

# Analysis of Leading Sector Shifts in Buol District

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## Abstract

Buol Regency has had a dynamic economic development since its separation from Tolitoli Regency. However, the non-optimal utilization of sectoral potential and the imbalance of contributions between sectors encourage the need to identify leading sectors as the basis for regional development policies. This study aims to analyze the regional economic structure, identify the basic sectors through Location Quotient analysis, and evaluate sectoral competitiveness with the Shift Share approach during the 2014-2023 period. The analysis methods used include Location Quotient to determine the base/non-base sector and Shift Share to evaluate the growth and competitive advantage of economic sectors. The Location Quotient analysis discover that Buol Regency has a number of economic sectors that have the potential to become leading sectors, such as Agriculture, Forestry and Fisheries; Water Supply; Waste Management, Waste, and Recycling; and other sectors that show Location Quotient (LQ) values greater than 1, indicating a positive contribution to the regional economy. Conversely, sectors with LQ values below 1 (Mining, Processing Industry, Electricity/Gas, Construction, and others) represent non-leading sectors, highlighting development challenges in Buol Regency. Shift Share analysis (2014-2023) reveals no significant economic structural shift, with the economy remaining primarily dependent on agriculture and fisheries despite some positive developments in other sectors. Economic structural shift would typically manifest as increased non-primary sector activity and reduced dependence on natural resource-based sectors. These findings identify priority sectors for regional economic policy. This research uniquely combines two analytical methods to assess sectoral dynamics in Buol—an approach rarely applied in eastern Indonesia's district-level studies.

**Keywords:** Economic Structure Analysis, Leading Sectors, Location Quotient, Regional Development, Shift Share Analysis.

## 1. Introduction

Regional development is an integral part of national development that aims to improve the welfare of the community through the optimization of local resources (Satrianto et al., 2022). According to Government Regulation No. 8/2008, development planning is a process of preparing stages of activities involving various elements of stakeholders in order to utilize resources effectively for the social welfare of the community in an area (Irmansyah, 2024). In this context, economic growth is the main indicator in assessing the success of development, where high and sustainable growth is an important requirement to ensure the continuity of economic development and improvement of people's welfare (Takalumang, 2018).

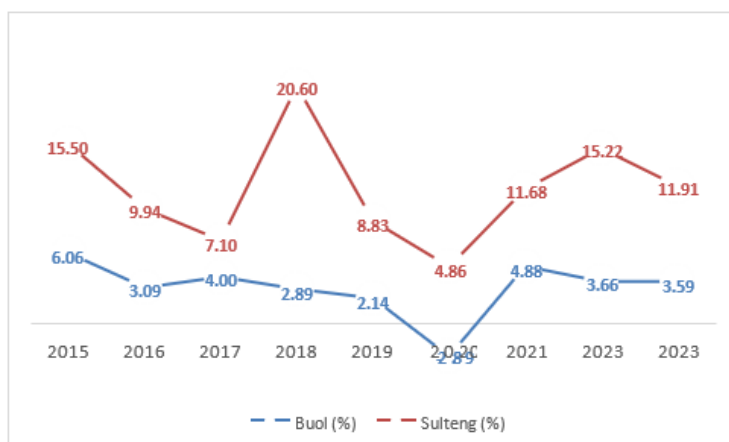
The importance of regional economic development lies in the active role of local governments in designing and implementing policies that are in line with local characteristics, including the utilization of natural resources, local wisdom, and geographical uniqueness (Nagel Paiva & Jannuzzi, 2022). With regional autonomy, local governments have greater



flexibility to formulate economic policies that are adaptive and responsive to community needs, as well as manage budgets more efficiently (Wang & Wei, 2021). Collaboration between local governments and the private sector is also expected to encourage job creation and inclusive and sustainable economic growth (Chernenko, 2024).

Furthermore, regional economic development has strategic objectives, including improving the quality of life of the community (Bosquez, 2023; Drozdowski, 2024), reducing social and economic disparities, and strengthening regional competitiveness in the midst of global economic dynamics (Neethling et al., 2023). In this case, development policies should be designed not only to promote quantitative growth, but also to improve the productivity and efficiency of the local economy. As expressed by (Muljanto, 2021), fundamentally, there is no significant difference between national and regional economic development goals. However, the development process at the regional level is more specific because it is influenced by comparative advantages, regional specialization, and the economic potential of each region (Khodakivska, 2021).

Buol Regency is a regency in Central Sulawesi Province that was formed in 1999, an expansion of Toli-toli Regency. Based on Law Number 28 dated October 30, 1959, Buol Toli-toli Regency was designated as one of the second level regions in Central Sulawesi Province. By 1999, Buol Regency had separated from Toli-toli Regency and formed its own district. The natural beauty and wealth of natural resources owned by Buol Regency make it an area with great potential for development, especially in the agriculture, fisheries and trade sectors. Nevertheless, Buol Regency also faces a number of challenges in terms of natural resource management and infrastructure development that still need to be improved, especially in rural areas and remote areas.



