Increasing Agricultural Sector

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Increasing Agricultural Sector Investment through Sectors and Regional Leading Products in Central Java Province

Suparmono
Sekolah Tinggi Ilmu Manajemen YKPN Yogyakarta
Corresponding Author:
Suparmono.pasca@gmail.com
Bunga Alfausta Amallia
Sekolah Tinggi Ilmu Manajemen YKPN Yogyakarta
bungaalfaustaamallia@gmail.com

Abstract

This article aims to analyze the agricultural sector and its subsectors in the economy of Central Java Province. The analytical tools used to determine the leading sectors and sub-sectors are location quotient (LQ), Klassen Analysis, Shift Share Analysis, and Sectoral Typology. By using data from 2023, it was found that overall, most of the sub-fields in the agriculture, forestry and fisheries business sector of Central Java Province were categorized as competitive sectors. The subsector that is not categorized as competitive is food crops. The agriculture, forestry and fisheries sector is categorized as an advanced business field and its growth is very fast, but the forestry and logging, fisheries sub-sector has a slow growth speed but is a growing industry. The agriculture, livestock, hunting, and agricultural services sub-fields have very fast and advanced growth so that they can become regional superior potential. The commodities of food crops and plantation crops still need further attention because the speed of growth is still hampered, although the industry has potential and is developing.

Keywords: regional superior products, LQ, klassen, shift-share, agriculture

Introduction

The leading economic sectors can be identified by referring to the base theory. The pure export base theory was first developed. According to the economic basis hypothesis, a region's rate of economic growth is based on how much its exports have increased. (Simionescu et al., 2017) (Solow, 1956)(Thaddeus et al., 2021). According to this approach, economic activity is divided into base and non-base categories. Non-base activities are those that meet the demands of local consumers, whereas base activities are all those that produce goods or provide services and earn revenue from outside the area. (Marin & Šušić, 2021)(Naftaly, 2021). Therefore, the demand for this non-base sector is strongly influenced by the level of income increase of the local community.

The development of leading sectors is a crucial step because leading sectors can be used as a guide and direction in driving the local economy. (Landrawan et al., 2020). (Landrawan et al., 2020). By identifying potential and comparative advantages, it can provide incentives for sectors that are highly competitive and contribute significantly to economic growth. (Anggaran et al., 2021) (Hendrawan, 2020). The economic development of a region cannot be separated from a deep understanding of its economic potential and unique characteristics. By capitalizing on local advantages and designing strategies based on regional characteristics, local governments can create a foundation for economic development that is sustainable, inclusive, and in line with the unique identity of its people.

This results in differences in agricultural yields in each region as well. Central Java is one of the provinces in Indonesia where one of its leading sectors is the agricultural sector. The agricultural sector in Central Java is quite advanced and contributes to the economy in Central

Java. The contribution of the agricultural sector to GRDP in Central Java is quite significant. In 2023, the three sectors with the largest contribution are: 1) Manufacturing; 2) Retail and wholesale sales; 3) Auto and motorbike maintenance; and 4) Forestry, agriculture, and fisheries

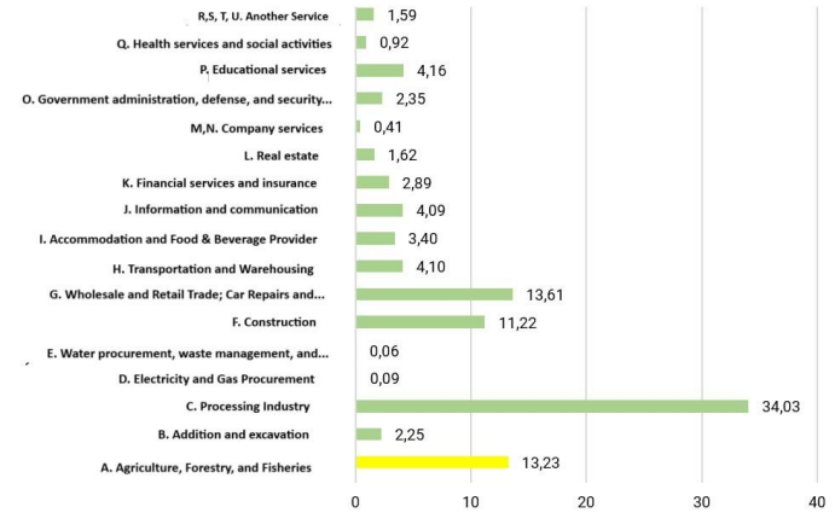

Figure 1. Contribution of Each Business Field to ADHB GRDP, Central Java Province in 2023

