An analysis of progressive sectors: agriculture position

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Abstract. In the economic development of a region, there needs to be attention in developing sectors that have the potential and also have good growth. This study aims to identify the economic sectors included in the progressive sector. This research uses secondary data in the form of Gross Regional Domestic Product (GRDP) of Bolaang Mongondow Regency and North Sulawesi Province in 2013-2017 and will then be analyzed using the Location Quotient method and Shift Share analysis. The results of the study concluded that there are five economic sectors which are the base sectors namely the Agriculture, Forestry, and Fisheries sectors; Mining and Excavation sectors, the Electricity and Gas Procurement Sector, Real Estate Sector and Education Services Sector. However, only the Mining and Excavation sector has a progressive growth rate and competitive advantage. As for the Agriculture position itself, it has a non-progressive growth rate and lacks a competitive advantage. In addition, there are four sectors namely the Construction sector, the Wholesale Trade, and Retail; Car and Motorcycle Repair sectors; The Financial Services and Insurance sectors and the Government Administration, Defense, and Social Security sectors are required to be able to move progressively even though those sectors are not included in the base sector.

1. Introduction

Development can be interpreted as a process of planned change and is a series of activities that are continuous, sustainable, and gradual towards a better shape. The success of a country is a reflection of the success of regional development. Regional development refers to the equal distribution and welfare of its people. National Development is defined as an effort to develop the living conditions of the people, nation, and state whereas Regional Economic Development is defined as a process whereby the Regional Government and all components of the society manage various existing resources and form a partnership pattern to form a new field of work and stimulate the development of economic activities in the area [1].

According to Widodo in Thohir [1], there are two main factors that need to be considered in identifying the potential of regional economic activities. First, the economic sector which is superior or has competitiveness in the last few years and the prospects for the economic sector in the future. Second, the economic sector has the potential to be developed in the future, although at present, it does not yet have a good level of competitiveness. Economic development will be optimal if it is based on comparative advantage (having a higher level of production than others) and competitive advantage (the ability gained through characteristics and resources to have better performance than others). The government, both at the national and regional levels in carrying out development, should be wiser in
2. Methods

This research was conducted in the area of Bolaang Mongondow Regency, which is one of the Regencies in North Sulawesi. The location selection is made intentionally or purposively with the consideration that the area of Bolaang Mongondow Regency is an area that is the center of the Bolaang Mongondow Raya region and directly borders with four districts/municipalities namely South Minahasa Regency, North Bolaang Mongondow Regency, South Bolaang Mongondow Regency, and Kotamobagu Municipality. The data used in this study are secondary data. Secondary data in this study are GRDP data according to the field of business at constant prices of the 2010 Bolaang Mongondow Regency and North Sulawesi Province in 2013-2017.

The data collection techniques used in this study are literature studies, both in collecting data and information and writing support materials. A literature study is the first step in data collection methods. A literature study is a method of collecting data that is directed at finding data and
information through documents, both written documents, photographs, drawings, and electronic documents that can support the writing process [5].

The study was conducted by examining and comparing literature sources to obtain theoretical data. Besides that, by using a literature study, the writer can obtain information about the expected research techniques. The research employed two methods, namely Location Quotient (LQ) and Shift Share Analysis. The Location Quotient (LQ) method itself is a comparison between the relative share of value in sector i at the regional level to total regional income with the relative share of the sector i value in the reference region to the income of the reference region [6]. This can be stated mathematically, as follows:

\[ LQ = \frac{v_i}{v_t} \cdot \frac{V_i}{V_t} \]  

(1)

Note:
\[ v_i = \] the value of sector i at the GRDP of Bolaang Mongondow Regency level 
\[ v_t = \] the total value of the GRDP of Bolaang Mongondow Regency 
\[ V_i = \] i sector value in the GDP level of North Sulawesi Province 
\[ V_t = \] North Sulawesi Province GRDP total value

From the results of the LQ analysis calculation, it can be categorized into three parts, namely:

- If \( LQ > 1 \), the sector concerned in the study area is more specialized than the economy of the reference region. This sector or commodity in the economy in the study area has a comparative basis and is categorized as a base sector.
- If \( LQ = 1 \), the sector concerned is either in the study area or at the economic level the reference area has the same level of specialization.
- If \( LQ < 1 \), then the sector concerned in the study area is less specialized than the economy of the reference region. This sector or commodity in the study area does not have a comparative basis and is categorized as a non-base sector.