**Figure 1. Percentage Comparison of Economic Growth Rate of Buol District and Central Sulawesi Province, 2015-2023**

Economic growth in Buol District during the 2015-2023 period showed quite fluctuating dynamics. The data shows that the peak growth occurred in 2021 at 4.88 percent, while a sharp decline occurred in 2020, reaching -2.89 percent due to the impact of the COVID-19 pandemic. When compared to the economic growth rate of Central Sulawesi Province, Buol District showed a lower rate, although the Province also contracted by 4.86 percent in the same year. This condition indicates that the economy of Buol District is still strongly influenced by economic stability and development at the provincial level. Over the past decade (2014-2023), Buol District's Gross Regional Domestic Product (GRDP) increased from IDR 3,311.07 billion to IDR 4,327.05 billion, with the agriculture, forestry and fisheries sectors as the main contributors to its economic structure.

Differences in the characteristics of each region in terms of natural resources, geographical location, and labor availability are important factors in influencing regional development potential. The social, economic and cultural environment also plays a role in shaping the growth rate of a region, which in turn creates development inequality between regions. Therefore, it is necessary to optimize the efficient use of local resources to encourage equitable and sustainable economic growth (Handayani et al., 2023).

Effective local economic growth involves synergies between local governments and communities, as well as collaboration with the private sector in creating jobs and accelerating development (Wahyudi et al., 2024). In this context, economic policies that favor the development of local potential are key to achieving inclusive growth (Herath Bandara, 2024; Saragih et al., 2024). Muljanto (2021), emphasizes that although the objectives of national and regional economic development are basically similar, their implementation is strongly influenced by the comparative advantages, regional specialization, and distinctive economic potential of each region.

Achieving stability and sustainability in economic growth is an important goal in regional development that requires a comprehensive approach (G. Zhou et al., 2022). Sustainability is key in maintaining long-term competitiveness as it ensures that economic growth does not damage environmental resources or social fabric (D'Adamo et al., 2021; Tao et al., 2022). In the context of regional development, a balanced approach between economic and environmental aspects is needed to create sustainable socio-economic stability (Lv et al., 2021). In addition, sustainable regional development is influenced by various factors such as investment stimulation (Bressanelli et al., 2022), diversification of economic activities, as well as funding policies directed to underdeveloped regions. Economic stability and balance are two interrelated elements where economic balance will promote stability, and ultimately strengthen sustainable economic growth (Lv et al., 2021; Z. Zhou et al., 2022).

In an effort to achieve this, government intervention and role is needed to direct development in line with the principle of sustainability through measurable and long-term oriented policies (Zainutdinov & Madрахimov, 2020). However, in areas of high economic pressure, there is often a tension between the drive for short-term economic growth and the pursuit of long-term sustainability (Arsyad et al., 2021). Therefore, one of the indicators used to assess the economic progress of a region is the Gross Regional Domestic Product (GRDP). GRDP reflects the performance of the regional economy and is an important reference in development planning, because its growth is influenced by the contribution of existing economic sectors (Takalumang, 2018).

To pay more attention to regional development, a step that can be taken is to identify potential sectors. This can be done by applying location quotient (LQ) analysis and shift share analysis. In LQ evaluation, a comparison is made between the level of contribution of each sector or subsector in a particular area and the contribution of the same sector to total output in the province (Khoirunnisa et al., 2024). Meanwhile, to see the economic performance of a region in each sector using Shift Share analysis.

The use of this analysis is very suitable for measuring the economic performance of a region. Shift share refers to an analytical method used in examining the economic development of a region by examining changes in economic indicators in the region over a period of time. Through shift share analysis, an assessment is made of the productivity or economic performance of a region, rather than the overall economic performance, both at the national and regional levels (Priyadi, 2021).

Handayani et al. (2023) emphasizes the importance of optimizing local resources as a strategy to overcome development inequality between regions. This is relevant to the context

of Buol District, which has potential natural resources, but has not been maximally utilized for economic growth. Next, Muljanto (2021) highlighted that comparative advantage and regional specialization should be the basis for formulating regional development strategies. This shows the importance of identifying specific leading sectors, as done in this study through Location Quotient analysis. Takalumang (2018) stated that GRDP is important as a macro indicator of economic growth, but it is not sufficient to explain the dynamics of sectoral competitiveness. Thus, in this study, Shift Share analysis was used to evaluate the relative contribution of economic sectors in Buol District. Thus, the three previous studies provide academic justification for the selection of the method and focus of this research, while also indicating a gap to be filled through a more integrative approach.

## 2. Literature Review

### 2.1. Leading Sector

The part of the economy that shows great resilience and potential is the main sector, thus becoming the hope for economic growth. This sector has an important role in driving the economy and is often referred to as a strategic sector because it is the main milestone in economic development in a particular region. Thus, the leading sector reflects the economic order and can be considered an essential part or characteristic of an economic order (Negara & Putri, 2020). Currently, the focus of economic policy is to develop economic sectors that are considered to have more value to society in general, as well as being connected to local potential and in accordance with available economic resources.