Source: BPS Central Java Province, 2024

The agricultural sector is one of the national strategic sectors that continues to make a positive contribution to exports and the national economy (Dini Rizki Rokhmawati, 2019). The agricultural sector includes businesses in the food crops, horticulture, plantation, livestock, fisheries, forestry, and agricultural services subsectors. As an agrarian country, Indonesia is predominantly an agricultural region, with each region having different characteristics (Fastabiqul Khairad, Melinda Noer, 2020).

Literature Review

The determination of leading sectors at the provincial and district/city levels can be known by calculating location quotient (LQ), shift share, sector typology, and Klassen analysis (Nyayu Nabilah Fabiany, 2021) . In order to determine the priority scale of economic sector development which is the comparative advantage of each region, LQ analysis can be defined as an analytical tool used to determine the extent of specialization of economic sectors in a region that utilizes the basic sector (Cahyono et al., 2020).

LQ analysis can be defined as an analytical tool used to determine the extent of specialization of economic sectors in a region that utilizes the base sector. LQ is a comparison between the role of an economic sector in a region against the size of the same economic sector nationally or a comparison against a region that has a larger administrative scope (Unggulan et al., n.d.). This analysis is carried out by comparing data between the Gross Regional Domestic Product (GRDP) of the Regency / City and Province at constant prices (ADHK) by business field in the current year and the previous year.

Shift Share Analysis (SS) was developed to analyze economic change and strengthen the analysis of determining the potential and priority of sectoral economic development in detail. This method illustrates the performance of economic sectors in a province against the national economy by looking at aspects of competitiveness and growth of a sector. This analysis can also see the development in comparing the amount of activity of a sector in a particular region and the growth between regions (Suparmono et al., 2022).

Sector Typology Analysis is used to classify the position of regional economic sector growth. Sector Typology is used to identify the position of the region's leading economic sectors with respect to sectoral growth (Shift-share Analyses/SSA), and concentration of economic activity (Location Quotient/LQ) (Widiarani et al., 2021). If the magnitudes of SSA and LQ are expressed on a flat plane, with the SSA value as the vertical axis (y) and the LQ value as the horizontal axis (x), four categories of relative position of the regional economy are obtained (Anggaran et al., 2021).

Research Method

***Location Quotient* (LQ) Analysis**

This analysis is carried out by comparing data between Regency / City GRDP and Provincial GRDP based on ADHK by business field in the current year and the previous year. (Ardian Amarullah, Markus Patiung, 2021).

$$LQ=\frac{Xij/RVj}{Xi/RVi} \quad \ldots\ldots (1)$$

where:
LQ = the sector i in district j's location quotient index or coefficient.
Xij = District j's Sector I GRDP
Xi = the province's sector I's GRDP.
RVj = the district j's total GDP.
Rvi = Province's Total GRDP

Where:

LQ > 1, indicating export of products in the sector, exports are made because of a surplus. The role of the sector is greater in the region than the province.

LQ < 1, indicates that the sector needs to import because the sector has not been able to meet the needs of the region. The sector's role is smaller in the region than in the province.

LQ = 1, indicating that there is balanced productivity which means the sector is still not worth exporting. The role of the sector is the same both regionally and provincially.Analisis *Shift-Share*

This analysis approach begins with the fundamental premise that a region's (Dij) value added or economic growth is impacted by three primary factors that are interconnected with each other, namely Regional Share (regional growth component), sectoral growth (Proportional Shift), and regional competitiveness growth (Qubro et al., 2021).

$$Dij = Nij + Mij + Cij \quad \ldots\ldots (2)$$

Description:
Dij : Change in GRDP of sector/sub-sector i in the Regency area

Ni : Change in GDP of sector/sub-sector i in the regency caused by by the influence of Provincial economic growth

Mij : Change in GDP of sector/sub-sector i in the study area of the Regency caused by the effect of the growth of sector i as a whole Province

Cij : Changes in GRDP of sector/sub-sector i in the region caused by by the competitive advantage of sector i in the region.

