



# Regional Economics Competitive Analysis of West Sulawesi Province

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**Abstract.** This study aims to determine which sectors have competitive advantages in the economy of West Sulawesi Province based on Shift Share analysis and Klassen Typology and to analyze the regional specialization of West Sulawesi Province with Regional Specialization Index analysis. The data used in this study is secondary quantitative data, namely GRDP data obtained from the Central Bureau of Statistics for the Provinces and Districts/Cities of West Sulawesi in 2010-2021. The analytical method used is Shift Share, Klassen Typology, and Regional Specialization Index. The results of this study in a comparison between Shift Share analysis and Klassen Typology, seven sectors in West Sulawesi Province have a competitive advantage and are sectors that have more significant growth and contribution than the national level, namely agriculture, forestry, and fishery sectors; sector of government administration, defense, and compulsory social security; wholesale and retail trade sector; car and motorcycle repair; education service sector; water supply sector; waste management, waste and recycling; food and drink accommodation provision sector; and the financial services and insurance sector. The seven leading sectors have yet to be able to create regional specialization in West Sulawesi Province..

**Keywords:** Leading Sectors, Regional specialization, Economic Development

## 1. Introduction

### 1.1 A Subsection Sample

The decentralization or regional autonomy model means moving most of the decision-making processes for planning, implementation, and evaluation of government from the center to the regions. With the implementation of regional government itself, it is hoped that it will also bring new nuances and a new spirit to realizing independent regional government. To achieve regional economic development goals, the central policy focuses on regional development and the suitability of regional potential. This condition is related to the very varied potential of each region, so each region must identify its leading economic sectors [Sjafrizal, 2014].

Economic growth is closely related to increased production as measured through Gross Domestic Product (GDP) at the national level and Gross Regional Domestic Product (GRDP) at the regional level, both provincial and district. These two

indicators of economic growth are indeed related. This is because national economic development will impact provincial-level economic development.

West Sulawesi is a province in Indonesia located in the western part of Sulawesi Island. West Sulawesi is famous for its Agriculture, Forestry, and Fisheries sectors and its Mining and Quarrying sectors. This province has potential, especially in the agricultural sector. The agricultural sector is considered to be able to realize food sovereignty in West Sulawesi Province. It is even planned to support the National Capital City (IKN) by becoming a supplier of food products, plantation products, suppliers of fruit, vegetables, and processed agricultural products [BPS, 2022]. This is because the agricultural sector is still the backbone of West Sulawesi's GRDP, as evidenced by data on the agricultural sector, which always grows positively in the 4-6% range.

In contrast to the previous year, the agricultural sector 2020 experienced a contraction due to the COVID-19 pandemic; growth from 4% to 6% fell to 0.54%. This also raises the question of whether this sector can still be the backbone of Sulawesi's GRDP. West. Based on this, the economic crisis resulted in changes in the formation of West Sulawesi's Gross Regional Domestic Product (GRDP). GRDP is an indicator that can be used to measure the economic growth of a region. By comparing GDP between years, economic growth is a result of economic activity over the current period in the West Sulawesi Province region.

The following is West Sulawesi Province's GDP growth rate at constant prices. The problem often faced is knowing which sectors have the potential for sound economic development. As a result, existing growth is limited to quantitative figures. It needs to provide information about economic management by prioritizing the development of leading economic sectors and how to revive economic sectors that often do not have the potential to do so.

Therefore, it is necessary to understand the underlying sectors of a region and determine whether these economic sectors have the potential for competitive advantage and can create regional specialization. This is important because an economic sector in a region whose strength or level of excellence has yet to be known will be challenging to develop. Knowing the potential level of a sector in a region will make it easier for investors to determine investment locations; the government can also take more appropriate attitudes and policies towards that sector to identify precise and targeted economic development, thus increasing growth, which will lead to regional economic development.

Economic growth is essential in analyzing economic development in a country or region [Adisasmita, 2011]. The growth rate of a region can be seen through GRDP. Economic growth is increasing per capita output in the long term. Regional growth theory was developed by Solow-Swan (1980), [Tarigan, 2005]; the theory explains that regional economic growth is based on population growth, capital accumulation, technological progress, and the size of output interacting.