### 2.2. Economic Growth

Schumpeter explained Adam Smith's approach to economic growth by recognizing that institutional, political, and natural factors were well taken into account. According to him, a community or country will tend to experience certain economic growth due to an increase in the number of members and their investments. On the other hand, Schultz states that in order to achieve significant economic growth, the country needs to take three important steps in their capital allocation and efforts; first, increase the quantity of recyclable goods produced; second, improve the quality of human beings as agents of production; and third, increase the level of production of works of art (Negara & Putri, 2020).

Gross Regional Domestic Product (GRDP) can be used as an indicator of sectoral economic growth rates so that it can be seen which sectors cause changes in economic growth. GRDP at constant prices shows the value added of these goods and services using current prices in a particular year as a basis and can be used to determine economic growth from year to year by not taking into account the element of inflation.

### 2.3. Structural Shifts in the Economy

The economy of a region in the long run will change the structure of the economy from relying on the agricultural sector to the industrial sector by not ruling out the agricultural sector in the long run (Liu et al., 2021). In terms of labor, it will cause the movement of labor from the rural agricultural sector to the urban industrial sector, causing the contribution of agriculture to decline. Factors causing changes in the structure of the economy include the availability of natural resources, human resources, facilities and infrastructure, as well as capital and investment that enter a region.

According to Sapriadi & Hasbiullah (2015), structural change theories focus on the transformation of the economic structure from an agricultural pattern to a more modern structure, which includes a robust manufacturing and service sector. This structural approach

was reinforced by the contributions of Lewis , known for his theoretical model of the "two-sector labor surplus," as well as by Chenery, known for his empirical analysis of "patterns of development."

### 3. Research Methods

#### 3.1. Research Type

A quantitative descriptive method involving numerical data and statistically analyzed was applied in this study. This method aims to generate information that allows accurate conclusions to be drawn (Khoirunnisa et al., 2024).

#### 3.2. Data and Data Sources

The data used in this study comes from Buol District and is accessed through the Central Bureau of Statistics (BPS). The data can be found and downloaded from the official BPS website. Economic Growth Data (GRDP) of Buol District 2014-2023 is the focus of this study.

#### 3.3. Data Analysis Technique

This study uses the Location Quotient (LQ) model to find sectors that have potential or not, as well as the Shift Share model to assess the productivity of a region and recognize the potential of economic sectors in the region. The calculations were done using Microsoft Excel. The data analysis used in this research is as follows:

##### 3.3.1. Location Quotient (LQ) Analysis Technique

Location Quotient is a method used to evaluate the economic potential of a region in determining the sectors that belong to the primary sector, as well as those that do not (non-base sectors). LQ analysis assumes that the expenditure pattern of residents in each region will be similar to that of a geographically similar reference region. In addition, it is assumed that the availability of labor remains stable, and that each industrial sector in the region produces similar goods across all sectors (Khoirunnisa et al., 2024). Generally, the LQ analysis method uses the formula:

$$LQ = \frac{Si/S}{Ni/N}$$

Description:

LQ : Location Quotient Value  
Si : GRDP of sector i in the analyzed region  
S : Total GRDP in the analyzed region  
Ni : GRDP of sector i in the reference region  
N : Total GRDP in the reference region

If the calculation result shows that  $LQ > 1$ , it indicates that the industry is a leading sector with export potential. Therefore, it can be concluded that it is a basic sector with the potential to be enhanced as a driving force of the economy in Buol Regency. On the other hand,  $LQ < 1$  means that the sector is not a leading sector or is a non-dominant (local/import) sector, which implies that it is not a basic sector and thus less likely to serve as an economic driver in Buol Regency.



### 3.3.2. Shift Share Analysis Technique (SS)

Shift Share Analysis is frequently used to identify the impact of structural transformation on the production capacity of a specific region. This method is useful for assessing the relationships between economic sectors and determining which sectors have the potential to grow within that region. The results of this analysis are then compared to broader regions, whether at the regional or national level (Khoirunnisa et al., 2024). In this approach, regional economic growth and structural economic transformation are determined by three basic components:

- 1) Change in GRDP (Dij) : A city variable, such as the amount of labor, value added, income or output, over a period of time becomes influenced.
- 2) Regional Share (Nij): Reflects the increase in local economic activity resulting from relevant national policies.
- 3) Proportional Shift (Mij): In regional economic development, this reflects the influence of a strong local economic structure, particularly in sectors experiencing significant growth.
- 4) Differential Shift (Cij): Represents the component of regional economic development arising from unique regional competitive conditions. This growth factor contributes as a regional competitive advantage, promoting the expansion of exports from the area.