The interpretation of this analysis is that, if the differential shift of an industry is positive, then the industry is relatively more competitive than the same industry in the reference economy. The differential shift is also called the competitive advantage effect. (Woestho et al., 2021).

Sector Typology Analysis

The purpose of sector typology analysis is to determine the main economic sectors in the region in relation to sectoral growth (Shift-share Analyses/SSA), and concentration of economic activity (Location Quotient/LQ).

Tabel.1. Matrik Tipologi Sektor

Nilai Location Quotient (LQ)	**Shift Share Analysis**	
	Negative Value	**Positive Value**
Positive (+/>1)	**Quadrant 2** Potential Sector	**Quadrant 1** Advanced and Quickly Expanding Industries
Negative (-/<1)	**Quadrant IV** Relatively Underdeveloped Sector	**Quadrant III** Advanced but Depressed Sector

The observed sector typology analysis can be divided into four classifications:

1. High growth and high income (fast-developing and fast-growing sectors);
2. High growth but low income (fast-growing/potential sector);
3. High income but low growth (developed but depressed sector);
4. Low growth and low income (relatively underdeveloped sector).

With the following criteria:

1. High growth and high income, Quadrant I (positive SSA and positive LQ /> 1) is a developed sector with very fast growth (rapid growth sector / industry or fast growing);
2. High growth but low income, Quadrant II (positive SSA and negative LQ/<1) is a sector with inhibited growth speed but tends to have potential (depressed sector/potential industry);
3. High growth but low income, Quadrant III (negative SSA and positive LQ/>1) is a sector with inhibited growth speed but developed (depressed sector/developing industry);
4. Low growth and low income, Quadrant IV (negative SSA and negative LQ/<1) are depressed sectors/industries that are relatively underdeveloped with weak competitiveness and also low role to the region.

Klassen Analysis

To strengthen the results of the three analytical tools, a fourth analytical tool, namely Klassen Analysis, was used. This analysis is used to obtain an additional view of the classification of the position/condition of economic sector growth (business field) and the position of the leading sector of the region by considering the growth and contribution of each sector compared to provincial conditions. (Martina Ariani et al., 2021) (Maghfiroh, 2021).

Each economic sector in the region can be classified as prime, developing, potential and underdeveloped. This analysis bases the classification of a sector by looking at the growth and contribution of a particular sector to the total GRDP of a region. (Yuliani, 2020). The categorization of a sector into the four categories above is based on the growth rate of its sectoral contribution and the average size of its sectoral contribution to GRDP (Yuliani, 2020).

Regional typology, regions are divided into 4 classifications, namely:

1. Fast-developing and fast-growing regions are regions that have economic growth rates and per capita incomes that are higher than the regional average;
2. Developed but depressed regions are regions that have a higher per capita income, but lower than average economic growth rate;
3. Fast-growing regions are regions that have a growth rate, but lower than average per capita income;
4. Relatively underdeveloped regions are regions that have low levels of economic growth and per capita income.

The following table illustrates the four distinct classifications of economic sectors that were identified for the analysis: the expanding sector, the retarded sector, the rapid growth sector, and the comparatively backward sector.

Table 2. Classification of Economic Sectors According to Klassen Typology

	yi > y	**yi < y**
ri > r	Developed and fast-growing sectors Fast-growing sectors	Developed and fast-growing sectors Fast-growing sectors
ri < r	Developed but depressed sectors Relatively lagging sectors	Developed but depressed sectors Relatively lagging sectors

Description:

ri: growth rate of sector i
r: growth rate of GRDP
yi: contribution of sector i to GRDP
y: average contribution of sector to GRDP

Result and Discussion

The agriculture, forestry, and fisheries business sectors have LQ scores of more than 1, making them potential business sectors. In more detail, the food crops, horticultural crops, livestock, and agricultural and hunting services sub-fields can also be indicated as surplus production because they have an LQ value of more than 1. Meanwhile, the plantation crops, forestry and logging, and fisheries sub-fields have an LQ score of less than 1, indicating low production and the need for imports.