The second data analysis, namely Shift Share analysis, is one of the regional economic growth models that aims to determine the determinants of economic growth in the region. Current Shift-Share Analysis has become a fairly popular growth model in Regional Economic Science because it can identify the role of the national economy and the specificity of the region concerned on the economic growth of the region concerned [7]. This analysis uses three basic information related to each other, namely: (i) economic growth in the reference area or national (National Growth Effect), which shows the effect of national economic growth on the regional economy; (ii) Proportional Shift, which shows the relative changes in the performance of a particular region in the sector against the same sector referenced provincial or national; (iii) differential shifts or the influence of a competitive basis that provides information in determining how far the competitiveness of the local industry (local) with the economy that is used as a reference. If the differential shift of an industry or sector is positive, the industry or sector is more competitive than the same industry or sector in the economy that is used as a reference. The formulation used for Shift Share analysis, according to Tarigan [8] is:

a. Calculate the level of Province Share (Ps) per economy sector in Bolaang Mongondow Regency with the formula:

\[ N_s = \sum_{t-1}^n \{E_{r,i,t-n} \ (E_{N,t} / E_{N,t-n}) - E_{r,i,t-n} \} \]  

(2)

b. Calculate the Proportional Shift (Pr) level per economy sector in Bolaang Mongondow Regency with the formula:

\[ Pr = \sum_{t-1}^n \{(E_{N,i,t} / E_{N,i,t-n}) - (E_{N,t} / E_{N,t-n})\} \times E_{r,i,t-n} \]  

(3)
c. Calculate the Differential Shift (Dr) level per economy sector in Bolaang Mongondow Regency with the formula:

$$Dr = \sum_{t=1}^{n} \left[ \left\{ E_{r,i,t} - \left( \frac{E_{N,i,t}}{E_{N,i,t-n}} \right) E_{r,i,t-n} \right\} \right]$$ (4)

d. Calculate the Total Shift Share ($\Delta E_r$) with the formula:

$$\Delta E_r = (Ns + Pr + Dr)$$  
$$\Delta E_r = (Ps + Pr + Dr)$$ (5)

Note:

$\Delta$ : Addition, the final number (year t) is subtracted from the initial number (year t-n)

N : National region/ higher-level region

r : Analysis region

i : Industry Sectors

t : Year

t-n : Early Year

Ns : National Share

Ps : Province Share

Pr : Proportional shift

Dr : Differential shift

If the economic sector, both Ps and Ds components are positive, it means that the sector has fast growth and strong competitiveness (progressive sectors), and if one or both of the Ps and Ds components are negative, it means the sector is not progressive.

3. Results and discussion

3.1. Progressive sector analysis in Bolaang Mongondow Regency

3.1.1. Location Quotient (LQ) Analysis. According to Widodo in Kurniawan [9], the basic logic of Location Quotient (LQ) is an economic base theory which is essential that the industry base produces goods and services for markets in the region and outside the region concerned, then sales outside the region will generate revenue for the area. In addition, according to Tarigan [8], LQ analysis or location quotient is a comparison of the size of the role of a sector/industry in a region against the size of the role of the sector/industry nationally. In addition, LQ analysis is used to determine which sectors can be used as leading sectors in terms of regional contributions, so that the export capabilities and capabilities of the region can be known. The results of the Location Quotient Analysis of the economic sector shown in table 1.

