

Analysis of Leading Sectors in Padang Pariaman District and West Sumatra Province Using Methods (DLQ, SLQ, and Shift Share)

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Abstract

The current complex regional development has encouraged intense competition between regions. To improve people's welfare, local governments need to increase the competitiveness of their regions. The measure of measuring regional economic growth is known as the Gross Regional Domestic Product (GDP). The purpose of the research conducted by the current author is to measure differences in the development of economic growth in the province of West Sumatra and the districts/cities of West Pasaman using the SLQ & DLQ analytical method, analysis shift shares. This study uses a quantitative descriptive approach. The data used are secondary data, namely research data obtained from the Central Statistics Agency (BPS) of West Sumatra Province and West Pasaman Regency/City in the form of Gross Regional Domestic Product (GRDP) data on the basis of constant prices (ADHK). The data used are 2018 & 2022, namely research by analyzing the data tested statistically and interpreting them in the form of descriptive sentences. Results from SLQ & DLQ analysts Based on the combined results of SLQ and DLQ analysis during the 2018 & 2022 observation period, the DLQ value > 1. This means that almost all economic sectors have the potential for faster development, and other economic sectors have a DLQ <1, which means that a commodity or sector with a score less than one is not a regional leading sector and still needs special attention for development.

Keywords: Leading Sector, Location Quotient, Shift Share

INTRODUCTION

Increasingly complex regional development in the current era of regional autonomy has resulted in increasingly tight competition between regions. In order for community welfare to remain stable and even increase, regional governments must increase their regional competitiveness. So that regional development is more focused, one effort that can be made is to detect regional superior sectors.

Regional economic growth is the process of increasing overall community income that occurs in the region, namely an increase in all added value that occurs. Economic growth is an indicator of social welfare. In general, regional economic growth can be seen from the size of the Gross Regional Domestic Product (GRDP) produced by the region. Apart from that, through Gross Regional Domestic Product (GRDP) it can also be seen to what extent the influence of each economic sector has on regional economic growth. To calculate regional income, it is first made at current prices. However, to know the increase from one period to the next, it must be expressed in real values, namely at constant prices. Tarigan (2005:46).

Each region has its own differences, both differences in characteristics and existing potential. This can shape the structure of the regional economy. The magnitude of the contribution of each economic sector can indicate the structure of the regional economy. By knowing the economic structure, economic development can be carried out in accordance with the potential of the region. Economic development is said to be successful if the role of the processing industrial sector continues to increase over time, both in the production structure and Gross Domestic Product (GDP) as well as in the export structure. (Winoto, 1996).

Sambodo in (Takalumang et al., 2018) stated that the leading sector, namely the sector that has a large contribution and is able to influence the regional economy, is a sector that must be utilized well. An economic sector that can produce goods or services with high demand, adapt to technological advances, and influence surrounding sectors through its contribution to investment and regional development makes a significant contribution to the value of regional GDP, so that it is able to maintain its title. as a leading economic sector

(Biky, 2019). Under these conditions, the leading economic sector will ultimately make the largest contribution to the overall GRDP value.

West Sumatra Province is one of the provinces in Indonesia which is located on the island of Sumatra which consists of 12 districts and 7 municipalities which have differences in each region. The difference lies in terms of geography and the potential natural resources found in each area. This has a big influence on the pattern of economic development in West Sumatra Province

In 2017 Tuandali, Engka, and Wauran conducted research entitled analysis of shifts in economic structure and leading sectors of North Halmahera Regency, North Maluku Province for the period 2010-2014, where the aim of the research was to determine shifts in economic structure. and the leading sectors of North Halmahera Regency. The research used location quotient (LQ) and shift share (SS) analysis, the results obtained were that the leading sectors according to the criteria included advanced and developing sectors, and the basic sectors, namely electricity, gas and clean water. sector, water supply sector, waste management, waste and recycling, construction sector, wholesale and retail trade sector; car and motorbike repair sector, transportation and warehousing sector, accommodation and food and drink provision sector, information and communication sector, financial services and insurance sector, real estate sector, corporate services sector, government administration sector, defense and mandatory social security sectors, and the health services sector and social activities as well as the mining and quarrying sector. Pada tahun 2016 Triwisnu melakukan penelitian tentang pertumbuhan ekonomi dan penentuan sektor unggulan di Provinsi Jawa Timur tahun 2010-2014.

