



Research Article

The Comparative Advantage of Cattle Farming and Its Contribution to Donggala Regency Livestock Development

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A B S T R A C T

The beef cattle business, especially in Central Sulawesi Province, is a people's livestock business that needs to be developed. To support the development of the livestock business, it is necessary to have a database on the existence of beef cattle and the potential of its development area, so that it can be used as a basis for establishing the model of beef cattle business development. This study analyzes the Comparative Advantage of the Cattle Business and Its Contribution to Livestock Development in Donggala Regency using time series data for 10 years, from 2010 to 2019. The analytical model used in this study combines Location Quotient (LQ) and Growth and Share analysis. The Location Quotient (LQ) technique is used as a guide to find out how much influence cattle have on regional economic growth, by comparing the production value in the area studied, namely the sub-district in Donggala Regency, with the area above it, Donggala Regency. The acquisition of the LQ value of cattle in Donggala Regency is $1.03 > 1$, which means that the beef cattle business is a basic sector, so it can be said that cattle have a comparative advantage because they can provide regional markets and markets outside the region from Donggala Regency. Based on the Growth and Share analysis, beef cattle commodities have positive growth where $x = 8$, with a contribution (positive share) $X = 9.8 > 2$, and it is stated that the beef cattle business is superior and contributes significantly to the development of livestock in Donggala Regency. Carrying capacity analysis and proximal tests indicate that grazing pasture grass in Donggala Regency is 8 UT/Ha/Year with Nutrient Content of Dry Ingredients = 37.75%, Coarse Fat = 0.68%, Coarse Protein = 3.56%, Coarse Fiber = 27.35%, Ash Content = 5.25%.

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1. INTRODUCTION

Livestock development in Indonesia aims to increase livestock production while increasing farmers' income and welfare, meeting food and nutritional needs, creating job opportunities, and encouraging the growth of agro-industry and agribusiness. (Saputra, 2009). Goats play a significant

role in fulfilling national food needs as a source of protein, fat, vitamins, minerals, and other nutrients. The popularity of goat meat is no longer in doubt in Indonesia because goat meat is believed to have higher efficacy than beef and lamb.

Cattle farming business in Indonesia has become one of the most developed livestock businesses because, apart from

being an integrated business with lowland rice farming as a labor and means of transportation for cattle, it is also a large meat producer after poultry, because the community prefers beef compared to poultry, with goat, sheep, and buffalo meat. So that the cattle farming business can be said to have spread throughout Indonesia. The province of Central Sulawesi is no exception, because it is considered very appropriate as a potential livestock commodity area.

This condition can be seen based on cattle population data in Central Sulawesi. According to the latest data from the Director General of Livestock and Animal Health (2019), the current cattle population is 343,630. One of the areas in Central Sulawesi Province that has the potential for developing a cattle farming business is Donggala Regency.

Regarding livestock business development efforts, a database on the existence of livestock in an area, especially cattle, and the potential of its development area needs to be used as a model for developing certain livestock commodity businesses. This is a consideration for researchers who want to research the comparative advantage of cattle and their contribution to livestock development in Donggala Regency, which will later become an alternative material for cattle business development strategies.

Analyzing the comparative advantage of cattle against ruminants (cows, buffaloes, cattle, and sheep) in Donggala Regency, and analyzing the contribution of cattle to livestock development in Donggala Regency.

Comparative advantage is a commodity for a country or region, which means that a commodity is superior to other commodities in the region. The leading sector can also be said to be the base sector in a region, because it is seen that the region's needs have been met, and it can still be exported and can be a source of original income in its region. Commodities that have superiority, even if only in the form of comparison, are more profitable to develop than other commodities that are equally produced by both countries or regions (Robinson, 2005).

Location Quotient (LQ) is an analysis used to determine the extent to which the level of specialization of economic sectors in an area is based on the basic sector or the leading sector. Location Quotient calculating sector output share comparison (i) in the city or district and share of sector (i) in the province. Tarigan (2012) also explained that the LQ method can be used to determine an area's comparative advantage.

