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THE PERFORMANCE OF THE AGRICULTURAL SECTOR IN BALI PROVINCE IN 2013-2017

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ABSTRAK

Sektor pertanian memiliki peran multifungsi dalam pengembangan suatu wilayah. Provinsi Bali merupakan salah satu provinsi di Indonesia yang menggunakan wilayah (kawasan) perdesaan sebagai gerbang sektor pertanian yang mendukung sektor pariwisata. Sumbangan sektor pertanian pada tahun 2017 sebesar 13,07 persen terhadap PDRB Provinsi Bali, nomor dua dari 17 sektor. Tujuan penelitian ini adalah memetakan tipologi pertumbuhan masing-masing sektor di Provinsi Bali, dan mengevaluasi kinerja sektor pertanian di Provinsi Bali dari tahun 2013-2017. Lokasi penelitian dilakukan di Provinsi Bali, dilakukan secara sengaja (purposive) dengan pertimbangan bahwa telah terjadi peningkatan yang sangat memprihatinkan terhadap alih fungsi lahan pertanian di Provinsi Bali. Analisis yang digunakan adalah Tipologi Klassen, LQ (Location Quotient), dan DLQ (Dynamic Location Quotient). Hasil dari penelitian ini adalah sektor pertanian, kehutanan, dan perikanan berada di kuadran II yaitu sektor maju tapi tertekan, secara keseluruhan pertanian terkategori "prospektif", sektor ini memiliki peran basis selama tahun 2013-2017 namun ke depannya sektor ini tidak memiliki potensi untuk tetap menjadi sektor basis dikarenakan laju pertumbuhan sektor pertanian di Provinsi Bali lebih lambat dibandingkan dengan tingkat nasonal.

Kata Kunci: DLQ, kinerja, LQ, sektor pertanian

ABSTRACT

The agricultural sector has a multifunctional role in the development of an area. Rural areas as a bridge to the agricultural sector that supports the tourism sector in Bali Province. The contribution of the agricultural sector in 2017 amounted to 13.07 percent of the GRDP of Bali Province. The purpose of this study was to map the growth typology of each sector in Bali and evaluated the performance of the agricultural sector in Bali Province from 2013-2017. The study was conducted in Bali Province. The study was carried purposively with the consideration that there has been an increasing in agricultural land conservation in Bali Province. Klassen method, LQ (Location Quotient), and DLQ (Dynamic Location Quotient) were used to analyze the data. The results of this study show that agriculture, forestry, and fisheries sectors were in quadrant II, namely the advanced but depressed sector. The agriculture sector was categorized as "prospective". The agriculture sector has a basic role in 2013-2017 however this sector does not have the potential to remain as a basic sector. The agriculture sector in Bali Province has been remain low compared to the national level.

***Keywords**: agriculture sector, DLQ, LQ, permormance*

INTRODUCTION

The agricultural sector is the basic sector for economies in developing countries. The agricultural sector has a multifunctional role in the development of a region. This multifunctional role includes roles in the aspects of production, food security, farmers'

welfare improvement, and sustainability in development. The development of the agricultural sector has given a trickle-down effect for other sectors, such as the tourism sector or the service sector. However, following the dominance of growth acceleration, the role of the agricultural sector as the basic sector has started to decline. Human resources (farmers) have also encountered a shift. Most of the farmers who work in rural areas are classified as no longer in productive age. Sudaryanto and Rusastra (2006) stated that the development of agricultural land cannot be separated from the development of irrigation infrastructure.

Based on land suitability and water availability, the potential area for irrigation development is remarkably limited. This trend shows the strong challenge for an increase in production and the farmers' welfare in rural areas. Another obstruction for further agricultural development is the availability of agricultural land. Bali Province is one of the provinces in Indonesia that uses rural areas as a gateway to the agricultural sector that supports the tourism sector. The contribution of the agricultural sector to the GRDP of Bali Province in 2016 was 14.74%, ranked second out of 17 sectors (the sector of the provision of accommodation and food and drink ranked first, which was 22.82%). One of the reasons for the decline in the contribution position of the agricultural sector is due to the increasingly massive conversion of agricultural land functions. The average conversion of agricultural land in Bali in the last five years from 2013 to 2017 was around 550 hectares per year (Statistics Indonesia of Bali Province, 2017).