In this research it can be concluded that there are two areas in East Java which are included in the fast developing category, namely Banyuwangi Regency and Probolinggo City. The lagging categories are Probolinggo Regency, Jember Regency and Situbondo Regency. The fast growing category is in Bondowoso Regency. Meanwhile, the advanced distressed category is in Lumajang Regency. Based on the Location Quotient (LQ) and Dynamic Location Quotient (DLQ), there is a sector that has the greatest contribution, namely the City of Probolinggo which is classified as a fast growing sector.

Research Purposes

The aim of the research carried out by the author at this time is to measure differences in the development of economic growth in West Sumatra Province and districts/cities in West Sumatra Province in West Sumatra Province using the SLQ, DLQ, shift share methods to determine economic growth and development.

Theoretical Basis

Statistical Location Question (SLQ) is an index used to measure whether a sector is a leading sector (basic sector) or not for a region. This approach requires data sourced from Gross Regional Domestic Product (GRDP), both at the district and provincial levels. Dynamic Location Quotient (DLQ) is a modification of SLQ, by accommodating economic sector output growth rate factors over time.

Shift share analysis is a very useful technique in analyzing changes in the structure of the regional economy compared to the national economy. This analysis aims to determine the performance or work productivity of the regional economy by comparing it with larger regions (regional/national). This analysis provides data on economic performance. Formula regarding shift share analysis

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

Where :

D_{ij} = Change in GDP in sector/subsector i in the area (district).

N_{ij} = Change in GDP of sector/subsector i in the observed area (district) caused by the influence of economic growth in the reference area (province or national)

M_{ij} = Change in GDP of sector/subsector i in the observation area (district) caused by the influence of growth in sector i in the reference area (province or national)

C_{ij} = Change in GRDP of sector/subsector i in the observed area (district) caused by the competitive advantage of sector i in the observed area (district)

To calculate the components N_{ij} , M_{ij} , and C_{ij} can be calculated using the formula:

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

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

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

Where :

E_{ij} = GRDP of sector/subsector i in the observation area (district) in the initial year of analysis
 E_{in} = GRDP of sector/subsector i in the reference area (province or national)

E_n = total GRDP in the reference area (provincial or national) in the initial year of analysis

$E_{ij,t}$ = GRDP of sector/subsector i in the observed area (district) in the final year of analysis

$E_{in,t}$ = GRDP of sector/subsector i in the reference area (provincial or national) in the final year of analysis

$E_{n,t}$ = reference total GRDP (provincial or national) in the final year of analysis

From the theory described above, it can be concluded that regional economic development can be done by improving regional leading sectors first so as to encourage other sectors.

Development planning can be said to be very synonymous with economic development. If only the economic development space tries to find development strategies, development planning is a powerful tool for translating development strategies into various coordinated activity programs. This coordination is necessary so that the goals, both economic and social, that have been determined are achieved more efficiently.

METHOD

This research uses a quantitative descriptive approach. The data used is secondary data, namely research data obtained from the Central Statistics Agency (BPS) of West Sumatra Province and West Pasaman Regency/City in the form of Gross Regional Domestic Product (GRDP) data at constant prices (ADHK) of West Sumatra Province and Regency/City Padang Pariaman.

The data used is 2018 and 2022, namely research that describes in general by analyzing the data tested statistically and interpreting it in the form of descriptive sentences. Determine sectoral, subsectoral and leading economic sector economic growth in West Sumatra Province with Padangang Pariaman Regency/City. With Location Quotient (LQ) analysis which consists of Static Location Quotient (SLQ) and Dynamic Location Quotient (DLQ) as well as Shift Share (SS) analysis.

