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Determination of Base and Non Base Sector of Livestock Commodity Development in Southeast Sulawesi Province, Indonesia

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Abstract. This research was conducted in Southeast Sulawesi Province, aiming to determine the basic and non-base sectors of livestock commodity development which can be used as livestock development areas. The data used are secondary data. Meanwhile, LQ analysis (*location quotient*) is a method used to determine the potential development and growth of livestock commodities in each district. The results showed that large livestock in the form of beef cattle were spread over 6 districts, dairy cows in 2 districts, buffalo in 5 districts, goat in 8 districts, pigs in 5 districts, and horses in 4 districts, each of which had $LQ > 1$. Meanwhile, small livestock in the form of native chickens are spread over 6 districts, 6 laying hens in 6 regencies, 6 regencies of broilers, 5 regencies of ducks and 7 regencies of manila ducks with $LQ > 1$

Keywords. Development Center, Livestock, Southeast Sulawesi

A. Introduction

Southeast Sulawesi is a province in Indonesia consisting of 17 districts and cities, the food sector is a priority in Indonesia in national development. This is due to the increase in population in several years continues to increase and accompanied by increased food and energy needs in Indonesia [1]. One of the subsectors of food is animal husbandry. Southeast Sulawesi has several subsectors of farms including beef cattle, goats, sheep, and several other types of non-ruminant cattle. The export value of the livestock sub-sector in recent years has increased by an average growth rate of 43.8%/year, while the growth rate for the value of imports has increased by a percentage value of 33.9% per year. This indicates a trend of decreasing/deficit in the trade balance of the livestock sub-sector [2]. The competitive advantage of a region, regional specialization and agricultural potential owned by the region is able to influence the growth of the agricultural sector of an area [3]. However, the potential of agriculture in an area has no meaning for the growth of agriculture in the area if there is no effort in the optimal utilization and development of agricultural potential [4].

Southeast Sulawesi generally has a mountainous, bumpy, hilly land surface. But it has potential land in the development of the agricultural sector. One of the agricultural sectors that can be developed in Southeast Sulawesi is livestock commodities. Seeing the potential of resources in Southeast Sulawesi in the development of livestock commodities, the superior potential of livestock commodities in Southeast Sulawesi can be determined. So far it is not

known the superior potential of livestock commodities in which districts. One of the important indicators in knowing the superior potential in a region is to use Location Quotient (LQ) analysis in an effort to determine the base and non-base sectors in each District/City.

Southeast Sulawesi province has various types of cattle and livestock such as beef cattle, dairy cows, buffalo, goats, pigs, horses, buras chickens, laying hens, broilers, ducks, and manila ducks. The dominant breed of cattle and the spread is quite good one of them is goat cattle. Seeing the potential of food from livestock is appropriate Indonesia has the potential to be an exporter of livestock products [5]. This is because it is supported by the availability of livestock resources and farmers [6]. Land with various types of feed crops, agricultural industry byproducts as a source of feed, as well as the availability of technological innovations [7]. The development of farms can be achieved through the extension of livestock businesses by focusing on increasing the livestock population [8]. Further intensification or increase of production per unit of livestock through the use of superior seedlings, animal feed and the application of good management [9, 10]. Therefore, the purpose of this research is to be able to know the determination of the Base Sector and Non-Base Livestock Commodity Development in Southeast Sulawesi Province.

B. Research Method

The research method used in this study is to analyze secondary data obtained from the Central of Statistics in 2021 covering livestock populations from various livestock commodities in Southeast Sulawesi. LQ analysis is a medium or tool in looking at the potential of farming development. LQ is a technique that can be used to know the capabilities of an area in a particular sector of activity (commodity). In addition, the LQ method can also be used to determine the leading commodity (base commodity) in a region with a size basis such as productivity, acreage, production, income, employment opportunities and other size bases. The LQ techniques used have not been able to provide the final conclusions of various sectors identified as strategic sectors of a communiqué. However, for the initial stage it is enough to give an idea of the capability or potential of a region in the identified sector. The LQ formula is expressed as follows:

$$LQ_k = \frac{Y_{sk}/Y_{tk}}{Y_{sp}/Y_{tp}}$$

Description:

LQ_k : Indeks *location quotient*

Y_{sk} : Number of Livestock Population sector *i* in district/city *j*

Y_{tk} : The total livestock population in the district/city *j*

Y_{sp} : Number of Sector I populations in the provinces observed to be part of it (District)

Y_{tp} : The total population of the provinces that are part of it

The results of the LQ analysis resulted in 3 (three) criteria including:

LQ>1 That is: the commodity becomes the basis and has a comparative advantage as well as the result can meet the needs in the region itself. However, it can also be exported out of the territory.

