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ANALYSIS OF THE BASE SECTOR OF SUMENEP AND SAMPANG REGENCY IN 2016-2020

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ABSTRACT
National development is a way to achieve one of the goals of Indonesia, which is to promote general welfare. Development through the decentralization system is implemented by giving authority to autonomous regions regarding local policies to manage their resources and regulate their respective regions. This regional development is also to increase regional independence through Regional Revenue, especially in increasing Regional Original Revenue (PAD) by maximizing the potential of the regional economic sector. However, in reality, there is still an imbalance in regional independence from PAD which plays a small role in regional revenue. This also occurs in East Java Province, with two regencies with PAD contributions of less than ten percent of their regional income, namely Sumenep Regency and Sampang Regency. Therefore, this study aims to determine the economic sectors that can become the base and leading sectors to get the attention from their local governments. The potential of the regional sector can be calculated using the Location Quotient (LQ) technique and Shift-Share Analysis, using these techniques, it can be seen which sectors are the basic, prospective, advanced, and competitive sectors. Through these techniques, it is found that based on the results of the LQ analysis, both regencies have the same basic sector, namely, mining and quarrying. As for the results of the shift-share analysis, it is found that Sumenep Regency has a leading sector in information and communication, while Sampang Regency has a leading sector, namely, the construction sector.

1. INTRODUCTION

1.1. BACKGROUND

National development is a way of achieving one of the objectives of the Indonesian state in the preamble of the 1945 Constitution, which is to promote the general welfare. The central government and local governments carry out national development through a decentralization system based on Law No. 22 of 1999 on Regional Government. This is implemented by giving autonomous regions the power to manage their resources and regulate their respective regions in terms of local policies. This regional development also aims to increase regional independence through provincial revenues, especially in increasing the Regional Original Domestic Product (Pendapatan Asli Daerah/PAD) by maximizing the potential of the regional economic sector. PAD is one of thecomponents of fiscal autonomy in the regions through establishing the regional budget (APBD), which is determined annually.

The APBD consists of regional revenue, regional expenditure, and regional financing. It is the basis for the management of each region (Hartoyo, 2014). Based on Law No. 1 of 2022 on the Financial Relations between the Central Government and the Local Governments, the revenues of the APBD come from the PAD, the Equalisation Fund, and other revenues. PAD is one of the sources for local governments to finance their public activities. However, in reality, PAD's role is still considered small (Kusumayanti & Triaryati, 2018). Local governments in Indonesia still tend to depend on transferring funds from the central government (Badrudin & Siregar, 2015). The higher the PAD, the less dependent the region is on funds from the central government (Taras & Artini, 2017).

Regional inequality also occurs in East Java, the province with the most regencies/cities in Indonesia. As the centre of the provincial capital, Surabaya City is the leader of economic progress in East Java, with the condition of its regional income from 2016-2020 of 60.74% supported by PAD. This is very different from the situation in other regions of East Java, where the average proportion of PAD is still below 50 percent. Only two regencies with an average share above 30 percent are Sidoarjo Regency (39.14 percent) and Gresik (31.34 percent). Meanwhile, the regions with the lowest share of PAD in regional revenue are two regencies on Madura Island, namely Sumenep (9.67%) and Sampang (9.56%). Thus, government efforts are needed to ensure that economic conditions are not centralized on Java Island alone, which is then realized in the construction of the Suramadu Bridge to encourage and accelerate the distribution of goods so that it is expected to stimulate economic growth on Madura Island.

In addition to looking at regional independence, the state of the regional economy is seen through its economic growth using Gross Regional Domestic Product (GRDP) data. In 2020, the GRDP of Sumenep Regency experienced negative growth due to the impact of the Covid-19 pandemic. The condition of Sampang Regency's GRDP is also the same, it also experienced a decline in 2020, but the conditions are better where the growth rate does not touch a negative number.