Tabel.3. Sector Typology Matrix

Sub. Sector	LQ	SS	T Sector	T Klassen
1. Agriculture, Livestock, Hunting and Agricultural Services	Basis	Competitive Sector	Advanced and Fast-Growing Sectors	Fast-Growing and Advanced Sectors
a. Food Crops	Basis	Not Competitive Sector	Potential Sector	Fast-Growing and Advanced Sectors
b. Horticultural Crops	Basis	Competitive Sector	Advanced and Fast Growing Sectors	Advanced and Fast Growing Sectors
c. Plantation Crops	NonBasis	Competitive Sector	Advanced but Distressed Sectors	Relatively Underdeveloped Sectors
d. Livestock	Base	Competitive Sector	Advanced and Fast Growing Sectors	Advanced but Depressed Sector
e. Agriculture and Hunting Services	Base	Competitive Sector	Advanced and Fast Growing Sector	Advanced and Fast Growing Sector
2. Forestry and Logging	NonBasis	Competitive Sector	Advanced but Distressed Sector	Relatively Disadvantaged Sector
3. Fishing	NonBasis	Competitive Sector	Advanced but Distressed Sector	Relatively Disadvantaged Sector

Source: Processed Primary Data

In sectoral growth (Mij), the shift of most sub-fields and commodities is negative. There is one sub-field whose shift is positive, namely the fisheries sub-sector, which indicates the development of performance in the Central Java economy.

The shift value of all subsectors in the competitive advantage component (Cij) is positive, which means that all sub-fields in the agriculture, forestry and fisheries business sector of Central Java Province have higher competitiveness than the same subsector at the national level.

Overall, most sub-fields in agriculture, forestry and fisheries in Central Java Province are categorized as competitive sectors. There is one subsector that is not categorized as competitive, namely food crops, which is indicated by negative growth (Dij).The agriculture, forestry, and fisheries sectors are categorized as advanced and fast-growing businesses, but the two sub-fields within them (forestry and logging, fisheries) are slow-growing but growing industries. The agriculture, livestock, hunting, and agricultural services sub-fields have very fast and advanced growth and can become the region's leading potential. However, food crops and plantation crops commodities still need further attention because their growth speed is still hampered, even though the industry has potential and is developing.The economic growth rate and per capita income in the agriculture, forestry and fisheries sectors of Central Java Province are higher than the regional average in Indonesia based on GRDP growth and GRDP contribution. However, the forestry and logging and fisheries subsectors tend to lag behind. The agriculture, livestock, hunting, and agricultural services subsectors are growing rapidly,

but the growth of livestock commodities is lower than average and the growth of plantation commodities is lower than average. The agricultural sector, especially the agriculture subsector, can be the leading potential of Central Java Province. However, further development is needed for this subsector and other commodities.

Conclussion

1. The agriculture, forestry, and fisheries sectors have an advantage because the LQ > 1. The food crops, horticultural crops, livestock, and agricultural and hunting services sub-fields have an LQ score of more than 1. The plantation crops, forestry and logging, and fisheries sub-fields have an LQ score of less than 1.
2. The Central Java Province's sub-fields of the agricultural, forestry, and fisheries business sector are classified as competitive sectors. Food crops are one subsector that lacks competition in the business sector, as seen by their negative growth (Dij).
3. 3. Central Java Province's business sector, which includes agriculture, forestry, and fisheries, contributes to the GDP by having a greater per capita income and economic growth rate than the country as a whole.
4. The agricultural sector can actually be the leading potential of Central Java Province, especially the agricultural subsector, but further attention is needed for the development of other subsectors and commodities.

Limitation:

This research is limited to one sector of the 17 economic sectors, but focused on the agricultural sub-sector so that the results obtained in this study can be used in decisions and policies for developing regional superior products in the agricultural sector and sub-sector.

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