LQ=1 That is: the commodity is classified as non-base, because it does not have comparative advantages and its production is only enough to meet the needs of the region itself.

LQ<1 That is: this commodity is also included as a non-base because commodity production in a region is not able to meet its own needs so it requires supply from outside.

C. RESULTS AND DISCUSSION

Subsectors of farms have an important role in agribusiness development in Southeast Sulawesi Province. The farming population in Southeast Sulawesi is presented in Table 1 and 2.

Table 1. Large Livestock Population in Southeast Sulawesi Province

Regency/City	Beef Cattle	Dairy	Buffalo	Goat	Pig	Horse
Buton	12.191	0	0	11.356	13	4
Muna	76.274	37	185	16.748	246	12
Konawe	65.817	16	907	56.129	6.228	70
Kolaka	29.819	0	401	26.201	7.241	75
South Konawe	72.004	0	418	11.609	5.298	20
Bombana	58.102	0	1.028	10.249	1.535	152
Wakatobi	1.184	0	0	9.958	0	0
North Kolaka	4.125	0	192	4.779	0	21
Buton Utara	6.690	0	0	1.870	0	0
North Konawe	14.520	0	397	37.000	0	0
East Kolaka	19.832	0	70	4.198	1.692	0
Konawe Islands	1.295	0	0	1.123	0	0
Kendari City	44.300	0	0	4.460	8	2
Bau-Bau City	6.384	0	0	2.184	2.695	0
Muna West	1.623	0	0	6.681	500	200
Central Buton	3.389	0	6	7.428	0	0
South Buton	2.333	0	0	8.458	0	0
Southeast Sulawesi	41.9882	53	3,604	220,431	25.456	556

Source: Statistics Agency of Southeast Sulawesi, 2021

Table 2. Small Livestock Population in Southeast Sulawesi Province

Regency/City	Chicken Buras	Laying Hens	Broilers	Duck	Manila Ducks
Buton	319.062	150	20.625	7.786	6.371
Muna	1.604.838	34.434	84.959	15.266	226
Konawe	1.206.451	23.456	1.301.955	119.312	5.899
Kolaka	1.540.006	19.029	172.104	27.431	0
South Konawe	1.425,523	111.549	804.251	29.973	13.942
Bombana	759.382	2.246	19.859	6.636	0
Wakatobi	37.436	7.620	36.418	6.265	0
North Kolaka	618.376	105.300	414.958	223.414	0
Buton Utara	62.659	1.100	49.100	2.399	0
North Konawe	132.871	3.300	0	1.100	1.050
East Kolaka	455.245	48.450	50.000	19.765	0
Konawe Islands	7.462	0	0	2.436	675
Kendari City	178.636	43.780	1.125.040	8.173	1.377
Bau-Bau City	172.468	21.000	397.500	5.470	2.075
Muna West	745.582	31.563	98.440	6.900	0
Central Buton	245.424	1.200	5.500	7.986	2.313
South Buton	148.891	2.235	59.380	6.488	5.239

Southeast Sulawesi	9.660.312	456.412	4.640.089	496.800	39.167
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Source: Statistics Agency of Southeast Sulawesi, 2021

Based on Table 1 data. For the most types of beef cattle are found in Muna Regency with a population of 76,274 heads, followed by Konawe Regency with a population of 72,004 heads. As for the type of beef cattle that have the least population in Wakatobi Regency as many as 1,184 heads. This is because Wakatobi Regency is an archipelago area that is divided into 4 main islands namely Wanci, Kaledupa, Tomia and Binongko which are rocky areas so that for people who work on beef cattle will have difficulties due to the topography of rocky soil. As for the type of dairy cattle there are only 2 (two) districts namely Muna and Konawe.