Thus, it is necessary to examine the typology and performance of the agricultural sector and agricultural sub-sector in Bali Province. The objective of this study was to map the typology of growth in the agricultural sector/sub-sector and evaluate the performance of the agricultural sector/sub-sector in Bali Province from 2013-2017.

RESEARCH METHODS

The research location was in Bali Province. The location was selected purposively by considering that there had been a very concerning increase in the conversion of agricultural land in Bali Province. The average conversion rate of agricultural land over the past five years was 550 hectares. The study was conducted in January 2019 to August 2019. The types of data used in this study were primary data and secondary data. The primary data were in the form of problems related to the development of the agricultural sector in Bali Province obtained from informants (Agriculture Office and Public Work Office (sub-planning and spatial planning), Regional Planning and Development Office (Bappeda) of each regency/city). The secondary data used were in the form of administrative maps, Gross Regional Domestic Product (GRDP) and GRDP growth rate of Bali Province and Indonesia in 2013-2017, and other related data. The secondary data were obtained from literature review and documents from the Agriculture Office, Bappeda, the Central Agency on Statistics (BPS), and other related agencies. The data collection techniques were carried out through in-depth interviews and literature reviews related to this study.

The first objective of the study was analyzed using Klassen's typology. Klassen's typology analysis is an analytical tool used to find out the overview of the pattern and structure of economic growth in each region (Hoover and Giarratani, 2000). Klassen's typology basically divides the regions based on two indicators, consisting of regional economic growth and regional per capita income, including quadrant 1 (developed and fast-growing sector), quadrant 2 (developed but depressed sector), quadrant 3 (potential sector) and quadrant 4 (relatively underdeveloped sector). The second objective of this study was analyzed using LQ (Location Quotient) and DLQ (Dynamic Location Quotient) analyses (Hoover and Giarratani, 2000). Analysis of the

performance of the agricultural sector and other economic sectors and the agricultural sub-sector which is the basis of the Bali Province used the Location Quotient (LQ) method, which is by comparing the relative share of *i*-sector's income at the regional level on the region's total income with the relative share of *i*-sector's income at the national level on the total income at the national level. If the LQ value of an economic sector in the regional economy in Bali Province is > 1, the agricultural sector/other economic sectors/agricultural sub-sector is the basic sector. Determination of the basic sector that will occur in the future in the agricultural sector and other economic sectors and the agricultural sub-sector in Bali Province used the Dynamic Location Quotient (DLQ) method, which is by introducing the growth rate by assuming that each sectoral added value and GRDP has an average growth rate per year individually over the period of the initial year and the year apart. If it obtains a DLQ value > 1, a sector can still be expected to become a basic sector in the future, whereas if the DLQ value < 1, the sector cannot be expected to become a basic sector.

RESULTS AND DISCUSSION

Typology of Growth of Each Sector in Bali Province

The contribution of the sectors analyzed is the contribution of the agricultural sector by using data on added value/contribution of the agricultural sector to the GRDP of Bali Province as the research area of analysis and Indonesia as the reference area. According to Tarigan (2012), when using added value data, the data used are GRDP data based on constant prices so that the real value of the product will be the same because the amount of production is the only factor that affects it.

Table 1. Contribution of the Agriculture Sector to GRDP of Bali Province

Years	Contribution of Agriculture Sector to GRDP of Bali Province (%)
2013	15,20
2014	14,90
2015	14,53
2016	14,06
2017	13,07

Source: Statistics Indonesia of Bali Province, 2018 (Processed)

The contribution value of the agricultural sector in the period of 2013-2017 only ranged from 13.7 to 15.2. Based on Table 1, the contribution value of the agricultural sector from 2013-2017 has declined. This condition is also seen in the added value of the agricultural sector to the GRDP of Bali Province from 2013-2017 which also experienced a decline. The decline in added value and contribution of the agricultural sector in the Bali Province over the last 4 years was affected by the development of the tourism sector.