The following formulas:

1. Regional economic growth:

$$D_{ij} = N_{ij} + M_{ij} + C_{ij}$$

2. Effect of economic growth:

$$N_{ij} = E_{ij} \times r_n$$

3. Proportional shift or industry mix effect:

$$M_{ij} = E_{ij} (r_{in} - r_n)$$

4. Effect of competitive advantage:

$$C_{ij} = E_{ij} = (r_{ij} - r_n)$$

Description :

- Dij : Change in sector i in region j (Buol District)  
 Eij : Value of sector/subsector i in the district (GRDP of sector i of Buol District)  
 Ein : Value of sector/subsector i in the reference region (Province)  
 i : Economic sectors studied  
 j : Economic region studied  
 Mij : Industry mix of sector i in region j (Buol District)  
 Nij : National growth of sector i in region j (Buol District)  
 rij : Growth rate of sector i in region j (Buol District)  
 rin : National growth rate of sector i (Central Sulawesi Province)  
 rn : National economic growth rate (Central Sulawesi Province)

When :

- Positive (+) : Indicates relatively rapid or increased growth.  
 Negative (-) : Indicates relatively slow or declining growth.

## 4. Results and Discussion

The sub-optimal utilization of sectoral potential and the imbalance of inter-sectoral contributions in the regional economic structure indicate the need for policy interventions based on the identification of leading sectors. This imbalance not only reflects an imbalance in development, but also indicates a lack of efficiency in the management of regional resources. Therefore, the identification of leading sectors is a strategic step needed to support the formulation of more targeted, effective and sustainable development policies. Location Quotient (LQ) and Shift Share (SS) approaches are quantitative methods that are widely used in analyzing regional economic structure. LQ serves to identify the base sector, which is a sector that has a comparative advantage due to a higher economic concentration value than the reference region, usually at the national or provincial level (Azaki, 2024). These base sectors have the potential to bring in revenue from outside the region and significantly boost local economic growth.

On the other hand, the Shift Share approach allows analysis of the components of sectoral growth, namely national growth effects (national share), structural or sectoral effects (industrial mix), and regional competitive advantage (regional shift). Through the combination of LQ and SS, a more comprehensive picture of the potential and competitiveness of economic sectors is obtained, making it easier to formulate development priorities (Maspaitea & Parinussa, 2021). Previous studies, such as those conducted by Abadi et al. (2024) showed that the agriculture, forestry and fisheries sector is a basic sector that also shows competitive advantages, making it a priority sector in economic development planning.

### 4.1. Location Quotient Analysis of Buol Regency for the Period 2014–2023

Location Quotient (LQ) analysis contributes significantly to regional economic planning and policy formulation. Through the identification of basic sectors, the Buol District Government can formulate targeted strategies to strengthen leading sectors, develop non-basic sectors, and encourage sustainable diversification of the economic structure.

**Table 1. Results of Location Quotient (LQ) Analysis of Buol Regency's GRDP, 2014–2023 (%)**

| Business Field                                       | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | LQ Average | Description |
|------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------------|-------------|
| Agriculture, Forestry and Fisheries                  | 1,50 | 1,62 | 1,70 | 1,74 | 2,00 | 2,10 | 2,27 | 2,47 | 2,77 | 3,01 | 2,12       | Basis       |
| Mining and Quarrying                                 | 0,15 | 0,13 | 0,11 | 0,11 | 0,10 | 0,11 | 0,09 | 0,09 | 0,08 | 0,09 | 0,11       | Non Basis   |
| Processing Industry                                  | 2,31 | 1,41 | 1,18 | 1,13 | 0,65 | 0,59 | 0,51 | 0,47 | 0,41 | 0,37 | 0,90       | Non Basis   |
| Electricity and Gas Procurement                      | 0,56 | 0,64 | 0,68 | 0,70 | 0,81 | 0,92 | 1,00 | 1,05 | 1,11 | 1,20 | 0,87       | Non Basis   |
| Water Supply; Waste Management, Waste, and Recycling | 1,24 | 1,33 | 1,45 | 1,45 | 1,66 | 1,76 | 1,85 | 1,93 | 2,11 | 2,27 | 1,71       | Basis       |
| Construction                                         | 0,60 | 0,58 | 0,65 | 0,68 | 0,81 | 0,82 | 0,85 | 0,80 | 0,85 | 0,94 | 0,76       | Non Basis   |
| Wholesale and Retail Trade;                          | 0,60 | 0,65 | 0,69 | 0,71 | 0,82 | 0,88 | 0,93 | 0,93 | 1,00 | 1,08 | 0,83       | Non Basis   |

