production was in 2016 which was 12,281.00 t.

Table 3. Total Production (tonnes) of Cocoa and Plantation Sub-Sectors at the District Levels of Pinrang and South Sulawesi 2016–2020

Years	2016	2017	2018	2019	2020	Average
Total Production (tons) of Cocoa in Pinrang	12281	11,067	10,556.00	11,067.00	11,091.00	11,212.40
Total Production (tons) of Plantation Subsector at Pinrang	19,083.00	18,142.48	16,922	18,073.00	17,606	17,965.30
Total Production (tons) of Cocoa at South Sulawesi	151,392.00	122,887.24	124,332.00	118,775.00	106,582.00	124,793.65
Total Production (tonnes) of Plantation Subsector at South Sulawesi	309,670.00	2,314.78	323,025.00	292,422	441,906	38,603.00

Source: Central Statistics Agency of South Sulawesi, 2017–2021 (processed)

Likewise, the amount of cocoa production at the South Sulawesi Province level has experienced ups and downs. At the Pinrang Regency level, if in 2016 it was the largest cocoa production, also at the South Sulawesi Province level in 2016 it was the largest cocoa production amount, namely 151,392.00 t. Meanwhile, the lowest cocoa production was in 2020, which was 106,582.00 t.

Calculating the LQ of cocoa commodities. After knowing the amount of production of cocoa commodities and the amount of production of the plantation sub-sector which is at the level of Pinrang Regency and South Sulawesi. Then the formula to find out the value of this LQ can be used. The calculation is based on the amount of production in a certain area. Commodity production is then converted into the formula so as to produce the values presented in Table 4.

Table 4 shows the Location Quotient (LQ) value of cocoa for the last five years in Pinrang Regency. In 2016 the LQ value is 1.31, the LQ value in 2017 is 0.01, the LQ value for 2018 is 1.62 and the 2019 LQ value is 1.50 and in 2020 it is 2.61. So that in the last five years the average value of LQ is 1.41.

Based on the amount of production of the plantation sub-sector commodity, this greatly affects the LQ of the cocoa commodity. If the amount of cocoa commodity production is high in a region, it does not become a benchmark for the region to become a leading sector/base. However, what affects is the optimal limit of cocoa commodity production with the number of plantation sub-sector commodities in the region. If the

Table 4. Cocoa Commodity LQ Value in Pinrang Regency

Years	Total Production (tons) of Cocoa at the District Level of Pinrang	Total Production (tonnes) of Plantation Subsector at Level Pinrang	Total Production (tonnes) of Cocoa at the Provincial Level of South Sulawesi	Total Production (tonnes) of Plantation Subsector at Level South Sulawesi	Nilai LQ
2016	12,281.00	19,083	151,392.00	309,670.00	1.31
2017	11,067	18,142.48	122,887.24	2,314.775	0.01
2018	10,556.00	16,922	124,332.00	323,025.00	1.62
2019	11,067	18,073	118,775	292,422	1.50
2020	11,091	17,606	106,582	441,906	2.61
Average LQ Value					1.41

Source: Central Statistics Agency of South Sulawesi 2017–2021 (processed)

difference in the amount of production between the plantation sub-sector and cocoa commodities is higher, it will affect the LQ value in the region.

On the other hand, if the total production of the plantation sub-sector is not much different from the total production of cocoa commodities in the region, then it is very likely that the commodity is the leading/base sector.

The results of the study indicate that the cocoa commodity in the last five years has an average LQ value greater than one, namely 1.41, meaning that it has development potential because it is a superior commodity or has comparative competitiveness, meaning that the production does not only meet the needs of the region but also can be exported outside the region.

The results of the analysis also show that the share of the commodity analyzed is cocoa in Pinrang Regency which is greater than the share of the same commodity at the provincial level.

Determining Superior/unfavorable Commodities. After the LQ value is obtained, it can be determined that the commodity is included in the superior/unseeded category through the following criteria:

a If the LQ value of a commodity is more than one (>1), then the commodity is a superior/basic commodity or has a comparative advantage. This means that the cocoa commodity can not only meet the needs of the region but can also be exported to other regions or surrounding areas.

b If the LQ value of a commodity is equal to one ($=1$) then the commodity is not a leading commodity, meaning that the commodity in a region is not a non-base sector. The potential of these commodities can only meet their own area without fulfilling the surrounding area.

c If the LQ value of a commodity is less than one (<1) then the commodity is not a leading commodity, meaning that the commodity in an area is not a non-base sector

and has no good potential to be developed. It also means that the production of commodities in a region cannot meet its own needs, so supply or import from outside is required.

Based on the LQ analysis criteria, the results of the calculation of LQ for cocoa commodities on average in the last five years (2016–2020) are 1.41 where >1 means that the commodity is a superior/basic commodity or has a comparative advantage. This means that the cocoa commodity can not only meet the needs of the region but can also be exported to other regions or surrounding areas.

4   Conclusion

The results of the data using Location Quotient (LQ) analysis on the level of competitiveness of cocoa commodities in Pinrang Regency indicate that the analyzed cocoa commodities are superior commodities or have comparative competitiveness in the region. With an average LQ value in the last five years (2016–2020) which is 1.41, which means it has potential for development in the region.

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