The development of the tourism sector in Bali has made the structure of the economy in Bali encountered a shift from primary to tertiary. This is evident from the contribution of each sector in shaping the GRDP of Bali Province. The sector of the provision of accommodation and food and drink, which is the sector with the highest relationship to tourism, provides the most dominant share of the GRDP in Bali Province, and even shows an increasing trend from over the years.

Although the agriculture, forestry, and fisheries sectors still ranked second in contributing to the GRDP of Bali Province, their role has gradually decreased. The agricultural sector provided a share of 13.07% in 2017 or decreased from the previous year which reached 14.06%.

The results of Klassen's typology analysis of the sectors in Bali Province can be seen in Figure 1. The agricultural, forestry, and fisheries sectors are in quadrant II (developed but depressed sector), followed by the transportation and warehousing sector and the information and communication sector. Figure 1 illustrates that the agriculture, forestry, and fisheries sectors are relatively progressing. Their contribution to provincial

Quadrant I Developed and fast-growing sector (Sectors of water supply, waste management, waste and recycling, accommodation provision and food and drink, financial service and insurance, real estate, government administration, defense, and compulsory social security, education service, health services and social activities)	**Quadrant II** Developed but depressed sector (Sectors of agriculture, forestry, fisheries, transportation and warehousing, information and communication)
Quadrant III Potential or still developing sector (Sectors of mining, excavation, processing industry, procurement of electricity and gas, wholesalers and retailers)	**Quadrant IV** Relatively underdeveloped sector (Sectors of construction, corporate service, other service sectors)

Figure 1. Klassen's Typology by Sector in Bali Province
Source: Analysis Results, 2019

added value is relatively high compared to the contribution of the same sector to national added value but their growth in recent years has tended to decline.

When examined per sub-sector in the agriculture, forestry, and fisheries sectors; the food crops sub-sector is relatively low. The horticulture sub-sector and the agricultural and hunting services sub-sector are developed and fast-growing. Meanwhile, the sub-sectors that are classified as potential/still developing rapidly are the plantation sub-sector and the forestry and logging sub-sector.

The growth rate of the food crops sub-sector is relatively low because during the last five years, Bali Province has experienced a massive conversion of paddy fields. The average conversion rate of paddy fields over the last five years was 550 hectares (Food Crops Agriculture Office of Bali Province, 2018). This condition will definitely reduce the production and productivity of food crops. This condition is different from the plantation, forestry, and logging sub-sectors which are classified as a sub-sector that is potential or still developing rapidly. The average growth rate of the plantation sub-sector (2013-2017) was 8.69%, which provided a higher contribution for GRDP than that for the same sub-sectors at the national level (4.40%). The growth rate of the agricultural sector in Bali Province and Indonesia can be seen in Figure 2.

Performance of the Agricultural Sector and Agricultural Sub-Sector in Bali Province

Performance of the agricultural sector as a priority program in the 2013-2018 Medium-Term Regional Development Plan (RPJMD) and the 2005-2025 Long-Term Regional Development Plan (RPJPD) is expected to provide great added value to support the economic growth of Bali Province to continue to increase. Development of the agricultural sector will be faster if it is carried out more specifically, which is through analysis to determine the basic or non-basic sub-sectors. The results of the classification of the agricultural sector/sub-sector as a basic or non-basic sector can be used as a reference by the government in implementing priority programs for regional development.

Location Quotient (LQ) Analysis

The role of an economic sector can be analyzed using Location Quotient (LQ) analysis, which is a method for determining economic sectors in GRDP classified into basic and non-basic sectors in a region. LQ