Endri (2012) states that the economic quadrant is needed to determine the economic sector or sub-sector that is superior, potential, dominant, or static by using the growth and share method. The growth method helps achieve growth for each sector, while the share method determines the contribution of a sector's results to the results of all sectors in the study area within one year of production.

2. METHOD

In this study, the method used is a literature study using time series data for 10 years and a field survey on the capacity of the grass field. The analytical model used combines Location Quotient analysis and Growth Share analysis. Location Quotient analysis compares base activities in an area relative to a larger area hierarchically. Systematically, the LQ equation can be written as follows (Dinc, 2002):

$$LQ = \frac{x_{ij} / \sum_{i=1}^4 x_{ij}}{\sum_{i=1}^8 x_{ij} / \sum_{j=1}^4 \sum_{i=1}^4 x_{ij}} \quad (1)$$

Based on (Sukirno, 1985), Growth analysis is used to obtain the growth of each sector with the following formulation model :

$$Growth = \frac{T_n - (T_n -)}{T_n - 1} \times 100 \quad (2)$$

While the share method is used to determine the contribution of the results of a sector to the results of all sectors in the study area every year within fifteen years, with the following formulation model :

$$Share = \frac{NP1}{NP2} \times 100 \quad (3)$$

If share > 1, it is given a value of 3; if share = 1, then it is given a value of 2; if share < 1, it is given a value of 1. Whether or not the contribution is given by looking at the following provisions: if the share is given a value of 2 or 3, then it is given a value (+). It is stated that the contribution given is significant, and if the share is given a value of 1, then it is marked (-), and it is stated that the contribution given is small (low). A value of 2 is declared to have a significant contribution, assuming that the subsequent development will increase or within 3 years the contribution given will remain or decrease. The results of growth share can be diagrammed as follows (Warpani S, 1980).

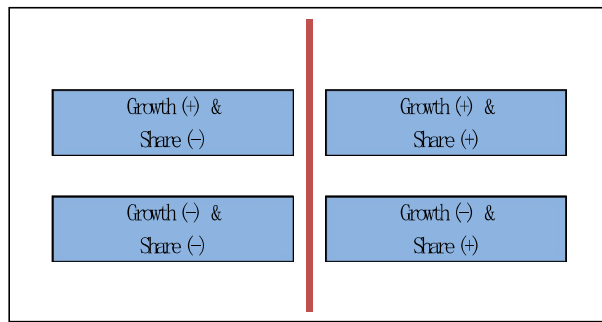


Figure 1. Quadrant Growth and Share

The figure shows that if the commodity sector has a reasonably high growth (+) and the contribution made is quite significant (+), it is called a leading sector, and is used as the base sector of a region. If a sector share has growth (-) and share (+), it is called a potential commodity, where the commodity can later be used as a base product for a long time. If the sector commodity in an area has growth (+) and share (-), then it is called a dominant commodity, which will be able to become a base product with special treatments, and if the sector has growth (-) and share (-), then this product is called a commodity. Dominant with special treatment and efforts to diversify commodities (Warpani S, 2016).

3. RESULTS AND DISCUSSION

The results of this study are shown in the location quotient analysis table by looking at how much influence the cattle population has on regional economic growth, namely by comparing the production value in the area studied, namely the sub-district in Donggala Regency, with the area above it, Donggala Regency. The results of these calculations can be seen in the table. 1.

Table 1. The above shows that cattle are the basic sector in Donggala Regency. This is indicated by the average LQ index value of $1.03 > 1$, which means that the beef cattle business is a basic sector, meaning that the cattle business has a comparative advantage because it can provide regional markets and markets outside the region from Donggala Regency.

Furthermore, to determine the extent of economic growth and the contribution of a commodity to other commodities in a region, a Growth Share analysis is carried out, which begins with calculating the growth of each sector. At the same time, the Share calculation method is used to determine the contribution of a sector's results to the results of all sectors in the study area in a one-year production period. The list used for this analysis is population data for

ruminants in Donggala Regency, Central Sulawesi Province.