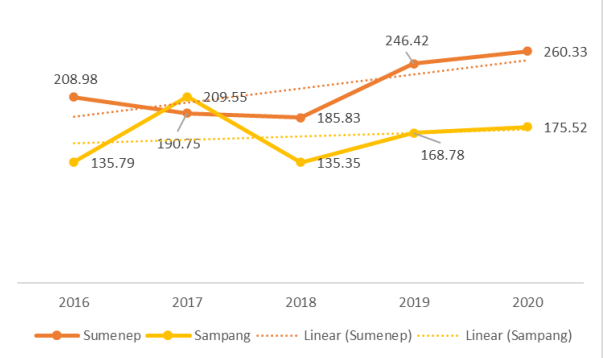
Table 1.1 GRDP of Sumenep dan Sampang Regencies in 2016-2020

No	Regencies	Year	GRDP (in billion Rupiahs)	Growth (%) Regional Revenue
1	Sumenep	2016	22.311,69	
		2017	22.949,70	3%
		2018	23.783,32	4%
		2019	23.816,44	0%
		2020	23.546,51	-1%
2	Sampang	2016	12.606,81	
		2017	13.198,46	5%
		2018	13.740,97	4%
		2019	13.994,78	2%
		2020	13.953,74	0%

Source: BPS Sumenep and Sampang regencies, author's compilation

Table 1.1 shows that Sumenep Regency has higher local revenue than Sampang Regency, in line with its GRDP. In 2018, there was a sharp decline in Sampang Regency, where its PAD decreased from 209.55 billion to 135.35 billion due to a decrease in other legitimate PAD from 171.82 billion to 94.55 billion.

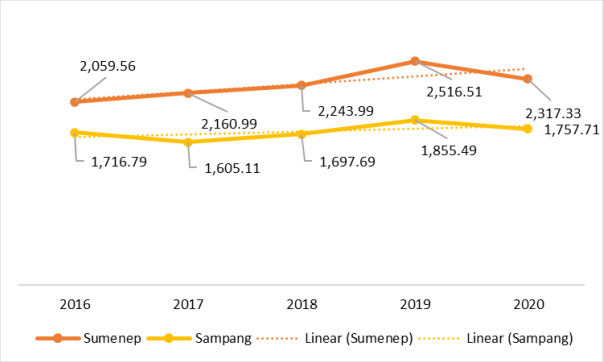
Graph 1.1 PAD of Sumenep and Sampang Regencies in 2016-2019 (in billion rupiahs)



Source: PAD funds from the website of the Directorate General of Fiscal Balance (DJPK) Sumenep and Sampang regencies, processed by the author.

Meanwhile, the condition of GRDP in these two regencies tends to be stable, although, in 2020, it also experienced a decline due to the Covid-19 Pandemic.

Graph 1.2 GRDP of Sumenep dan Sampang Regencies in 2016-2019 (in billion rupiahs)



Source: BPS Sumenep and Sampang regencies, author's compilation

Based on the results of the GRDP of Sumenep Regency in 2016-2020, similar to Sampang Regency, where Sumenep Regency is dominated by Sector A (Agriculture, Forestry, and Fisheries) and Sector B (Mining and Quarrying). These two sectors contribute 57% of the regional GRDP, 33% from Sector A, and 24% from Sector B. The results of GRDP align with previous research, in 2008-2012, Agriculture, Forestry and Fisheries, and Mining and Quarrying became the leading sectors (Kurniawan, 2014). Different things are shown in the research of Petriyati (2014), which states that the primary sector in Sumenep Regency from 2008 to 2012 was the trade, hotel, and restaurant sector. Due to the different research results with the same base year and because research has been carried out for a long time, the authors want to conduct new research on which superior sectors belong to Sumenep Regency in the GDP period 2016 to 2020.

Then, based on the results of Sampang Regency GRDP for the period 2016-2020, it is dominated by sectors A (agriculture, forestry, and fishing) and B (mining and quarrying), where these two sectors contribute on average 50% of the regional GRDP, 29% from sector A and 21% from sector B. This aligns with Mubarok's (2019) research for the first leading sector but different for the second leading sector. In 2015-2017 Sampang Regency had sectors with good prospects, namely the Agriculture, Forestry and Fisheries, Mining and Quarrying, and Government Administration, Defense, & Compulsory Social Security sectors. Research conducted for 2014-2019 also produced the same first leading sector. Still, the second sector was different again, where the main sector of Sampang Regency was the mining and quarrying sector and the agriculture, forestry, and fisheries sector (Hasanah et al., 2022).