A region can be analyzed using regional growth theory. As an open economic system, a region is interconnected with other regions by moving production factors and commodities. Development in one region can influence the growth of other regions through the form of sector demand for other regions, which can encourage

development in that region, or it could be said that economic development in other regions will reduce the level of economic activity in a region and its interrelationships.

Regional growth is an increase in overall community income that occurs in a region. The income of a region describes the remuneration that occurs in a region so that it shows the prosperity of that region. Adam Smith [Boediono, 1985, ] stated that economic growth is influenced by capital accumulation. This capital accumulation directly affects the output level, where additional capital will increase the output amount and indirectly increase per capita productivity through higher work specialization. So, an area that has a specialized sector will accelerate the growth of that area.

The economic potential of a region can be known through identifying the superiority of the region's sectors. Sectors that have advantages have good prospects for development. Moreover, it can encourage other sectors to develop. Tumenggung [1996] said that a leading sector is a sector that has comparative advantages and competitive advantages compared to similar sectors from other regions. This differs from Mawardi [1997], who defines a superior sector as a sector with significant added value to other economies and high demand in local and international markets.

According to Richardson (1973) in Arsyad [1999], a primary factor in regional economic growth is the demand for goods and services outside the region. This theory assumes that local resources such as labor and raw materials will be channeled to other regions, resulting in increased regional economic growth and job creation. This assumption provides the understanding that a region will have a superior sector if the region has a sector that wins competition in the same sector as other regions, thus creating demand for a commodity [Suyatno, 2000].

Competitive advantage shows the region's ability to market its products outside the region. Competitive advantage is the competitiveness of one region's economic activities against economic activities in other regions. Competitive advantage reflects the superiority of one region's economic growth over other regions. In realizing accelerated economic growth in a region, each regional government has made various efforts to encourage economic sector development, especially sector specialization in each region. Regional specialization will occur if economic activities are concentrated or prioritized in developing an economic sector through policies that support the progress of that sector [Razak, *et al.* 2020]. Development of these priority sectors can be carried out through investment and increasing human resources in these sectors.

## 2. Study Methodology

This research tries to analyze the economic sector and the competitiveness of economic sectors in West Sulawesi Province and determine the leading sectors in West Sulawesi Province to be prioritized in regional development. The data used in this research is Gross Regional Domestic Product (GRDP) based on constant prices according to business fields in 2010-2021 in West Sulawesi Province.

The data used in this research is secondary data, which is quantitative in the form of numbers. The data source in this research was obtained from the Central Statistics

Agency of West Sulawesi Province. The data used is National GDP and GRDP according to business fields in West Sulawesi Province.

This research uses the Shift share analysis method, Klassen Typology, and Regional Specialization Analysis. Shift share analysis can describe the performance of sectors in a region compared to the national economy's performance. Shift share analysis is used to analyze shifts and the role of economic sectors in a region. This method used to observe the economic structure and its shifts by emphasizing the growth of economic sectors in regions that are compared with similar sectors at higher regional levels. This method compares the growth rate of sectors in a region with the growth rate of national economic sectors and observes deviations from these comparisons. If the deviation is positive, it is called the competitive advantage of a sector in that region. [Soepono, 1993]

According to Soepono [Abidin, 2015], the general form of the equation for Shift-Share Analysis and its components is as follows:

$$D_{ij} = N_{ij} + M_{ij} + C_{ij} \quad (1)$$

Information :

$i$  = economic sector studied

$j$  = regional area studied (West Sulawesi Province)

$D_{ij}$  = Change in GDP in sector  $i$  in the Province

$N_{ij}$  = National growth of sector  $i$  in the Province

$M_{ij}$  = Industrial Mix of sector  $i$ .