| Business Field                                                     | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | LQ Average | Description |
|--------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------------|-------------|
| Repair of Cars and Motorcycles                                     |      |      |      |      |      |      |      |      |      |      |            |             |
| Transportation and Warehousing                                     | 0,71 | 0,77 | 0,83 | 0,83 | 0,94 | 1,02 | 1,16 | 1,20 | 1,14 | 1,21 | 0,98       | Non Basis   |
| Provision of Accommodation and Drinking Meals                      | 0,90 | 0,96 | 1,04 | 1,04 | 1,17 | 1,34 | 1,44 | 1,47 | 1,53 | 1,64 | 1,25       | Basis       |
| Information and Communication                                      | 0,30 | 0,33 | 0,34 | 0,35 | 0,41 | 0,43 | 0,47 | 0,49 | 0,54 | 0,58 | 0,42       | Non Basis   |
| Financial and Insurance Services                                   | 0,35 | 0,40 | 0,41 | 0,40 | 0,49 | 0,53 | 0,60 | 0,63 | 0,70 | 0,76 | 0,53       | Non Basis   |
| Real Estate                                                        | 1,32 | 1,47 | 1,56 | 1,59 | 1,86 | 1,98 | 2,14 | 2,28 | 2,44 | 2,60 | 1,92       | Basis       |
| Company Services                                                   | 0,26 | 0,30 | 0,33 | 0,33 | 0,36 | 0,41 | 0,44 | 0,46 | 0,50 | 0,54 | 0,39       | Non Basis   |
| Government Administration, Defense, and Compulsory Social Security | 0,66 | 0,72 | 0,78 | 0,78 | 0,85 | 0,91 | 1,00 | 1,03 | 1,13 | 1,24 | 0,91       | Non Basis   |
| Education Services                                                 | 0,71 | 0,77 | 0,84 | 0,85 | 0,95 | 1,02 | 1,11 | 1,20 | 1,29 | 1,39 | 1,01       | Basis       |
| Health and Social Services                                         | 1,17 | 1,29 | 1,41 | 1,40 | 1,57 | 1,68 | 1,80 | 1,95 | 2,16 | 2,33 | 1,68       | Basis       |
| Other Services                                                     | 1,94 | 2,04 | 2,16 | 2,19 | 2,57 | 2,73 | 2,95 | 3,11 | 3,37 | 3,64 | 2,67       | Basis       |
| Gross Regional Domestic Product                                    |      |      |      |      |      |      |      |      |      |      | 1,00       | Basis       |

Source: BPS Buol District (processed)

Buol District has several basic sectors that can become the basis of the regional economy. Yet, there are also sectors that need more attention to be developed so that Buol Regency can further strengthen economic diversification and reduce dependence on non-base sectors. The economy of Buol District in the last 10 years has shown an increasing trend. This increase is based on the existence of 7 basic sectors in Buol District. These sectors have become the base sectors in Buol District in its economic development. The following table presents the results of the Location Quotient calculation of Buol Regency in the last 10 years.

Likewise, LQ calculation of Buol Regency shown in Table 1 also indicates that this region has a base in certain economic sectors that are superior to the provincial or national average. The economic sectors of Buol Regency on the basis of constant prices for the 2014-2023 period presented in the table above, it can be seen that there are 7 economic sectors that have an LQ value greater than 1 ( $>1$ ) so that they can be used as the base sector in Buol Regency, namely the Agriculture, forestry and fisheries sector; water supply, waste management, waste, and recycling; provision of accommodation and eating and drinking; real estate; education services; health services and social activities; other services, which means that these seven sectors have great potential to meet the needs of their own region and also have the potential to export and indicate that Buol District has a higher concentration in the sector, which is one of the advantages in Buol District.



Nevertheless, other sectors that have lower LQ values indicate that Buol District still faces challenges in developing these economic sectors. Overall, the LQ analysis provides an overview of Buol District's leading potential and areas that need more attention in order to strengthen regional economic diversification. There are 10 other economic sectors categorized as non leading sectors. This means that these 10 sectors are not able to meet the needs of Buol Regency and are only able to import from other regions.

This finding is in line with Sinurat & Pakpahan (2023) view that LQ analysis can be the basis for more focused development policies, where policies and investment allocations can be directed to sectors with significant growth potential. In addition, sectors with low LQ values need attention in the form of interventions aimed at improving their competitiveness and long-term sustainability (Rana et al., 2023). This is in line with the findings in the study of Rana et al. (2023), which showed that leading sectors, such as agriculture and tourism, have the ability to drive regional economic development, both in terms of job creation and increased regional income.

Furthermore, LQ also serves as a tool to identify sectors that have the potential for expansion and significant contribution to the regional economy, as also found in Prabowo (2023) study of the Student City. By utilizing LQ analysis, regions can develop more targeted policies, focusing on the development of leading sectors that have been proven to contribute significantly to the local economy. For example, the tourism sector has great potential to attract local and international tourists, which in turn can strengthen related sectors, such as hospitality and transportation (Nasrullah et al., 2024).

In addition, this finding illustrates that the leading sectors identified through LQ have the potential to become drivers of inclusive and sustainable economic growth. Therefore, it is important for local governments to develop policies that can maximize the potential of these sectors, for example by improving access to technology, skills training, and supporting infrastructure development. With such strategic measures, these leading sectors can strengthen their position in the regional economy and become important pillars in designing long-term sustainable economic development (Sari et al., 2022).

#### 4.2. Shift Share Analysis of Buol Regency for the 2014-2023 Period

Shift-share analysis is an effective method to evaluate the dynamics of regional economic growth by separating economic change into three main components: national growth, sectoral structure (industrial mix), and regional competitive advantage (regional shift). Through this approach, it is possible to comprehensively identify the relationship between components that affect regional economic growth. In this study, researchers applied Shift-share analysis to Buol Regency's Gross Regional Domestic Product (GRDP) data based on constant prices, and compared it with the GRDP of Central Sulawesi Province during the period 2014 - 2023.