Based on the above background and research, it is not known whether the leading sector can still survive in 2020 or not. This study aims to identify the leading sectors in Sumenep and Sampang regencies, hoping that local governments can focus on promoting the economy in promising economic sectors and see other potential sectors, especially sectors that will survive during the pandemic. To improve the financial situation of Sumenep and Sampang regencies to provide services, comfortable facilities and infrastructure, social support, and education to improve the welfare of the people in their regions. The use of research methods based on the above background is to use quantitative methods with descriptive statistics using Static Location Quotient (SLQ), Dynamic Location Quotient (DLQ), and shift-share analysis techniques.

2. THEORETICAL FRAMEWORK

2.1 ECONOMIC GROWTH

Economic growth is the process of long-term per capita output growth that originates from the internal economic process itself (Todaro, 2011). GRDP in Indonesia is calculated based on 2 types of prices, namely constant prices and current prices. At current prices, the value added of goods and services is calculated based on the prices prevailing in that year. In constant price GRDP, the value added of goods and services is calculated based on a certain year as the base year. Therefore, to calculate economic growth by knowing the increase in output each year, the author uses GRDP data based on constant prices to eliminate the effects of inflation. Growth theory is helpful to know that sectoral growth in one region can affect growth in other regions through the transfer of goods or factors of production. Regional economic growth is an increase in the volume of economic variables of a spatial subsystem/country. It can also be interpreted as an increase in the wealth of a region (Mubarok, 2019).

2.2 BASIS SECTOR

Based on the GRDP data obtained, it can be seen that the output information of a region can be seen in terms of the economy per sector and can be seen from the growth in GRDP so that the regional base sector can be known (Hajeri & Tadjoedin, 2015). When the base sector of a region is known, it is considered the backbone of the regional economy because it has a competitive advantage (Sapriadi & Hasbiullah, 2015). However, it does not mean that the non-basic sector is not useful, the non-basic sector plays a supporting role in the GRDP of the region, even if there is a government policy to encourage the progress of the non-basic sector, it does not rule out the possibility that the non-basic sector has the potential to experience development into a basic sector.

2.3 PRIOR RESEARCH

Sumenep Regency

Based on the research results in the northern region of East Java Province, including the Sumenep Regency in it, using the LQ method on GRDP data in 2008-2012, it was found that the mining and quarrying

sector was the base sector for the Sumenep Regency. Then in the 2012-2016 GRDP data, it was found that Sumenep Regency did not yet have a comparative and competitive leading sector. Hence, the existing sector was still in the potential development stage. Then in 2017, the mapping of land for the development of superior commodities showed that the land scattered in each sub-regency of Sumenep Regency was dependent on the economy from the agricultural sector (Arifin et al., 2021). Contrary to other studies' findings, the Sumenep Regency's leading sectors are mining and quarrying, wholesale and retail trade, accommodation and food services, financial services, and business services (Abadi, 2020). The difference in the results of the basic sector in the Sumenep Regency can occur due to differences in research techniques or the GRDP year used in the calculation.

Sampang Regency

Based on the GRDP data of Sampang Regency for 2014-2017, out of the 17 sectors, there are three basic sectors, namely the agriculture, forestry, and fishing sector; the mining and quarrying sector; and the government administration, defence, and compulsory social security sector (Mubarok, 2019). While the other 14 sectors are not considered basic sectors, in the period of this year, the three sectors considered that their growth started to be depressed, so they needed attention from the government. It is necessary to evaluate the sectors of the Sampang Regency Government, which is expected to receive policies or programs from the local government to overcome the growth of the three main sectors that are starting to be depressed.