Tabel 1. Research variable

NO	Economic Sector/Research variables
1	Agriculture, Forestry and Fisheries
2	Mining and excavation
3	Processing industry
4	Procurement of Electricity and Gas
5	Water Procurement, Waste Management, Waste and Recycling
6	Construction
7	Wholesale and Retail Trade; Car and Motorcycle Repair
8	Transportation and Warehousing
9	Provision of accommodation and food and drink
10	Information and Communication
11	Financial Services and Assurance
12	Real Estate
13	Company Services
14	Government Administration, Defense and Mandatory Social Security
15	Education Services
16	Health Services and Social Activities
17	Other services

Source: Central Statistics Agency (CSA).

Table 2. Gross Regional Domestic Product of Bitung City at Constant Prices

Economic structure			
West Sumatera Province		Padang Pariaman Regency	
2018	2022	2018	2022
36612272,53	40189080.98	2670435,17	3039937,03
6705049,43	7038276.95	747407,18	833220,39
16445055,91	16917966.18	1602162,49	1719560,39
175080,06	181007.39	3952,99	4127,9
160240,92	185320.89	6516.44.00	7855,68
15066989,63	16607627.06	1071618,69	1201758,21
25985871,63	30577856.90	1281797,48	1503621,95
19975310,85	19030284.48	3165014,46	1688535,92
1832878,56	2037909.66	107362,02	153890,53
11728422,78	15902746.16	525445,78	713482,6
4665415,8	5482903.87	193816,91	232656,99
3166853,19	3671085.25	128640,18	149312,63
722425,15	799636.39	10727,71	12190,96
9175850,47	9927919.90	646919,82	695869,32
6382703,06	7746797.40	614735,76	776999,05
2311450,41	2994266.46	80361,14	106346,37
2883397,98	3338856.59	164973,57	198208,54

Source: Central Statistics Agency (CSA) 2018 & 2022.

RESULTS AND DISCUSSION

Analysis Static Location Quotient (SLQ)

SLQ is an initial analysis to detect the leading economic sectors in a region at a certain point in time. SLQ analysis provides an overview of the differences in the competitiveness of an economic sector in Padang Pariaman Regency with the competitiveness of similar sectors in West Sumatra Province.

Table 3. Results of SLQ Analysis of the Parimanan Regency Economic Sector

Category	Business field	2018	2022
A	Agriculture, Forestry and Fisheries	0,07	0,08
B	Mining and excavation	0,11	0,12
C	Processing industry	0,10	0,10
D	Procurement of Electricity and Gas	0,02	0,02
E	Water Supply, Waste Management, Waste and Recycling	0,00	0,04
F	Construction	0,07	0,07
G	Wholesale and Retail Trade; Car and Motorcycle Repair	0,05	0,05
H	Transportation and Warehousing	0,16	0,09
I	Provision of accommodation and food and drink	0,06	0,08
J	Information and Communication	0,04	0,04
K	Financial Services and Insurance	0,04	0,04
L	Real Estate	0,04	0,04
M,N	Company Services	0,01	0,02
O	Government Administration, Defense and Mandatory Social Security	0,07	0,07
P	Education Services	0,10	0,10
Q	Health Services and Social Activities	0,03	0,04
R,S,T,U	Other Services	0,06	0,06

Source: Data processing results

Based on the results of the SLQ analysis presented in Table 3, it is known that the SLQ value during the observation years 2018 and 2022 is $SLQ < 1$, meaning it has lower competitiveness in the industrial sector.

Analysis Dynamic Location Quotient (DLQ)

DLQ is an index that shows the level of growth of the economic sector in a region over a certain period of time. DLQ is used to complement the weakness of DLQ which can only describe whether an economic sector is superior or not at one point in time.