This approach makes it possible to identify the main factors driving regional economic growth, as well as recognize sectors that have the potential to grow faster in the future. It also helps in evaluating sectors that need special attention in the formulation of regional development policies, in order to encourage more inclusive and sustainable economic growth in Buol District.

**Table 2. GRDP of Buol District and Central Sulawesi Province at Constant Prices (in %)**

| Sector                                                             | Buol District |       | Central Sulawesi Province |       |
|--------------------------------------------------------------------|---------------|-------|---------------------------|-------|
|                                                                    | 2014          | 2023  | 2014                      | 2023  |
| Agriculture, Forestry and Fisheries                                | 51,74         | 50,23 | 34,5                      | 16,66 |
| Mining and Quarrying                                               | 1,48          | 1,51  | 10,1                      | 17,21 |
| Processing Industry                                                | 13,75         | 13,64 | 5,96                      | 36,82 |
| Electricity and Gas Procurement                                    | 0,03          | 0,04  | 0,05                      | 0,03  |
| Water Supply; Waste Management, Waste, and Recycling               | 0,19          | 0,18  | 0,15                      | 0,08  |
| Construction                                                       | 7,41          | 7,47  | 12,28                     | 7,92  |
| Wholesale and Retail Trade; Repair of Cars and Motorcycles         | 6,29          | 6,38  | 10,44                     | 5,9   |
| Transportation and Warehousing                                     | 3,04          | 2,47  | 4,3                       | 2,03  |
| Provision of Accommodation and Drinking Meals                      | 0,5           | 0,55  | 0,55                      | 0,33  |
| Information and Communication                                      | 1,22          | 1,76  | 4,07                      | 3,04  |
| Financial and Insurance Services                                   | 0,82          | 1,06  | 2,31                      | 1,41  |
| Real Estate                                                        | 2,84          | 3,07  | 2,15                      | 1,18  |
| Company Services                                                   | 0,08          | 0,08  | 0,29                      | 0,15  |
| Government Administration, Defense, and Compulsory Social Security | 4,18          | 4,49  | 6,29                      | 3,61  |
| Education Services                                                 | 2,97          | 3     | 4,17                      | 2,16  |
| Health and Social Services                                         | 1,75          | 2,25  | 1,5                       | 0,96  |
| Other Services                                                     | 1,72          | 1,81  | 0,88                      | 0,5   |
| Gross Regional Domestic Product                                    | 51,74         | 50,23 | 34,5                      | 16,66 |

Source: BPS Buol District (processed, 2024)

Table 2 presents data on the GRDP of Buol District and Central Sulawesi Province based on constant prices, which provides an overview of the economic performance of the two regions. The data in this table reflects changes in GRDP values from 2014 to 2023, which makes it possible to see more accurate trends in economic growth. Using constant prices. The comparison between the GRDP of Buol Regency and Central Sulawesi Province becomes more objective, as the inflation factor that can affect nominal figures has been eliminated. The results of the analysis show that although the GRDP of Buol Regency experienced fluctuations, overall its growth tended to be slower than that of Central Sulawesi Province, which has more developed leading sectors, such as mining, plantations, and the service sector. In addition, the results presented in Table 3 provide an overview of the contribution of the main economic sectors in each region. This information can be used to identify the structural strengths and superior potential of the regional economy, as well as being the basis for formulating more targeted and effective development policies to improve the welfare of the people in the two regions.

The sectoral structure component indicates the impact of differentiation in economic sector composition on regional growth. In this context, the difference in economic structure between Buol District, which is still dominated by the primary sector, and Central Sulawesi Province, which experienced significant growth in secondary sectors such as the processing industry, indicates the influence of sectoral structure on different growth patterns. This phenomenon is in line with Abidin (2016) findings in Southeast Sulawesi, which underline the role of sectoral structure in influencing the direction and speed of regional economic growth.

Meanwhile, the regional competitive advantage component is evident from sectors that grow faster than the national and structural trends, reflecting local competitiveness capacity. The significant growth of the manufacturing and mining sectors in Central Sulawesi is indicative of a strong competitive advantage, as also identified by Putra and Rahmi (2023) in their study of Wajo Regency.

The application of Shift-share analysis to GRDP data has important implications for the formulation of regional development policies. This analysis allows the identification of leading sectors and sectors that require strategic intervention. This has been proven in Maspaitella & Parinussa (2021) study in Bintuni Bay, where the construction and education sectors that showed progressive performance were then made the focus of regional development planning. In addition, an understanding of inter-sectoral linkages, as expressed by Situmorang (2024) in the context of the mining sector in Manokwari, is important in encouraging synergies between sectors to optimize regional economic potential in a sustainable manner. Thus, Shift-share analysis not only functions as a quantitative tool, but also as a strategic instrument in supporting data-driven decision-making processes in the context of regional economic planning (Herrera Martheyn & Valero Valencia, 2023; Maspaitella & Parinussa, 2021)

Shift-share analysis in Table 3 showed a significant change in the value of Buol District's sectoral Gross Regional Domestic Product (GRDP) during the 2014-2023 period, with an increase of IDR 1,016,050,000. This increase not only reflects quantitative economic growth, but also reflects the structural dynamics and competitiveness of the region. Based on the Shift-share approach, the growth can be explained through three main components: Regional Share (Nij), Proportional Shift (Mij), and Differential Shift (Cij). The Regional Share component reflects the growth that would occur if sectors in Buol District grew in line with the average growth of Central Sulawesi Province or the national level, which serves as a reference for comparison. Meanwhile, the Proportional Shift identifies the effect of sectoral growth at the national level on similar sectors in the region, providing insight into the extent to which sectors follow national trends (Xanthos et al., 2022).