$C_{ij}$  = Competitive advantage of sector  $i$  in the Province

In this research, the regional variable used is GRDP, denoted as ( $E$ ). Changes in a regional variable for a sector in a particular region are also changes between GRDP in the final year of analysis and GRDP in the base year. So Equation above can be formulated as follows:

$$D_{ij} = E_{ij} \dot{r}_{ij} - E_{ij} \quad (2)$$

$$N_{ij} = E_{ij} \dot{r}_n \quad (3)$$

$$M_{ij} = E_{ij} (r_{ij} - r_n) \quad (4)$$

$$C_{ij} = E_{ij} (r_{ij} - r_{ij}) \quad (5)$$

Information:

$E_{ij}$  = GDP sector  $i$  in Prov. West Sulawesi in the base year

$E_{ij} \dot{r}_{ij}$  = GDP sector  $i$  in Prov. West Sulawesi at the end of the analysis year

$n$  = Region / reference area (National)

$r_{ij}$  = GDP growth rate of sector  $i$  in Prov. West Sulawesi

$r_i$  = GDP growth rate in sector i at the national level

$r_n$  = Total GDP growth rate for all sectors at the national level.

Each growth rate can be defined as follows:

$$r_{ij} = \frac{E_i \dot{r}_{ij} E_{ij}}{E_{ij}} \quad (6)$$

$$r_i = \frac{E_i \dot{r}_i E_i}{E_i} \quad (7)$$

$$r_n = \frac{E_n \dot{r}_n E_n}{E_n} \quad (8)$$

Information:

$E_i$  = GDP of sector i at the National level in the base year

$E_i \dot{r}_i$  = GDP of sector i at the National level at the end of the analysis year

$E_n$  = Total GDP of all sectors at the National level in the base year

$E_n \dot{r}_n$  = Total GRDP of all sectors at the National level at the end of the analysis year

For a region, national growth, industrial mix, and competitive advantage can be determined for a sector (i) or summed for all sectors as a whole region. So equation (1) can be explained as follows:

$$D_{ij} = E_{ij}(r_n) + E_{ij}(r_i - r_n) + E_{ij}(r_{ij} - r_i) \quad (9)$$

This analysis looks at the economy of a region which can be decomposed into three parts, namely [Stough & Roberts, 2002]:

1. Regional Share (Nij): the element of regional economic growth caused by an increase in regional economic activity due to national policies that apply to all regions and can also occur due to economic encouragement of trade with neighboring regions. Alternatively, it could also be called an element of economic growth caused by external factors.
2. Proportional Shift (Mij): Namely, the element of economic growth specializes in sectors proliferating nationally. This economic growth is also known as the element of growth caused by a relatively good regional economic structure originating from within the region itself.
3. Differential Shift (Cij): elements of regional economic growth can increase export growth because the region concerned has a competitive nature caused by specific conditions in that region.

From these three elements, which growth elements have driven regional growth can be seen. Each element can be negative or positive; the total will always be positive if economic growth is positive and vice versa. The total will always be negative if economic growth is also harmful.

*Klassen Typology Analysis* is an analytical tool used to determine the description of the pattern and structure of economic growth in each region [Sjafrizal, 2008] The Klassen typology divides regions based on two leading indicators: regional economic growth and regional per capita income. The observed area can be divided into four classifications by determining the average economic growth as the vertical axis and the average per capita income as the horizontal axis.

**Table 1.** Classification of Klassen Typology

<b>Quadrant I</b>	<b>Quadrant II</b>
A sector that is advanced and growing rapidly (developed sector) $s_i > s$ and $s_{ki} > s_k$	Advanced but depressed sector (stagnant sector) $s_i < s$ and $s > s_k$
<b>Quadrant III</b>	<b>Quadrant IV</b>
Potential sector or still able to develop (developing sector) $s_i > s$ and $s_{ki} < s_k$	Relatively underdeveloped sector $s_i < s$ and $s_{ki} < s_k$

Information :

Quadrant I = Advanced Sector:  $s_i > s$  and  $s_{ki} > s_k$

Quadrant II = Advanced but depressed sector  $s_i < s$  and  $s > s_k$

Quadrant III = Potential sector  $s_i > s$  and  $s_{ki} < s_k$

Quadrant IV = Relatively Underdeveloped Sectors  $s_i < s$  and  $s_{ki} < s_k$  Where:

$s_i$  = Growth rate of a particular sector in GRDP

$s$  = Growth rate of GRDP sector

$s_{ki}$  = Sector contribution value to GRDP

$s_k$  = Regional contribution

The regional specialization index is an analytical tool used to determine the level of specialization between one region and other regions in an economic system. Regional specialization analysis was carried out using the Krugman specialization index model in Razak [2009] with the following calculation formula:

Displayed equations are centered and set on a separate line.

$$SI_{jk} = \sum_{i=1}^n \left[ \frac{E_{ij}}{E_j} - \frac{E_{ik}}{E_{jk}} \right] \quad (10)$$

Information:

$SI_{jk}$  = Specialization index of district/city j and k

$E_{ij}$  = GDP of sector i in district/city j

$E_j$  = Total GRDP of district/city j

$E_{ik}$  = GRDP of Sector i in district/city k  $E_k$  = Total GRDP of district/city k

The measurement criterion is that if the regional specialization index is near zero, then regions j and k have no specialization. If the regional specialization index is  $> 1$  or close to 2, then regions j and k have Specialization. The average value of the specialization index for all regions is used to see the level of Specialization of one region compared to other regions.

**Table 2.** Results of West Sulawesi Province GRDP Shift Share Analysis of West Sulawesi GRDP 2010-2021 (in million rupiah)

Business field	Changes in GRDP of SUL-BAR	Components of Change			
		Nij	Mij	Cij	Nett Shift
Agriculture, Forestry and Fisheries	5.420.182,59	4.464.482,8	2.089.967,6	1.915.460,8	8.469.911,3
Mining and excavation	433.024,36	205.501,6	29.752,6	383.131,4	618.385,7
Manufacturing Industri	2.109.947,81	892.728,4	455.617,7	1.345.910,3	2.694.256,5
Procurement of Electricity and Gas	17.582,32	5.111,5	2.981,1	12.583,1	20.675,8
Water Supply; Waste, Waste and Recycling Management	37.037,73	13.651,6	9.501,8	21.103,7	44.257,3
Construction	1.260.532,39	782.330,9	593.528,4	265.228,8	1.641.088,2
Wholesale and Retail Trade; Car and Motorcycle Repair	1.422.100,85	1.078.435,5	614.318,3	391.934,2	2.084.688,1
Transportation and Warehousing	192.084,95	180.655,9	118.396,8	-6.457	292.594,9
Provision of accommodation and food and drink	37.583,49	24.797,7	13.678,1	14.646,2	53.122,1
Information and Communication	1.041.116,39	433.672,6	745.933,2	-209758	969.847,2
Financial Services and Insurance	463.168,83	187.166,6	175.597,4	168.704,8	531.468,9
Real Estates	331.956,97	349.136,5	237.913,4	-67006	520.043,6
Company Services	10.881,99	9.435,04	9.333,7	-4.769	13.998,7
Government administration, Defense, and Mandatory Social Security	1.394.475,27	729.771,1	293.957,03	901.530,9	1.925.259,1
Educational Services	821.587,55	498.230,4	368.546,6	203.562,04	1.070.339,1

Health Services and Social Activities	377.827,42	188.987,8	257.863,06	-5.4589	392.260,9
Other Services	319.703,00	203.122,5	200.410,9	-16.371	387.162,06
Total	15.690.793,91	10.247.219,3	6217.298,4	5.264.842,5	21.729.360,2

Source: Provincial GDP and GRDP. West Sulawesi (data processed)

Based on the results of the Shift Share analysis calculations above, which sectors have competitive advantages in West Sulawesi Province can be seen. By looking at the positive shift differential, eleven sectors have competitive advantages in the following order:

(1) agriculture, forestry and fisheries; (2) processing industry; (3) government administration, defense and mandatory social security; (4) wholesale and retail trade, car and motorbike repairs; (5) mining and quarrying (6) construction; (7) education/education services; (8) financial and insurance services; (9) water supply; waste, waste, and recycling management; (10) provision of food and drink accommodation; (11) electricity and gas procurement.