This is in line with research conducted by Rosita et al. (2019) from 2010 to 2016 on GRDP data using the Location Quotient (LQ) method found that the basic sectors of Sampang Regency were the agricultural sector, mining and quarrying sector, government administration sector; and education services. The increase in growth in the economy of Sampang Regency is inseparable from the role of the Suramadu Bridge in facilitating the distribution of goods. The role of development is that the Differential Shift (DS) of Sampang Regency before the Suramadu Bridge, the agricultural sector has slower growth than the same sector in other regions. After the development of the Suramadu Bridge, 9 sectors show faster growth. Before the Suramadu Bridge, the sectors that experienced relatively fast growth were mining and quarrying, trade, hotels and restaurants, and services. Meanwhile, after the Suramadu bridge, the sectors with relatively fast growth are construction, trade, hotels and restaurants, and financial and business services (Wiprapto, 2015).

3. RESEARCH METHODS

3.1. RESEARCH TYPE

The research used quantitative research methods and descriptive statistics. Quantitative research was conducted by mapping the GRDP per sector in each regency against the GRDP of East Java Province to identify the leading sector in each regency.

3.2. DATA COLLECTION TECHNIQUE

This study uses secondary data from constant price GRDP described in 17 economic sectors from 2016-2020. The source data comes from the Central Bureau of Statistics (BPS) of Sumenep and Sampang regencies. The data collection method uses the non-participant observation method. The use of GRDP as the main data in this study is because the data can compare productivity among regions by showing the economic structure of each business field. When the business field has a large role, it can show a region's economic base. Meanwhile, constant price GRDP is used to show the economic growth rate without the influence of inflation.

3.3. ANALYSIS TECHNIQUES

The region's potential is mapped using the Static Location Quotient (SLQ) and Dynamic Location Quotient (DLQ) methods and shift-share analysis. These three methods are used because they are faster, easier, and cheaper than direct methods in the form of surveys, which are limited by time and cost.

Static Location Quotient (SLQ)

The SLQ method is used to identify the leading sectors, sectors that have the potential to export outside the region and to identify the sectors that no longer have the potential to export. The use of two assumptions in this method, namely, the consumption pattern of households (regencies) is similar to that of households above (provinces), and the lower and upper regions have a linear production function with the same productivity in each sector. According to Tiebout (1962), SLQ is better used using the income approach due to the difficulty of converting part-timers and seasonal labour into full-year labour, the existence of commuter labour, and the difference in productivity between sectors. In the SLQ method, seventeen sectors will be grouped into two groups, namely:

1. Base sector: the leading sector for a region.
2. Non-base sector: not the leading sector for a region.

The advancement of a sector into a base sector can occur due to the development of infrastructure, technology, communication networks, and regional income. Progress can also go through a process of decline due to decreased demand or depletion of resources.

Dynamic Location Quotient (DLQ)

Dynamic Location Quotient (DLQ) is a form of LQ. The previous LQ is used to determine which sectors are basic/non-basic, while DLQ is used to determine the growth rate of a region's leading sector. The DLQ formula is.

$$DLQ_{ij} = \left[\frac{(1+g_{ij})/(1+g_j)}{(1+G_i)/(1+G)}\right]^t$$

With the formula description:

DLQ_{ij} = Index of the potential of sector i in the region
g_{ij} = Growth rate of sector i in the region
g_j = Average sector growth rate in the region
G_i = Growth rate of sector i in the province
G = Average sector growth rate in the province
t = Difference between end year and beginning year

If the value of DLQ>1, it means that sector i in the region is faster than the same sector in the province. Conversely, if DLQ<1, it means that sector i in the region is lower than the same sector in the province. Thus, four DLQ quadrants are obtained to divide which sectors are basic and prospective with the following form.