The large breed of cattle in the form of buffalo has the largest population in Bombana Regency as many as 1,028 heads and at least 70 in east Kolaka Regency. While the type of goat cattle almost every district has a population of goats are quite diverse this is because goats have good adaptation to the environment [11]. The population of goats in Southeast Sulawesi is 220,431 with the largest population in Konawe Kabuapaten 56,129. This is supported by the area owned Konawe District and is one of the rice producers so that for the availability of agricultural follow-up feed from rice straw can be used as goat fodder. This is in accordance with the opinions expressed by the [12] that rice straw is a byproduct of rice crops and is used as a source of feed for ruminant livestock especially by small-scale farmers in developing countries, including Indonesia.

Types of pig herds are found in several districts of Buton, Muna, Konawe, Kolaka, South Konawe, Bombana, East Kolaka, Bau Bau City, and West Muna with a total of 25 total. 456. Looking at the population of pig herds in Kolaka Regency with a total population of 7,241 heads and is the largest population in Southeast Sulawesi. This is because Kolaka Regency is one of the districts that became the destination of transmigration from java island and Bali island in 1980 and some tribes in South Sulawesi as well as other districts such as Konawe Regency has the same case as Kolaka Regency. As for the most types of horse cattle found in western Muna Regency, west Muna Regency is a fraction of Muna Regency with the symbol of the area that is horse cattle, only the population of horses typical of western Muna began to be threatened. This is due to the continuous slaughter of livestock by the community, especially at events or customs activities so that with these activities the community is obliged to cut horses as a traditional event offering.

Buras chicken cattle are scattered in several districts in Southeast Sulawesi. However, buras chicken or known as tolaki chicken is a popular breed of cattle in Southeast Sulawesi. Tolaki chicken is one of the local Indonesian chicken species and is a germplasm native to Southeast Sulawesi spread in several regions in Konawe, South Konawe and Kolaka Districts [13].

In addition to being a meat producer, Tolaki chicken is known to have potential as an egg producer, both consumption eggs and to be hatched, because egg production is quite high [14]. The size and weight of the eggs are relatively smaller than the native chickens. Tolaki chicken farmers in this area have a lot to do with specific purpose purposes, for example as soap chickens that use spurs, traditional ceremonies, settlement of family/customary disputes, or treatment [15].

The spread of laying hens and broilers in Southeast Sulawesi is uneven let alone there are districts that do not have at all the population of laying hens. Similarly, there are 2 (two) broilers that do not have at all the population of broilers, among them North Konawe Regency and Konawe Islands Regency this is because both districts become one of the concessions of mining and oil palm plantations so that one of the regional asset income owned by the district comes

from plantations and mining. However, for duck cattle, all districts have a total population of 496,800 and manila duck cattle numbered 39,167 heads spread into 10 (ten) districts.

1. Determination of Base and Non-Base Sectors of Large Livestock in Southeast Sulawesi Province

Based on the results of the LQ analysis shows that there are 2 (two) types of livestock have comparative advantages in certain areas. Beef cattle commodities from 17 districts of cities or regions that develop there are 6 (six) districts that have a value of $LQ > 1$. This indicates that beef cattle commodities are already the basis or source of growth and have comparative advantages in the six districts. including Muna, Bombana, North Buton, North Konawe, Konawe Islands, and Muna West. Beef cattle business can be said to be successful, if it can contribute income and can meet the needs of daily farmers [16, 17, 18]. The results of the LQ analysis also showed that each goat livestock commodity has comparative advantages in 8 different districts. This shows that the commodity is not only able to meet the needs of the region itself but also able to be exported out of the region. More clearly the distribution of livestock commodities that have a value of $LQ > 1$ is shown in Table 3.