| GRDP business field                      | 2013  | 2014  | 2015  | 2016  | 2017  | LQ Average |
|------------------------------------------|-------|-------|-------|-------|-------|------------|
| Agriculture, Forestry, and Fisheries     | 2.321 | 2.272 | 2.225 | 2.240 | 2.284 | 2.269      |
| Mining and Excavation                    | 0.952 | 0.994 | 1.066 | 1.161 | 1.153 | 1.065      |
| Processing Industry                      | 0.367 | 0.390 | 0.392 | 0.384 | 0.372 | 0.381      |
Electricity and Gas Supply 1.083 1.063 1.057 1.039 1.061 1.060  
Water Supply, Waste Management, Waste and Recycling 0.734 0.770 0.771 0.779 0.769 0.765  
Construction 0.722 0.781 0.923 0.958 0.963 0.869  
Wholesale and Retail Trade, Car and Motorcycle Repair 0.898 0.927 0.927 0.926 0.927 0.921  
Transportation and Warehousing 0.211 0.208 0.208 0.199 0.198 0.205  
Accommodation and F&B 0.201 0.206 0.206 0.193 0.191 0.199  
Information and Communication 0.152 0.154 0.148 0.143 0.141 0.148  
Financial and Insurance Service 0.320 0.334 0.340 0.355 0.330 0.336  
Real Estate 1.508 1.524 1.507 1.493 1.472 1.501  
Company Services 0.442 0.443 0.441 0.411 0.405 0.428  
Government Administration, Defense, and Mandatory Social Security 0.470 0.479 0.471 0.474 0.473 0.474  
Education Services 1.628 1.732 1.722 1.722 1.724 1.706  
Health Services and Social Activities 0.594 0.605 0.599 0.587 0.576 0.592  
Other Services 0.342 0.354 0.349 0.338 0.336 0.344  

Table 1 shows that Location Quotient of the economic sector in Bolaang Mongondow Regency in 2013-2017, there are five economic sectors that are included in the base sector. The base sector itself is an economic sector that has an average LQ value > 1, which means that the economic sector in the area is more prominent than the role of the sector in the reference area. Economic sectors included in the base sector in Bolaang Mongondow Regency are the Agriculture, Forestry and Fisheries sectors with LQ value of 2.269; Education Services sector with an LQ value of 1.706; the Real Estate sector with an LQ value of 1.501; the Mining and Excavation sector with a LQ value of 1.065 and the Electricity and Gas Procurement sector with an LQ value of 1.060.

3.1.2. Shift share analysis. According to Thohir [1], Shift Share analysis is used to find out the process of economic growth of a region in relation to the economy of the reference region, which is the wider region. In this case, North Sulawesi Province is associated with the level of Bolaang Mongondow Regency. In the Shift Share analysis, it is assumed to be divided into three components of growth, namely, the National Share or Province (Province Share) growth component, the proportional growth component (Proportional Shift) or the effect of the sector growth structure and the competitive advantage component of the study area (Differential Shift). In this research, the contribution value variable, Gross Regional Domestic Product or GRDP, is used to describe economic growth in the region of Bolaang Mongondow Regency. The results of the calculation of shift-share analysis shown in table 2.
The calculation result of the shift-share value in the economic sector in the Bolaang Mongondow Regency in 2013-2017, which are listed in Table 2 shows that the GRDP sector in Bolaang Mongondow has experienced growth and development. Based on the results of the shift-share analysis shows that the total development value of the GRDP is 1003.4 Billion Rupiah or around 1,003 Trillion Rupiah. Based on the calculation of the Province Share component, in this case, the GRDP growth in North Sulawesi Province had an influence on the GRDP growth of Bolaang Mongondow Regency amounting to Rp 1,013,444,648,000. This positive value indicates that the economic growth of the Bolaang Mongondow Regency is still influenced by the economy of North Sulawesi Province.

In the second component, Proportional Shift shows that the changes in the regional economy are caused by the industrial/sectoral mix. Based on the results of this analysis show that the industrial/sectoral mix has a negative influence on the economy of Bolaang Mongondow Regency, which is equal to Rp -177,682,048,000. With this negative value indicating that the influence of the industrial/sectoral mix is not able to increase economic growth in Bolaang Mongondow Regency, it can also be said that the sectors developed in Bolaang Mongondow Regency are not in accordance with those developed in the reference area, in this case, North Sulawesi Province. This value also shows that the composition of the sector in the GRDP of Bolaang Mongondow Regency tends to lead
to an economy that will grow relatively slowly due to the influence of the industrial/sectoral mix on the economic growth of the minus-value Bolaang Mongondow Regency.