Table 3.1 DLQ Quadrant Table

	DLQ ≥ 1	**DLQ < 1**
SLQ ≥ 1	**Type I** Base sector, prospective	**Type III** Basic sector, not prospective
SLQ < 1	**Type II** Non-base sector, prospective	**Type IV** Non-base sector, not prospective

Shift-share Analysis

The shift-share analysis is an analysis of changes in economic indicators, such as output and employment, at two points in the region to determine the development of the economic sector relative to the development of the broader economic sector, to see the development of the economic sector relative to other sectors, and to see the development of a region relative to other regions. There are three components to the shift-share analysis, namely:

1. National Growth (NG) is the change in production/employment opportunities of a region caused by changes in national production/employment opportunities.
2. Proportional growth component (PG), where growth is driven by differences in each sector (demand for final products, availability of raw materials, and industrial policy) and market structure.
3. Regional Share Growth (RSG) component, due to an increase or decrease in production/employment opportunities within a region compared to other regions.

Steps in shift-share analysis:

1. To determine economic activity indicators, this research uses revenue with a base year of 2016 and an end year of 2020.
2. The economic sectors analyzed are 17 sectors based on the BPS website of the Sumenep and Sampang regencies.
3. Calculate changes in economic activity indicators (GRDP) of sector i in region j. Changes in economic activity indicators are calculated from the production ratio:

$$r_i = \frac{Y'_{ij} - Y_{ij}}{Y_{ij}}$$

Description:
Y'_{ij} = economic indicator of sector i in region j in the final year of analysis
Y_{ij} = economic indicator of sector i in region j in the base year of analysis

R_i is formulated as:

$$R_i = \frac{Y'_i - Y_i}{Y_i}$$

Description:
Y'_i = sector i economic indicator in the final year of analysis (national)
Y_i = sector i economic indicator in the base year of analysis (national)

R_a is formulated as:

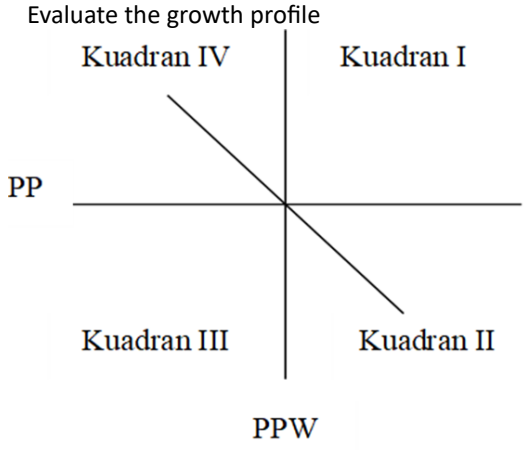
$$R_a = \frac{Y'_{..} - Y_{..}}{Y_{..}}$$

Description:
$Y'_{..}$ = economic indicators in the final year of analysis (national)
$Y_{..}$ = economic indicators in the base year of analysis (national)

4. Calculate the regional growth component consisting of the national growth component (NG), proportional growth component (PG), and regional share growth component (RSG).
   a. $NG_{ij} = (R_a)Y_{ij}$
      where:
      NG_{ij} = national growth component of the sector i for region j
      Y_{ij} = economic indicator of sector i in region j in the base year of analysis
      R_a = ratio of national economic indicators
   b. $PG_{ij} = (R_i - R_a)Y_{ij}$
      Where:
      PG_{ij} = proportional growth component of sector i for region j
      Y_{ij} = economic indicator of sector i in region j in the base year
      R_i = national economic indicator ratio of sector i
      R_a= ratio of national economic indicators
   c. $RSG_{ij} = (ri - Ri)Y_{ij}$
      where :
      RSG_{ij} = growth component of the region Share of sector i for region j
      Y_{ij} = production/employment of sector i in region j in the base year of analysis

r_i = production/employment ratio of sector i in region j
R_i = production/employment ratio (national) of sector i

5. Calculating the net shift is used to identify the growth of economic sectors with the formula:
   $NS_{ij} = PG_{ij} + RSG_{ij}$
   Dimana:
   NS_{ij} = net shift of sector i in region j
   PG_{ij} = proportional growth component of sector i in region j
   RGS_{ij}= growth component of region share of sector i in region j
   When:
   $NS_{ij} > 0$, then the growth of sector i in region j belongs to the progressive group (developed)
   $NS_{ij} < 0$, then the growth of sector i in region j is slow
6. Evaluate the growth profile



Picture 3.1 Shift-share Analysis Quadrant Clustering,

Source: Budiharsono, S (2001)

a. Quadrant I: Sectors have rapid growth, with good competitiveness.
b. Quadrant II: Sectors have fast growth but poor competitiveness.
c. Kuadran III: slow growth sector with poor competitiveness.
d. Kuadran IV: sector has slow growth but good competitiveness.
e. In Quadrant II and Quadrant IV, there is a sloping line that forms an angle of 45° and cuts both quadrants. The top line shows the progressive sector, while the bottom shows the slow sector.