Table 4. Results of DLQ Analysis for Padang Pariaman Regency

Kategori	Business field	2018	2022
A	Agriculture, Forestry and Fisheries	0,96	1,00
B	Mining and excavation	2,75	1,00
C	Processing industry	0,56	1,00
D	Procurement of Electricity and Gas	1,18	1,00
E	Water Supply, Waste Management, Waste and Recycling	0,89	1,00
F	Construction	2,71	1,00
G	Wholesale and Retail Trade; Car and Motorcycle Repair	1,00	1,00
H	Transportation and Warehousing	0,89	1,00
I	Provision of accommodation and food and drink	0,49	1,00
J	Information and Communication	1,02	1,00
K	Financial Services and Insurance	1,40	1,00
L	Real Estate	0,36	1,00
M,N	Company Services	0,66	1,00
O	Government Administration, Defense and Mandatory Social Security	3,61	1,00
P	Education Services	1,47	1,00
Q	Health Services and Social Activities	1,46	1,00
R,S,T,U	Other Services	0,49	1,00

Source: Data processing results

Based on the results of the DLQ analysis presented in Table 4, it is known that only the Processing Industry sector has a DLQ value > 1 . This means that almost all economic sectors in Padang Pariaman Regency have the potential to develop more quickly, and other economic sectors in Padang Pariaman Regency have DLQ values < 1 , which means that a commodity or sector with a score of less than one is a non-basic sector or not a regional leading sector and still requires special attention for its development.

If $LQ > 1$, then the sector is a base sector and if $LQ < 1$, then the sector is a non-base sector. The LQ formulation structure provides the following values:

$SLQ > 1$ = means that the growth rate of commodities in the study area is greater than the growth rate of the same commodity in the economy of the reference area. Thus, this commodity is a basic commodity for further development by the study area.

$SLQ = 1$: This means that the growth rate of commodities in the study area is the same as the growth rate of the same commodity in the economy of the reference area.

$SLQ < 1$: meaning that the growth rate of commodities in the study area is smaller than the growth rate of the same commodity in the economy of the reference area.

Matriks Gabungan SLQ dan DLQ

After having the SLQ and DLQ index values, the next step is to classify the 17 economic sectors in Padang Pariaman Regency into a four-quadrant matrix based on a combination of these two indices.

Formulas regarding SLQ and DLQ

$$SLQ = \frac{Vik/VIP}{vk/VK} \quad DLQ = \left(\frac{1+gij}{1+Gi} \right) / \left(\frac{1+gj}{1+G} \right)^t$$

Information :

Vik = GRDP based on constant 2010 sector prices in West Sumatra Province

Vk = Total GRDP based on constant 2010 sector prices in West Sumatra Province

Vip = GDP at constant 2010 sector prices at National

VP = Total GDP at constant 2010 sector prices at National

gij = Sector growth rate in South Sumatra Province

Gi = Average growth rate of all sectors in West Sumatra Province

gj = National sector growth rate

G = Average growth rate of all subsectors nationally

t = Research time period

The form of the four quadrant matrix combined SLQ and DLQ can be seen in Table 5 below.

Table 5. Combined SLQ and DLQ

Kriteria	DLQi>1	DLQi<1
SLQi>1	superior	develop
SLQi<1	potency	left behind
	B, Mining and Quarrying D, Procurement of Electricity and Gas F, Construction G, Wholesale and Retail Trade; Car and Motorcycle Repair J, Information and Communication K, Financial Services and Insurance O, Government Administration, Defense and Mandatory Social Security P, Education Services Q, Health Services and Social Activities	A, Agriculture, Forestry and Fisheries C, Processing Industry E, Water Supply, Waste Management, Waste and Recycling H, Transportation and Warehousing I, Provision of Accommodation and Food and Drink L, Real Estate M,N Corporate Services R,S,T,U Other Services