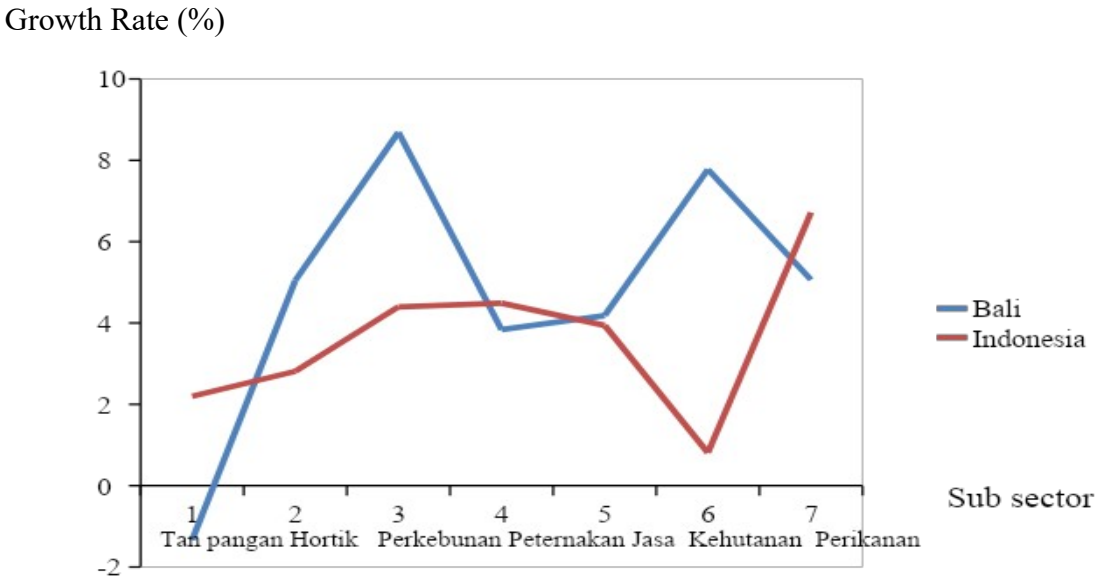

Figure 2. The Average Growth Rate of the Agriculture Sector in the Provinces of Bali and Indonesia

Source: Analysis Results, 2019

illustrates the comparison of the contribution of a sector/sub-sector in a region (province) on the same economic sector at the above economic level (national). If the LQ value > 1, the economic sector is the basic sector in the province and the role of this sector/sub-sector in the province is more dominant than its role at the national level. If the LQ value < 1, the economic sector is a non-basic sector in the province and the role of this sector/sub-sector in the province is smaller than its role at the national level.

The LQ value can be used by the provincial government of Bali as a guideline to be used as a basis for determining potential sectors to be developed. A sector that functions as a basic sector can not only meet the needs of the region but also be able to meet the needs of other regions because of the surplus from particular sector products, and it becomes a priority sector as a driving factor of the economy in regional development.

The agricultural sector consists of three sub-sectors, including the agriculture, livestock, hunting and agricultural services sub-sectors; forestry and logging sub-sectors; and fisheries sub-sector. The agriculture, livestock, hunting and agricultural services sub-sectors consist of food crops, horticultural crops, plantation crops, livestock, agricultural services and hunting. The results of the LQ analysis for the agricultural sector/sub-sectors during 2013-2017 can be seen in Table 2.

Table 2 shows that agriculture generally has the potential to be developed. When examined based on the sub-sectors, horticultural crops, livestock, agricultural services, and hunting and fisheries also have potential as a basic sector (LQ > 1). The agricultural sector widely occupied the second place after the marketing, restaurants, and accommodation services sectors in employing labor (labor intensive). The 2017 National Labor Force Survey (Sakernas) data showed that the population working in this sector reached 466,307 people (19.44%). This condition shows that the agricultural sector is still in demand in Bali Province.

The food crops sub-sector in Bali Province obtained an LQ value < 1 (non-basic sector). Most of the farmers in Bali Province have main activities in the food crop agricultural sub-sectors, including rice, secondary crops, and horticulture. The sub-sector that functions as a non-basic sub-sector

Table 2. LQ Value in Agriculture Sector and Sub-Sector

Sector / Sub Sector	LQ Value					
	2013	2014	2015	2016	2017	Average
Agriculture, Forestry, Fisheries	1,14	1,13	1,11	1,10	1,08	1,11
Agriculture, Animal Husbandry, Hunting and Agricultural Services	1,06	1,02	1,03	1,00	0,98	1,02
1. Crop	0,81	0,78	0,72	0,71	0,65	0,73
2. Horticulture	1,33	1,26	1,42	1,31	1,25	1,32
3. Plantation	0,37	0,35	0,38	0,38	0,37	0,37
4. Livestock	3,07	3,02	2,91	2,85	2,92	2,96
5. Hunting and Agricultural Services	1,04	1,01	1,03	1,07	1,05	1,04
Forestry and Logging	0,01	0,01	0,01	0,01	0,01	0,01
Fisheries	1,96	1,99	1,83	1,82	1,78	1,87