Table 3. Results of LQ analysis of large livestock populations in Southeast Sulawesi Province (2021)

Regency/City	Beef Cattle	Dairy	Buffalo	Goat	Pig	Horse
Buton	1.05	0.00	0.00	1.87	0.02	0.26
Muna	1.11	4.28	0.31	0.47	0.06	0.13
Konawe	0.97	1.87	1.56	1.57	1.51	0.78
Kolaka	0.86	0.00	1.34	1.43	3.43	1.63
South Konawe	1.03	0.00	0.69	0.32	1.25	0.22
Bombana	1.20	0.00	2.48	0.40	0.52	2.38
Wakatobi	0.75	0.00	0.00	12.03	0.00	0.00
North Kolaka	0.32	0.00	1.72	0.70	0.00	1.22
Buton Utara	1.17	0.00	0.00	0.62	0.00	0.00
North Konawe	1.22	0.00	3.89	5.93	0.00	0.00
East Kolaka	1.06	0.00	0.44	0.43	1.49	0.00
Konawe Islands	1.26	0.00	0.00	2.08	0.00	0.00
Kendari City	0.27	0.00	0.00	0.68	0.01	0.12
Bau-Bau City	0.38	0.00	0.00	0.68	7.28	0.00
Muna West	1.14	0.00	0.00	0.33	0.21	3.89
Central Buton	0.96	0.00	0.11	2.13	0.00	0.00
South Buton	0.57	0.00	0.00	5.62	0.00	0.00

Source: Secondary Data Analysis, 2021

The results of LQ analysis of large livestock populations in table 3 in Southeast Sulawesi Province show that for buffalo cattle that have growth and comparative advantages are found in 5 (five) districts, including Konawe Regency, Kolaka Regency, Bombana Regency, North Kolaka and North Konawe.

Buffalo cattle (*Bubalus bubalis*) has a very strategic role and function in the life of the People of Indonesia, namely as food and livestock work [19]. The culture or belief and familiarity of the community with buffalo has been entrenched in the community in Indonesia, such as in Toraja, South Sulawesi, Sumba, East Nusa Tenggara, Sumbawa, West Nusa

Tenggara, Minangkabau, West Sumatra, and Pampangan, South Sumatra. The decline in local buffalo population occurs in various regions in Indonesia including in Southeast Sulawesi. One of the uniqueness of Southeast Sulawesi local buffalo is that it has a reliable fighting ability so that it becomes a source of seeds of fighting buffaloes that are often delivered to The Land of Toraja, South Sulawesi [20].

Pig herds in Southeast Sulawesi are basically raised or farmed by community communities originating from the island of Bali and the land of Toraja. So that the types of pig herds are found in several districts including Konawe, Kolaka, South Konawe, East Kolaka, and Bau-Bau City. The five districts are indeed areas that are partly populated from the island of Bali and the land of Toraja. This is in the opinion expressed by the [21] Pig herds have long been a cultural part for farmers in East Nusa Tenggara because these cattle have economic value and at the same time religious values.

Horse cattle are also not one of the leading communiqés in Southeast Sulawesi. But there are several districts that have $LQ > 1$ values including Kolaka, Bombana, North Kolaka, and Muna West. Previous research conducted by [22]. Efforts to determine the ability of each commodity in the livestock sub-sector as the economic base of an area can be analyzed by method *Location Quotient*.

The market capacity of the non-base sector is undeveloped or local. The theory of economic basis is stated that in a region there are two sectors of activity, namely base and non-base. The base sector is a sector that has great potential in determining overall development in the region, while the non-base sector is a supporting sector in the overall development [23].

2. Determination of Small Base and Non-Base Sector in Southeast Sulawesi Province

Factors that affect a livestock commodity into a base and non-base are supported by internal and external factors. Internal factors are generally caused by high production amount, breeding experience, land area and capital, while for external factors that support a commodity to be base and non-base such as availability of livestock facilities and infrastructure, climate conditions, livestock selling price and government policy. The results of LQ analysis of small livestock populations are presented in Table 4.