Table 1. Average Ruminant Livestock LQ Index in Donggala Regency

No	District	Cattle	Buffalo	Goat	Sheep
1.	Rio Pakava	0.63	3.10	1.06	0.0
2.	Pinembani	0.06	0.00	1.14	0.0
3.	Banawa	0.59	0.00	1.07	0.0
4.	Banawa Selatan	0.74	0.00	1.04	0.0
5.	Banawa Tengah	0.42	0.00	1.09	0.0
6.	Labuan	1.29	0.00	0.96	0.0
7.	Tanantovea	0.72	0.00	0.99	10.2
8.	Sindue	1.42	0.00	0.94	0.0
9.	Sindue	1.75	0.00	0.90	0.0
	Tombusabora				
10.	Sindue Tobata	1.94	0.00	0.87	0.0
11.	Sirenja	1.40	0.00	0.95	0.0
12.	Balaesang	1.50	7.98	0.93	0.0
13.	Balaesang	0.57	0.00	1.07	0.0
	Tanjung				
14.	Dampelas	2.15	0.00	0.84	0.0
15.	Sojol	0.66	5.16	1.05	0.0
16.	Sojol Utara	0.65	0.00	1.06	0.0
	Total	1.03	1.01	1.00	0.64

Source: Secondary data processed, 2021

Table 2. Growth Share

Ternak	Growth	Share
Cattle	8	9,8
Buffalo	-12	0,45
Goat	6	0,72
Sheep	-1	0,78

Source: Secondary Data processed, 2021

Based on Table 2. It appears that beef cattle in Donggala Regency with a value of Growth = 8 obtained shows that the growth of the cattle population is relatively high, while where the value of beef cattle share = $9.8 > 2$ and marked (+) which means that the contribution of beef cattle to the development of livestock in Donggala Regency is quite significant. Next, to determine the classification of superior commodities or base regions, see Table 3.

Table 3. Results of Ruminant Commodity Growth Share

Komoditas	Nilai Growth (y)	Nilai Share (x)	Klasifikasi Komoditas
Cattle	+	+	Superior
Buffalo	-	+	static
Goat	+	+	Superior
Sheep	-	+	static

Source: Primary data processed (2021)

Based on Table 3. He pointed out that both the value of Growth and Share of beef cattle marked (+), which means that beef cattle is a superior commodity in Donggala

Regency and can be used as a base area for beef cattle development, because in the subsequent development, it will experience a considerable increase. The advantages and determination of the beef cattle base area in Donggala Regency can be seen in the following quadrant image.

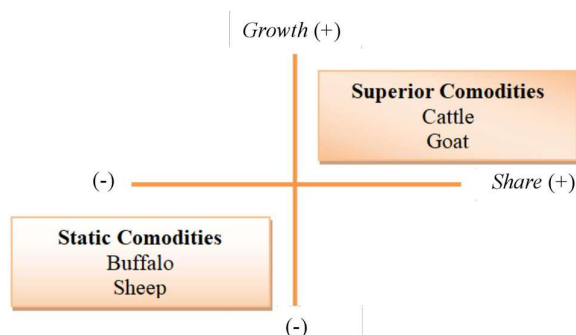


Figure 2. Quadrant of Growth Share

Based on the classification of the sector in terms of the growth rate of the last ten years and the contribution of commodities to the development of ruminant livestock in Donggala Regency, it shows that beef cattle and goats are designated as superior commodities and have the potential to be developed in Donggala Regency, where the classification of leading sectors shows that these commodities have growth is relatively high (+). The contribution is quite significant (+), while buffalo and sheep are designated as static commodities, where the static sector classification shows that these commodities have significantly less growth (-).

4. CONCLUSIONS AND SUGGESTIONS

4.1. Conclusions

The beef cattle business in Donggala Regency serves as a base sector and holds a comparative advantage over other ruminant livestock. The cattle slaughterhouse industry contributes significantly to livestock development in the regency. The grazing fields, although smaller in size and lower in nutrient content compared to previous research findings, still can support a population three times larger than the current cattle population in Donggala Regency.

4.2. Suggestions

The development of the beef cattle business should be directed toward regions identified as base sectors, with an LQ index value greater than 1 and a relatively large carrying capacity. To improve the field grass's production and nutritional quality, it is necessary to conduct soil management and establish superior grass plantations on the land surrounding the cattle pens.

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