4. RESULTS AND DISCUSSION

4.1. ANALYSIS OF THE BASE SECTOR OF SUMENEP

LQ analysis with SLQ and DLQ types is the basis for determining which sectors are basic and potentially developable. Using the SLQ analysis in the Sumenep Regency, 4 basic sectors were identified out of 17 sectors considered. The basic sector is a sector that exports goods and services or labour to places outside the boundaries of the regional economy concerned (surplus). The basic sectors of Sumenep regency include Sector A (agriculture, forestry, and fishing), sector B (mining and quarrying), sector K (financial services and insurance), and Sector O (public administration, defense, and compulsory social security). The basic sector with the highest average SLQ is Sector B (Mining and Quarrying). Two sectors are the mainstay of Sumenep Regency, namely the agricultural sector, with an average contribution of 33.13%, and the mining and quarrying sector, with an average contribution of 24.29% to GRDP from 2016-2020. This is because Sumenep Regency is one of the regencies in East Java that has sufficient natural resources, especially type C excavation, to support its regional income. C excavation material is a type of excavation material that does not include strategic excavation material (A excavation material) or vital excavation material (B excavation material). An example of C excavation material that is a mainstay in Sumenep Regency is phosphate, where Sumenep has a cluster of karst rocks. (Redaksi, 2023). The following are the results of calculating SLQ and DLQ in Sumenep.

Table 4. 1 Results of SLQ and DLQ Index Calculation of Sumenep Regency 2016-2020

	Business Sector (2010 Series)	LQ	DLQ	INTERPRETATION		FINAL INTERPRETATION	TYPE
				LQ	DLQ		
A	Agriculture, Forestry, and Fishery	3.08	0.14	base	non-prospective	base, non-prospective	III
B	Mining and Quarrying	4.63	9.45	base	prospective	base, prospective	I
C	Manufacturing Industry	0.19	0.40	non-base	non-prospective	non-base, non-prospective	IV
D	Electricity and Gas Procurement	0.11	72.17	non-base	prospective	non-base, prospective	II
E	Water Supply, Waste Management, Sewage and Recycling	0.48	0.21	non-base	non-prospective	non-base, non-prospective	IV
F	Construction	0.73	0.56	non-base	non-prospective	non-base, non-prospective	IV

	Business Sector (2010 Series)	LQ	DLQ	INTERPRETATION		FINAL INTERPRETATION	TYPE
				LQ	DLQ		
G	Wholesale and Retail Trade; Repair of Cars and Motorcycles	0.66	0.33	non-base	non-prospective	non-base, non-prospective	IV
H	Transportation and Warehousing	0.40	8.13	non-base	prospective	non-base, prospective	II
I	Provision of Accommodation and Drinking Meals	0.14	1.10	non-base	prospective	non-base, prospective	II
J	Information and Communication	1.02	0.56	base	non-prospective	base, non-prospective	III
K	Financial and Insurance Services	0.78	1.23	non-base	prospective	non-base, prospective	II
L	Real Estate	0.61	0.77	non-base	non-prospective	non-base, non-prospective	IV
M,N	Corporate Services	0.26	0.68	non-base	non-prospective	non-base, non-prospective	IV
O	Government Administration, Defense, and Compulsory Social Security	1.40	0.24	base	non-prospective	base, non-prospective	III
P	Education Services	0.98	0.35	non-base	non-prospective	non-base, non-prospective	IV
Q	Health and Social Services	0.57	0.23	non-base	non-prospective	non-base, non-prospective	IV
R,S, T,U	Other services	0.50	0.00	non-base	non-prospective	non-base, non-prospective	IV