Source: Analysis Results, 2019

shows that the contribution of the sub-sector in the province is smaller than its contribution at the national level. The production of food crops is indeed the main business sector which is managed with very simple management and the results obtained are sufficient to guarantee fulfillment of their own needs.

In horticultural crops, the commodity that has experienced a significant increase is orange fruits. The production of orange fruit during 2017 reached 169,006 tons or experienced an increase of 100.58% from the previous year. For the type of vegetable commodity, the largest production in 2017 was found in the type of chili, which reached 44,164 tons or decreased by 13.95% from the previous year which reached 51,325 tons. On the other side, garlic is the commodity with the lowest production with a total production of 0 tons throughout 2017. Meanwhile, garlic production in 2016 only reached 41 tons (Statistics Indonesia of Bali Province, 2018).

Plantations have a strategic position in the development of the agricultural sector in Bali Province. Besides, plantations in Bali Province are community plantations. Increase in the quality and production of plantation products is one of the objectives of the development of the plantation sub-sector. Plantation commodities that have the potential to be developed and have high export opportunities in Bali Province are coconut, coffee, cloves, vanilla, and cashew nuts. Based on data from the Bali Provincial Plantation Service (2018), the overall area of coconut plants in Bali reached 75,336 ha in 2017 covering the planted area of coconut of 71,918 ha, hybrid coconut of 242 ha, dwarf coconut of 3,020 ha, and thick coconut of 156 ha. The area of this coconut plant has decreased 0.18% compared to that in 2016 which reached 75,473 ha, including for the type of planted coconut of 72,040 ha, hybrid coconut of 244 ha, dwarf coconut of 3,032 ha, and thick coconut of 157 ha. The amount of coconut production in the past year decreased by 13.19% from 72,830.45 tons in 2016 to 63,223.14 tons in 2017.

Another potential plantation crop in Bali Province is coffee. There are two types of coffee produced in Bali, consisting of arabica and robusta coffee. For arabica coffee, the overall planted area during 2017 reached 12,232 ha or there was a decrease of 1.2% from the previous year of 12,381 ha. The decrease in the planted area was followed by a decrease in production, which was by 14.27%, from 4,051.67 tons in 2016 to 3,473.43 tons in 2017. For robusta coffee, seen from the area, the planted area has decreased, which was from 23,134 ha in 2016 to 22,979 ha in 2017. However, the total production increased by 75.51% from 13,083.15 to 22,962.38 tons.

Table 3. DLQ Value for Agriculture Sector and Sub-Sector in Bali Province

Sector/Sub Sector	DLQ Value
Agriculture, Forestry, Fisheries	0,32
a. Agriculture, Animal Husbandry, Hunting and Agricultural Services	0,22
Crop	0,00
Horticulture	3,15
Plantation	5,19
Livestock	0,30
Hunting and Agricultural Services	0,61
b. Forestry and Logging	275,74
c. Fisheries	0,19

Source: Analysis Results, 2019

DLQ (Dynamic Location Quotient) Analysis

LQ analysis has a weakness, in which the results are static. Dynamic Location Quotient (DLQ) analysis is carried out to complement LQ analysis because LQ analysis cannot be used to predict the basic or non-basic sector in the future. DLQ illustrates the comparison of the growth rate of the agricultural sector/sub-sector in a province with the growth rate of the same sector at the national level. DLQ analysis can be used to determine the repositioning of sectors from the basic sector to the non-basic sector or vice versa. This analysis focused on the sectoral growth rate. The DLQ value that is higher than 1 shows that the agricultural sector/sub-sector has the opportunity to become a basic sector in the future. This means that the growth rate of the agricultural sector/sub-sector in the province is faster than the growth rate of the same sector at the national level. If the DLQ value < 1, the agricultural sector/sub-sector cannot be expected to become a basic sector in the future. This means that the growth rate of the agricultural sector/sub-sector in the province is slower than the growth rate of the same sector at the national level. The results of the DLQ analysis for the agricultural sector in Bali Province can be seen in Table 3.