Source: Data processing results

Based on the results of the combined SLQ and DLQ analysis during the 2018 & 2022 period which are presented in Table 5, the economic sector in Padang Pariaman district has potential sectors with SLQ<1 and DLQ>1, namely Mining and Quarrying, Procurement of Electricity and Gas, Construction, Wholesale Trade and Retail; Car and Motorcycle Repair, Information and Communication, Financial Services and Insurance, Government Administration, Defense and Mandatory Social Security, Education Services, Health Services and Social Activities and there are also sectors that are lagging behind SLQ<1 and DLQ<1. namely the Department of Agriculture, Forestry and Fisheries, Processing Industry, Water Supply, Waste Management, Waste and Recycling, Transportation and Warehousing, Provision of Accommodation and Food and Drink, Real Estate, Corporate Services and Other Services.

Analysis Shift Share (SS)

Shift Share (SS) analysis is a technique used to analyze the development of a region's economic sector relative to other sectors in a reference region. This analysis compares differences in growth levels and competitiveness of various sectors in Padang Pariaman Regency and West Sumatra Province.

Table 6. Analysis of shift share

Sector	Proportional Shift (PS)	Differential Shift (DS)	Sector Type
Agriculture, Forestry and Fisheries	-42547,12	108615,70	Potensial
Mining and excavation	-47780,92	48668,57	Potensial
Processing industry	-135975,39	71324,53	Potensial
Procurement of Electricity and Gas	-315,34	41,08	Potensial
Water Procurement, Waste Management, Waste and Recycling	11,65	7541,65	Superior
Construction	-12189,02	20563,82	Potensial
Wholesale and Retail Trade; Car and Motorcycle Repair	80860,84	-4683,04	Develop
Transportation and warehousing	-509366,73	-1326742,59	Left behind
Provision of accommodation and food and drink	-189,39	34518,68	Potensial
Information and Communication	127309,34	1022,71	Superior
Financial Services and Assurance	11938,36	4878,90	Superior
Real Estate	5865,34	190,13	Superior
Company Services	-72,40	316,70	Potensial
Government Administration, Defense and Mandatory Social Security	-20484,77	-4073,23	Develop
Education Services	61529,17	30883,60	Superior
Health Services and Social Activities	14607,97	2246,08	Superior
Other services	7313,62	7175,91	Superior

Sumber: Hasil olah data

Based on the results of Table 5 above, it can be concluded from the Shift share analysis in 2018 & 2022 that the sectors included in the leading sectors can be described:

- Water management, waste management and recycling.
- Information and communication.
- Financial and insurance services.
- Real Estate.
- Educational services
- Health services and insurance activities.
- Other services

Growing sectors:

- Wholesale and Retail Trade; Car and Motorcycle Repair
- Government Administration, Defense and Mandatory Social Security

Potensial Sectors:

- Agriculture, forestry and fisheries
- Mining and excavation
- Electricity and Gas Procurement Processing Industry
- Construction
- Provision of accommodation and food and drink
- Company Services

Lagging Sectors:

- Transportation and Warehousing

Table 7. Discussion Results

No.	Business field	N	M	C	D
		$E_{ij} * r_n$	$E_{ij} * (r_n - r_n)$	$C'_{ij} + A'_{ij}$	Total
1.	Agriculture, Forestry and Fisheries	303.433,27	-42547,12	108615,70	369.501,86
2.	Mining and excavation	84.925,56	-47780,92	48668,57	85.813,21
3.	Processing industry	182.048,76	-135975,39	71324,53	117.397,90
4.	Procurement of Electricity and Gas	449,17	-315,34	41,08	174,91
5.	Water Procurement, Waste Management, Waste and Recycling	30,85	11,65	7541,65	7.584,15
6.	Construction	121.764,71	-12189,02	20563,82	130.139,52
7.	Wholesale and Retail Trade; Car and Motorcycle Repair	145.646,68	80860,84	-4683,04	221.824,47
8.	Transportation and Warehousing	359.630,79	-509366,73	-1326742,59	(1.476.478,54)
9.	Provision of accommodation and food and drink	12.199,21	-189,39	34518,68	46.528,51
10.	Information and Communication	59.704,78	127309,34	1022,71	188.036,82
11.	Financial Services and Assurance	22.022,81	11938,36	4878,90	38.840,08
12.	Real Estate	14.616,99	5865,34	190,13	20.672,45
13.	Company Services	1.218,96	-72,40	316,70	1.463,25
14.	Government Administration, Defense and Mandatory Social Security	73.507,49	-20484,77	-4073,23	48.949,50
15.	Education Services	69.850,52	61529,17	30883,60	162.263,29
16.	Health Services and Social Activities	9.131,19	14607,97	2246,08	25.985,23
17.	Other services	18.745,44	7313,62	7175,91	33.234,97