Source: BPS Sumenep Regency, data processed

While in DLQ, the results obtained in assessing which sectors are prospective in the future are calculated through the economic growth of Sumenep Regency and East Java Province. Based on the DLQ calculation, 5 sectors are considered prospective with a DLQ value ≥ 1. The five sectors are Sector B (Mining and Quarrying), Sector D (Electricity and Gas Supply), Sector H (Transportation and Storage), Sector I (Accommodation and Food Services), and Sector K (Financial Services and Insurance). This prospective sector means that the sector has the potential to grow in the future. In DLQ, the sector with the highest value is electricity and gas supply. Although it has a smaller GRDP value compared to Sector B (Mining and Quarrying), the electricity and gas procurement sector has a more stable upward trend compared to the mining and quarrying sector, which decreased by an average of 4.11% from 2016 to 2020. Meanwhile, the Electricity & Gas Procurement sector has an average growth of 0.17% from 2016 to 2020. This is why the DLQ of the electricity and gas supply sector has the highest value.

So that the calculation of LQ in the form of SLQ and DLQ in Sumenep regency obtained sector classification into four types. Type I, is a basic and prospective sector to develop in the future. In type I, sector calculations have SLQ and DLQ values ≥ 1. The sector in Sampang regency with SLQ of 4.03 and DLQ of 9.45 is Sector B (Mining and Quarrying). Type II, which is a non-basic sector but prospective for future development. In Sampang Regency, there are 4 sectors included in Type II, including Sector D (Electricity and Gas Procurement), Sector H (Transportation and Warehousing), Sector I (Accommodation and Food Services), and Sector K (Financial Services and Insurance).

Then in Type III, it is a basic sector but not prospective to develop in the future. Sectors in Sampang Regency have 4 sectors in Type III, namely Sector A (Agriculture, Forestry, and Fisheries), Sector F (Construction), Sector O (Government Administration, Defense, and Compulsory Social Security), and Sector P (Education Services). Finally, type IV is a non-basic sector with no future development prospects. In Sampang Regency, 8 sectors have Sector IV, including Sector C (Manufacturing), Sector E (Water Supply, Waste Management, Sewage, and Recycling), Sector G (Wholesale and Retail Trade; Automobile and Motorcycle Repair), Sector J (Information and Communication), Sector L (Real Estate), Sectors M,N (Business Services), Sector Q (Health Services and Social Activities), and Sectors R,S,T,U (Other Services).

From the above information, it is found that Sampang Regency can focus on type I sectors, namely sector B (mining and quarrying,) and can develop type II sectors that have prospective value in the future, considering that type I sectors are non-renewable natural resources. The research is consistent with Kurniawan (2014), based on the results of his LQ analysis

which states that the mining and quarrying sector with the oil and gas subsector. Not only the mining and quarrying sectors but also the agriculture, fishing, and plantation sectors are the basic sectors in Sumenep Regency, also in line with the research of Purnama et al. (2022). Although it already has a basic and prospective sector, the role of other non-basic sectors cannot be ignored because the basic sector is expected to help the development of non-basic sectors into basic sectors and non-prospective sectors into prospective sectors.

4.2. ANALYSIS OF SHIFT-SHARE OF SUMENEP REGENCY

Shift-share analysis calculations are used to determine the growth process of the Sumenep regency in relation to the economy of East Java province as a reference. The shift-share analysis uses income variables in the form of GRDP. This analysis consists of three components, namely national growth (NG), proportional growth (PG), and regional share growth (RSG). NG is used to analyze changes in sectoral aggregates compared to changes in the same sector in the reference economy (East Java Province). PG determines whether the regional economy is growing faster than the reference economy in a particular sector. RSG is used to determine the competitiveness of sectors in the local area, with the larger economy used as a reference. PG is an element of regional growth due to the influence of external elements that work nationally (province). At the same time, RSG is an element of regional growth due to the influence of internal factors in the region concerned. The following are the results of the shift-share analysis carried out in Sumenep Regency.