**Table 3. Results of Regional Share (Nij), Proportional Shift (Mij) and Differential Shift (Cij) Calculation**

| Sector                                                             | Nij     | Mij      | Cij      | Dij     | Shift Value (%) |        |
|--------------------------------------------------------------------|---------|----------|----------|---------|-----------------|--------|
| Agriculture, Forestry and Fisheries                                | 2904,28 | -2387,61 | -56,38   | 460,29  | 45,30           |        |
| Mining and Quarrying                                               | 83,13   | 93,00    | -159,82  | 16,31   | 1,61            | 46,91  |
| Processing Industry                                                | 771,88  | 6350,20  | -6987,02 | 135,07  | 13,29           |        |
| Electricity and Gas Procurement                                    | 1,56    | -0,83    | 0,08     | 0,81    | 0,08            |        |
| Water Supply; Waste Management, Waste, and Recycling               | 10,68   | -8,34    | -0,97    | 1,37    | 0,13            | 21,17  |
| Construction                                                       | 416,01  | -234,53  | -103,64  | 77,84   | 7,66            |        |
| Wholesale and Retail Trade; Repair of Cars and Motorcycles         | 352,83  | -244,10  | -40,80   | 67,93   | 6,69            |        |
| Transportation and Warehousing                                     | 170,70  | -142,86  | -21,72   | 6,12    | 0,60            |        |
| Provision of Accommodation and Drinking Meals                      | 27,83   | -17,64   | -3,01    | 7,19    | 0,71            |        |
| Information and Communication                                      | 68,59   | -27,46   | -5,32    | 35,80   | 3,52            |        |
| Financial and Insurance Services                                   | 45,87   | -28,63   | 1,72     | 18,96   | 1,87            |        |
| Real Estate                                                        | 159,58  | -114,30  | -6,76    | 38,52   | 3,79            |        |
| Company Services                                                   | 4,24    | -3,12    | -0,04    | 1,08    | 0,11            |        |
| Government Administration, Defense, and Compulsory Social Security | 234,42  | -158,71  | -19,56   | 56,16   | 5,53            | 31,92  |
| Education Services                                                 | 166,53  | -127,92  | -6,85    | 31,76   | 3,13            |        |
| Health and Social Services                                         | 98,00   | -55,63   | -2,84    | 39,53   | 3,89            |        |
| Other Services                                                     | 96,49   | -67,14   | -8,04    | 21,31   | 2,10            |        |
| Gross Regional Domestic Product                                    | 5612,61 | 2824,38  | -7420,94 | 1016,05 | 100,00          | 100,00 |

Source: BPS Buol District (processed, 2024)

The Differential Shift contributes to explaining the competitive advantage or disadvantage of certain sectors in Buol District, which cannot be explained solely by general growth or national sectoral trends. For example, if the agricultural sector grows faster in Buol than the growth of the agricultural sector nationally, then it can be interpreted as a local competitive advantage. In other words, the growth of Buol District's GRDP over the past decade is not solely the result of macro trends, but is also influenced by sectoral structural strengths and specific local potential. Therefore, the Shift-share approach provides a comprehensive framework for evaluating regional economic performance as well as formulating more targeted policies in the context of regional development (Montanía et al., 2024).

Based on the analysis of the regional growth component (Nij), there was a growth in GRDP in Buol Regency which was triggered by a surge in GRDP growth in Central Sulawesi Province of IDR 5,612,609,000. With this positive value, it can be concluded that Buol Regency still has a strong relationship with the Central Sulawesi economy.

The (Mij) component indicates that industrial change has had a major impact on the economic growth of Buol District. The study found that industrial change had made a positive contribution of IDR 2,824,383,000. The positive value indicates that the sectors in the GDRP of Buol Regency are driving economic growth rapidly, industrial/sectoral changes have a major impact on the economic growth of Buol Regency and the economic structure of Central Sulawesi Province contributes to GDRP growth of IDR 2,824,383,000. In table 3, the (Mij) component has a positive effect on some sectors, such as Mining and Quarrying and Processing Industry, although most, namely 15 other sectors, experience a negative impact.