In the Proportional Shift component it is known that there are four sectors in Bolaang Mongondow Regency which are growing slower than the same sector in the North Sulawesi Province region namely the Agriculture, Forestry, and Fisheries sectors; Manufacturing Industry sector; Water Supply, Waste Management, Waste, and Recycling sector and Education Services sector. In the third component, the total of Differential Shift in Table 2 shows Rp 167,677,400,000. With this positive value, it shows that the competitive advantage obtained will enhance economic development and growth in Bolaang Mongondow Regency. The sectors that are growing faster based on their competitive advantage are the Mining and Excavation sector; Manufacturing Industry sector; water supply, waste management, waste management, and recycling; the Wholesale and Retail Trade sector, and the Repair of Cars and Motorcycles; Financial Services sector; real estate sector; the Government Administration, Defense, and Mandatory Social Security sectors and the Education Services sector.

This is consistent with the opinion of Sjafrizal [7], that if the differential shift of an industry or sector is positive, then the industry or sector is more competitive than the same industry in the economy that is used as a reference. Furthermore, the thing that will be examined in this research is the net shift. The net shift can be interpreted as the number of components of Industry Mix (Pr) and competitive advantage (Dr) or percentage (Pr) and value (Dr). Net shift with a positive value means that the growth of GRDP in the study area is classified as progressive or advanced groups. Otherwise, if the value is classified as a negative value, it means that GRDP growth in the study area is slow [10]. The level of net shift in the object of research is shown in table 2 as well as figure 1.

![Figure 1](image)

**Figure 1.** The position of each economic sector in the quadrant is based on Net Shifts.

Figure 1 shows that the growth profile of the economic sector is divided into four quadrants. Quadrant I illustrates a sector that has fast growth (progressive) with a good competitive advantage. Quadrant II illustrates fast growth (progressive) but weak in competitive advantage. Sector III represents slow growth but has a competitive advantage. Whereas quadrant IV illustrates slow and weak growth in competitive advantage. Even if compared with the results of the LQ analysis, only the Mining and Quarrying sector is classified as the base sector, while the other four sectors in I awareness are not the base sector. Mining and Excavation Sector; Construction Sector; Wholesale and retail sector; Car and Motorcycle Repair; The Financial Services and Insurance Sector and the Government Administration, Defense, and Social Security Sector are required to be in quadrant I. This shows that these sectors have progressive growth and have a competitive advantage.

In quadrant II there is the Electricity and Gas Supply sector; Transportation and Warehousing Sector; Food and Beverage Accommodation Sector Information and Communication Sector; Real
Estate Sector; Corporate Services Sector; Health Services Sector and Social Activities as well as Other Services sectors. This shows that these sectors have fast growth but a less competitive advantage. In quadrant III there is the Manufacturing Industry sector; Water Supply, Waste, Waste and Recycling Management and Education Services Sector. This shows that these sectors are classified as sectors that have a competitive advantage but do not have fast growth. The Agriculture, Forestry, and Fisheries sector itself are in quadrant IV. This shows that the sector lacks competitive competitiveness, and growth does not move rapidly. The author needs to emphasize again that the data used in determining this progressive sector refers to the GRDP data of the Bolaang Mongondow Regency and the GRDP of North Sulawesi Province.

4. Conclusion and suggestion
There are five economic sectors which are the basic sectors in Bolaang Mongondow Regeny, namely Agriculture, Forestry, and Fisheries sectors; Mining and Excavation Sector; Electricity and Gas Supply Sector, Real Estate Sector and Education Services Sector. However, only the Mining and Excavation sector has a progressive growth rate and competitive competitiveness. As for the agriculture sector position, it has a non-progressive growth rate and lacks competitive competitiveness. In addition, there are four sectors namely the Construction sector, the Wholesale Trade, and Retail sector; Car and Motorcycle Repair; The Financial Services and Insurance sectors and the Government Administration, Defense, and Social Security sectors are required to move progressively even though these sectors are not included in the base sector. The advice that can be given from the results of this study is that the Bolaang Mongondow Government is expected to pay more attention to potential sectors that have the potential to be developed and also as a material for study in making policies related to the economic sector, especially sectors that are able to move and grow progressively in 5 last year and the need for attention to the agricultural sector which still contributes greatly to the GRDP for the sake of sustainable development and is able to have a positive impact in increasing regional income.

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