The results of the West Sulawesi Province Klassen Typology analysis can be seen in the table following:

**Table 3.** Classification of Economic Sectors in West Sulawesi Province 2010-2021 According to Klassen Typology

Klassen Typology	Sectoral Growth Rate	
Sectoral Contribution Rate	<b>Quadrant I (Advance and grow rapidly)</b> 1. Agriculture, Forestry and Fisheries 2. Water Supply, Waste Management, Waste and Recycling 3. Wholesale and Retail Trade; Car and Motorcycle Repair 4. Provision of accommodation and food and drink 5. Financial Services and Insurance 6. Government Administration, Defense and Mandatory Social Security 7. Education Services	<b>Quadrant II (Advanced but depressed)</b>



	<b>Quadrant III (Potential/can still develop rapidly)</b> 1. Mining and Quarrying 2. Processing Industry 3. Procurement of Electricity and Gas 4. Construction 5. Health Services and Social Activities 6. Other services	<b>Quadrant IV (Underdeveloped)</b> 1. Transportation and Warehousing 2. Information and Communication 3. Real Estate 4. Company Services
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Source: BPS, data processed.

Based on the table above, the economic sectors of West Sulawesi Province which have a growth rate and have a more significant contribution than the national level are the agriculture, forestry, and fisheries sectors; water supply, waste management, waste, and recycling sectors; wholesale and retail trade sector; car and motorbike repair; accommodation and food and drink provision sector; financial services and insurance sector; government administration, defense and mandatory social security sectors; and the educational services sector.

From the results of the analysis of the specialization index for districts/cities in West Sulawesi Province in 2021, which can be seen in the table below, it is known that the average value for each region is relatively low because the value is below one or the middle limit for the specialization index.

**Table 4.** District/City Specialization Index in West Sulawesi Province, 2021

Area	Mamuju	Majene	Mamuju Tengah	Mamasa	Pasangkayu	Polewali Mandar	Average
Mamuju	0	0.199	0.875	0.234	0.649	0.325	0.380
Majene		0.199	0.875	0.234	0.649	0.325	0.380
Mamuju Tengah		0	0.774	0.161	0.622	0.235	0.332
Mamasa			0	0.811	0.621	0.685	0.628
Pasangkayu				0	0.634	0.293	0.356
Polewali Mandar					0	0.538	0.511

Source: BPS in West Sulawesi Province, processed

Based on the results of the Regional Specialization Index analysis, it can be seen that every Regency/City in West Sulawesi Province has a Specialization Index value of less than one in every sector of the economy. This indicates that the economy in West Sulawesi Province does not have specialization. This is because the economic structure of all regencies/cities in West Sulawesi Province is relatively

dominated by the agriculture, forestry and fisheries sectors in forming the GRDP of each region.

### 3. Conclusion

1. Based on the research that has been carried out, the following conclusions can be drawn
2. Based on the results of the Klassen Typology analysis, sectors are classified in quadrant I or sectors that have more significant growth than growth at the national level and have a more significant contribution than the contribution at the national level. The sectors included in this quadrant are the agriculture, forestry, and fisheries sectors; water supply, waste management, waste, and recycling sectors; wholesale and retail trade sector; car and motorbike repair; accommodation and food and drink provision sector; financial services and insurance sector; government administration, defense, and mandatory social security sectors; and the educational services sector.
3. Based on the results of the comparison between Shift Share analysis and Klassen Typology, seven sectors in West Sulawesi Province have competitive advantages and are sectors that have more significant growth and contribution than the national level, namely agriculture, forestry, and fisheries sectors: government administration, defense and mandatory social security sectors; wholesale and retail trade sector; car and motorbike repair; education services sector; water supply sector; waste, waste and recycling management; food and drink accommodation provision sector; and the financial services and insurance sector.
4. Based on the Regional Specialization Index analysis results, each Regency/City in West Sulawesi Province has a specialization index value of less than one in each economic sector. This indicates that the economy in West Sulawesi Province needs to be specialized. This is because the economic structure of all districts/cities in West Sulawesi Province is relatively equally dominated by the agricultural, forestry, and fisheries sectors in forming the GRDP of each region.
5. Based on the Shift Share and Klassen Typology analysis results, compared with the Regional Specialization Index analysis, these seven superior sectors have yet to create regional specialization in West Sulawesi Province. This is because a region with many leading sectors may only sometimes be able to create regional specialization in that regional specialization in West Sulawesi Province. This is because a region with many leading sectors may only sometimes be able to create regional specialization in that region.

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