The calculation value of the competitive advantage component (Cij) in Table 3 above is IDR 7,420,940,000. This value indicates that the resulting competitive advantage will reduce the economic development of Buol Regency. The effect of Buol's competitiveness on the economy of Central Sulawesi Province was not able to encourage an increase in the economy of Central Sulawesi Province by IDR 7,420,940,000. There is one sector that has a positive competitive advantage value, namely Financial Services and Insurance, from sixteen sectors that have non-competitive advantages or negative values. The positive value indicates that the financial services sector has better competitiveness in Buol District compared to other regions in Central Sulawesi Province. This indicates that although the sector is not very large in terms of economic contribution (which is reflected in the LQ), it has a competitive advantage that can support its growth, or the sector is growing faster than similar sectors in the province. In other words, although the LQ shows that the financial services sector is not very prominent in terms of concentration, the Shift Share Cij reveals that the sector has the potential to grow faster or more competitively than other similar sectors at the provincial level.

These sectors are economic sectors that grow faster than the same sectors at the Central Sulawesi Province level, so they have the potential to be developed in spurring GRDP growth in Buol District. Meanwhile, sixteen other sectors have negative values, so that these sectors have slow growth at the Central Sulawesi Province level.

The results of the calculation of the impact of regional economic growth (Dij), show that the agriculture, forestry and fisheries sector have the highest value during the study period with a value of IDR 460.29 billion, this value shows that Buol District has not experienced a shift in the structure of the economy, because Buol District still depends on natural resources / primary sector. in the economic shift section, which can be seen in the table above shows the value of the primary sector by 46.91 percent, the secondary sector by 21.17 percent, and the tertiary sector by 31.92 percent. This strengthens the explanation of Buol district, which has not undergone a transformation of the economic structure during the study period.

Based on an analysis of the economic conditions of Buol District, several factors indicate that this region has not fully experienced a significant economic shift. First, the dominance of primary sectors such as agriculture, forestry and fisheries is still very high. This reflects the strong dependence on natural resources as the main driver of the regional economy. Although there are some sectors that have begun to develop, such as the industrial sector, their impact on the overall economy is still limited. Based on the calculation results, the industrial sector does have a positive influence on economic growth, but its contribution is not significant enough to shift the dominance of the primary sector (natural resource-based sectors) towards secondary or tertiary sectors.

Second, sector composition Based on the results of Shift Share analysis, the growth component of the industrial sector ( $M_{ij}$ ) has a positive influence on economic growth, but its impact is not significant enough to replace the dominance of the primary sector. This indicates that there are some sector changes, but these changes are not large enough to fully shift the economic structure from the primary sector to the secondary or tertiary sector.

Furthermore, dependence on other economic sectors in Central Sulawesi Province, the national growth component ( $N_{ij}$ ) shows that the economy of Buol District is still highly dependent on the economic growth of Central Sulawesi Province. This means that the economic growth of Buol District is largely influenced by the economic conditions of the province as a whole, and not from changes in economic sectors that occur independently at the regional level.

Finally, competitive advantage remains suboptimal. Although some sectors like financial services and insurance show positive competitive advantage, the negative  $C_{ij}$  value (-7,420,940,000) indicates that competitiveness in most sectors is still low. This indicates that Buol Regency has not been able to encourage other sectors to grow rapidly, which is an indicator that the overall economic shift has not occurred optimally.

Overall, Buol District has not experienced a significant structural shift in the economy during the 2014-2023 period. Natural resource-based sectors (primary) still dominate the regional economy, while industrial and service sectors (secondary and tertiary) have not developed enough to reduce dependence on the primary sector. The dominance of the natural resource-based sector is still very strong, while the industrial and service sectors have not developed rapidly enough to reduce dependence on the primary sector. Therefore, there needs to be a more focused and intensive effort in encouraging economic sector diversification and increasing competitiveness in non-primary sectors so that the desired economic shift can be achieved optimally.

## 5. Conclusion

Based on Location Quotient (LQ) and Shift Share analysis, Buol Regency has several leading sectors that can be the driving force of the regional economy, such as Agriculture, Forestry and Fisheries, Water Supply, and Waste Management, Waste, and Recycling, each of which has a significant contribution with an LQ value greater than 1. However, sectors such as Mining and Quarrying, Processing Industry, Electricity and Gas Procurement, and Construction still show low performance with an LQ value of less than 1, which requires more attention for development. Shift Share analysis shows that Buol Regency's dependence on primary sectors such as agriculture and fisheries is still high, and although there are several sectors that are developing positively, the competitiveness of the region is still limited, reflected in the negative value of the competitive advantage component ( $C_{ij}$ ), although the Financial and Insurance Services sector shows potential that can be further optimized.



The Buol District Government needs to focus on economic diversification by developing potential non-primary sectors, such as manufacturing and services, to reduce dependence on natural resource-based sectors that are vulnerable to fluctuations in global commodity prices. Sustainable management of natural resources, with the application of environmentally friendly technologies, is essential to maintain the viability of leading sectors such as agriculture, forestry, and fisheries without damaging the environment. In addition, the utilization of technology and innovation in sectors that have competitive advantages, such as Financial Services and Insurance, can improve regional competitiveness, including through the development of digital infrastructure and empowerment of human resources in the field of information technology. This research illustrates that diversifying and strengthening non-leading sectors can create better economic resilience and open up new market opportunities. However, the limitations of the data and analysis period (2014-2023) require further research with a more comprehensive approach, including field surveys, to explore the economic potential and challenges of Buol District in more depth.

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