Table 3 shows that the agricultural sector in Bali Province has a DLQ value of 0.32. This indicates that the GRDP growth rate of the agricultural sector in Bali Province is slower than the GDP growth rate of the national agricultural sector. The agricultural sector has not the potential to become a basic sector in Bali Province for the future.

The results of the combined analysis between the LQ and DLQ values can be used as a criterion in determining the classification of the sector/sub-sector in the agricultural sector/sub-sector. The classification of the agricultural sector/sub-sector generates four groups, including superior, prospective, reliable, and less prospective (Kuncoro, 2012). The results of the combined analysis between LQ and DLQ (sector classification) are presented in Table 4.

Generally, agriculture is categorized as “prospective”. This sector has a basic role during 2013-2017 but this sector does not have the potential to remain a basic sector in the future. This is because the growth rate of the agricultural sector in Bali Province is slower than that of the national rate. The massive movement of tourism which resulted in the massive conversion of agricultural land is one of the consequences that one day the agricultural sector could no longer be the leading sector in Bali Province. All stakeholders should seek a solution for this happening so that agricultural sustainability can be re-realized.

The food crop sub-sector is classified as “underdeveloped”. This indicates that this sub-sector does not function a basic role in Bali Province. This sub-sector also does not have the potential to become a basic sector in the future, prioritized to meet the needs of this sub-sector in the Bali region. The plantation

Table 4. Classification of Agriculture Sector / Sub-Sector of Bali Province

Sector/Sub Sector	LQ	DLQ	Information
Agriculture, Forestry, Fisheries	LQ > 1	DLQ < 1	
a. Agriculture, Animal Husbandry, Hunting and Agricultural Services	LQ > 1	DLQ < 1	Prospective
Crop	LQ < 1	DLQ < 1	Left behind
Horticulture	LQ > 1	DLQ > 1	Superior
Plantation	LQ < 1	DLQ > 1	Mainstay
Livestock	LQ > 1	DLQ < 1	Prospective
Hunting and Agricultural Services	LQ > 1	DLQ < 1	Prospective
b. Forestry and Logging	LQ < 1	DLQ > 1	Mainstay
c. Fisheries	LQ > 1	DLQ < 1	Prospective

Source: Analysis Results, 2019

sub-sector occupied a "reliable" position. The reliable sub-sector requires efforts regarding the performance of the sub-sector to improve to become a superior sub-sector. If there is no effort to improve the performance, there is a possibility that this sub-sector will experience a decline in the next period in its role to the non-basic sub-sector. The forestry sub-sector is classified as a reliable sub-sector. The forestry sub-sector has a non-basic role, but it has the potential to become a basic sub-sector in the future. The potential in production forest resources can still be optimally utilized to increase forest product production without increasing the forest area because the area of production forest in Bali Province is the same every year.

CONCLUSIONS

The agriculture, forestry, and fisheries sectors in Bali Province are in quadrant II which indicates that the sectors are developed but depressed. These sectors are relatively developed sectors, in which its contribution to added value in the province is relatively high compared to the contribution of the same sector to added value in the national level but its growth in recent years has tended to decline. Based on a combination of LQ and DLQ analyses, the agricultural sector is generally categorized as "prospective". This sector had a basic role during 2013-2017 but this sector does not have the potential to remain a basic sector in the future. This is because the growth rate of the agricultural sector in Bali Province is slower than the national rate. An increase in specialized agricultural growth due to the potential of existing resources needs to be continuously developed by supplying technology, particularly increasing production and productivity and product quality. Moreover, efforts to increase the added value of agricultural products should also continue to be developed through industrial initiatives to process raw materials at least into the main materials. In this regard, it needs support in policy, such as capital and the provision and development of supporting facilities and infrastructure.

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