Table 4. Results of LQ analysis of small livestock populations in Southeast Sulawesi Province (2021)

Regency/City	Chicken Buras	Laying Hens	Broilers	Duck	Manila Ducks
Buton	1.20	0.01	0.16	0.57	5.91
Muna	1.02	0.46	0.11	0.19	0.04
Konawe	0.77	0.32	1.74	1.49	0.93
Kolaka	1.92	0.50	0.45	0.67	0.00
South Konawe	0.88	1.46	1.04	0.36	2.13
Bombana	0.68	0.04	0.04	0.12	0.00
Wakatobi	1.03	4.44	2.09	3.36	0.00
North Kolaka	2.07	7.46	2.89	14.54	0.00
Buton Utara	0.47	0.18	0.77	0.35	0.00
North Konawe	0.49	0.26	0.00	0.08	0.95
East Kolaka	1.06	2.38	0.24	0.89	0.00
Konawe Islands	0.31	0.00	0.00	2.00	7.02
Kendari City	0.63	3.25	8.20	0.56	1.19
Bau-Bau City	1.23	3.16	5.89	0.76	3.64

Muna West	0.83	0.75	0.23	0.15	0.00
Central Buton	1.61	0.17	0.08	1.02	3.74
South Buton	2.26	0.72	1.87	1.91	19.58

Source: Secondary Data Analysis, 2021

Based on Table 4 data. Showing that there are 6 (six) districts that become the superior base of buras chicken livestock including Buton, Kolaka, North Kolaka, Bau-Bau, Central Buton and South Buton. As for the breed of laying hens scattered in 6 (six) districts including South Konawe Regency, Wakatobi, North Kolaka, East Kolaka, Kendari City, and Bau-Bau City. Similarly, the types of broilers are spread in 6 (six) districts such as Konawe, Wakatobi, North Kolaka, Kendari, Bau-Bau and South Buton.

Types of duck cattle and ducks manila is 2 (two) livestock communiqés that have a value of $LQ > 1$ in some districts. For the type of duck cattle found in Konawe and North Kolaka districts have a value of $LQ > 1$ because the average population living in Konawe and North Kolaka districts with the majority of rice farmers also try duck cattle as cattle that can eliminate rice worms, disruptors of rice crops such as golden snails. At the same time duck manure is a natural fertilizer that can help soil fertility [24]. In addition to Konawe Regency for the area that can be used as a base for the development of duck cattle are Wakatobi Regency, Konawe Islands, and South Buton Regency.

Livestock commodities that have changed position from non-base commodities will now become base commodities in the future is manila duck cattle. Of the 17 regencies / cities in Southeast Sulawesi there are 7 (seven) districts that are the basis of the development of manila duck cattle including Buton Regency, South Konawe, Konawe Islands, Kendari City, Bau-Bau City, Central Buton and South Buton Regency with the value of $LQ > 1$.

The problem that is often faced in the business of ruminant livestock development is the procurement of feed, especially fiber feed [9]. Failure to develop livestock populations in an area is usually a result of under-accounting of the support capacity of available feed [25]. One alternative land use system for production purposes is agroforestry system, namely the management of agricultural commodities, livestock and fisheries [26].

D. Conclusion

Based on the results of the analysis LQ (*Location Quotient*) determination of the sector of large and small livestock bases that can be found in Southeast Sulawesi, among others, Buton (goats, buras chickens, and ducks manila), Muna (beef cattle and dairy cows), Konawe Regency (dairy cows, buffalo, goats, pigs, broilers, and ducks), Kolaka Regency (buffalo, goats, pigs, horses, and buras chickens), South Konawe Regency (pigs, laying hens, manila ducks), Bombana Regency (beef cattle, buffaloes, and horses), Wakatobi Regency (goats, laying hens, broilers, and ducks), North Kolaka (buffalo, horses, buras chickens, laying hens, broilers, and ducks), North Buton Regency (beef cattle), North Konawe Regency (beef cattle, buffalo, and goats), East Kolaka Regency (pigs and laying hens), Konawe Islands Regency (beef cattle, goats, ducks and ducks), Kendari City (laying hens, broilers, and manila ducks), Bau-Bau City (pigs, buras chickens, laying hens, broilers, and manila ducks), West Muna Regency (beef cattle and horses), Central Buton Regency (goats, buras chickens, and manila ducks), and South Buton Regency (goats, buras, broilers, ducks, and manila ducks).

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