Source: Data processing results

From the results of the calculation above, based on the M_{ij} value of each business sector, it is known that there are 11 (eleven) of the 17 (seventeen) business sectors, namely: Water Supply, Waste Management, Waste and Recycling, Construction, Transportation and Warehousing, Accommodation Provision and Food and Drink, Information and Communication, Financial Services and Insurance, Real Estate, Company Services, Education Services, Health Services and Social Activities and Other Services are positive, meaning that the business sector is experiencing rapid growth, and the impact on regional income is positive.

It can be assumed that Padang Pariaman Regency's income will grow above the growth of West Sumatra Province. Furthermore, by identifying business fields in the C_{ij} calculation, the result is that all business fields have positive values. The next step is to calculate the net shift (net shift) to identify developed and less developed sectors (see table above), which is taken from the $M_{ij} + C_{ij}$ value. The results of the study show that all business fields have a positive sign, meaning that all business fields are advanced and those with a negative sign are leading sectors in the region and still need special attention for their development.

CONCLUSION

Regional economic growth is the process of increasing overall community income that occurs in the region, namely an increase in all added value that occurs. Economic growth is an indicator of social welfare. In general, regional economic growth can be seen from the size of the Gross Regional Domestic Product (GRDP) produced by the region. Apart from that, through Gross Regional Domestic Product (GRDP) it can also be seen to what extent the influence of each economic sector has on regional economic growth.

The aim of the research carried out by the author at this time is to measure differences in the development of economic growth in West Sumatra Province and districts/cities in West Sumatra Province in West Sumatra Province using the SLQ, DLQ, shift share methods to determine economic growth and development

The data used is 2018 and 2022, namely research that describes in general by analyzing the data tested statistically and interpreting it in the form of descriptive sentences. Determine sectoral, subsectoral and leading economic sector economic growth in West Sumatra Province with Padang Pariaman Regency/City. With Location Quotient (LQ) analysis which consists of Static Location Quotient (SLQ) and Dynamic Location Quotient (DLQ) as well as Shift Share (SS) analysis.

Based on the results of the combined SLQ and DLQ analysis during the 2018 & 2022 period which are presented in Table 5, the economic sector in Padang Pariaman district has potential sectors with $SLQ < 1$ and $DLQ > 1$, namely Mining and Quarrying, Procurement of Electricity and Gas, Construction, Wholesale Trade and Retail; Car and Motorcycle Repair, Information and Communication, Financial Services and Insurance, Government Administration, Defense and Mandatory Social Security, Education Services, Health Services and Social Activities and there are also sectors that are lagging behind $SLQ < 1$ and $DLQ < 1$.

namely Agriculture, Forestry and Fisheries Services, Processing Industry, Water Supply, Waste Management, Waste and Recycling, Transportation and Warehousing, Provision of Accommodation and Food and Drink, Real Estate, Corporate Services and Other Services

Furthermore, by identifying business fields in the Cij calculation, the result is that all business fields have positive values. The next step is to calculate the net shift (net shift) to identify developed and less developed sectors (see table above), which is taken from the $Mij + Cij$ value. The results of the study show that all business fields have a positive sign, meaning that all business fields are advanced and those with a negative sign are leading sectors in the region and still need special attention for their development.

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