Table 4. 2 Calculation Results of Shift-Share Value of Sumenep Regency in 2016-2020 (billion rupiah)

	Business Sector (2010 Series)	NGij Billion	PGij Billion	RSGij Billion	NSij Billion	PG+RSG	RSG
A	Agriculture, Forestry, and Fishery	1,089.01	-959.55	252.60	-706.94	Undeveloped	High Competitiveness
B	Mining and Quarrying	896.25	-417.14	-1,446.41	-1,863.55	Undeveloped	Poor Competitiveness
C	Manufacturing Industry	165.04	47.98	76.60	124.58	Developed	High Competitiveness
D	Electricity and Gas Procurement	1.07	-1.12	0.72	-0.41	Undeveloped	High Competitiveness
E	Water Supply, Waste Management, Sewage and Recycling	1.51	0.75	-0.64	0.11	Developed	Poor Competitiveness
F	Construction	203.11	29.10	13.95	43.04	Developed	High Competitiveness
G	Wholesale and Retail Trade; Repair of Cars and Motorcycles	371.65	-50.57	43.13	-7.45	Undeveloped	High Competitiveness
H	Transportation and Warehousing	34.77	-21.19	21.31	0.12	Developed	High Competitiveness
I	Provision of Accommodation and Drinking Meals	22.73	-1.26	1.82	0.55	Developed	High Competitiveness
J	Information and Communication	174.43	237.50	56.01	293.51	Developed	High Competitiveness
K	Financial and Insurance Services	61.04	-12.91	33.13	20.23	Developed	High Competitiveness
L	Real Estate	32.24	15.48	2.62	18.10	Developed	High Competitiveness
M,N	Corporate Services	6.17	-1.16	0.24	-0.91	Undeveloped	High Competitiveness
O	Government Administration, Defense, and Compulsory Social Security	96.72	-30.39	4.41	-25.99	Undeveloped	High Competitiveness
P	Education Services	77.92	40.35	34.40	74.75	Developed	High Competitiveness

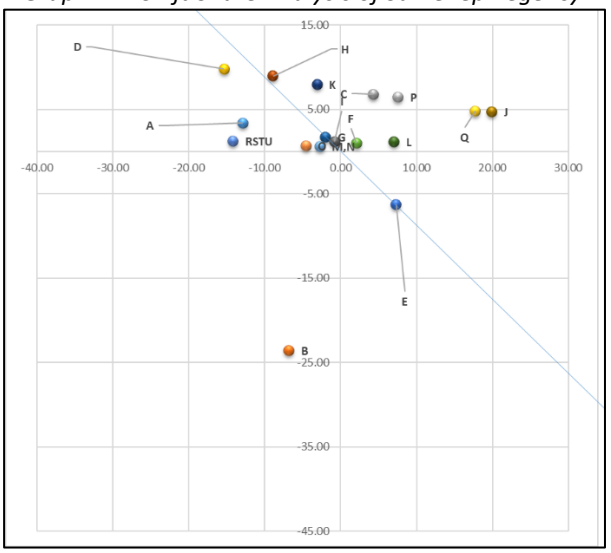
	Business Sector (2010 Series)	NGij Billion	PGij Billion	RSGij Billion	NSij Billion	PG+RSG	RSG
Q	Health and Social Services	11.38	13.79	3.75	17.54	Developed	High Competitiveness
R,S,T,U	Other services	22.27	-21.59	1.83	-19.75	Undeveloped	High Competitiveness
Total		3,267.30	-1,131.94	-900.54	-2,032.48		

Source: BPS Sumenep Regency, data processed

The calculation of the shift-share analysis above, the sectoral GRDP value of Sumenep Regency has changed, where the GRDP value from 2016 to 2020 has increased by Rp1,234.82 billion or up 5.53% from 2016. Based on the calculation of the national growth component (NG), where the GRDP of East Java Province affects the growth of the GRDP of Sumenep Regency by Rp 3,267.30 billion. The positive value of NG shows that the GRDP economy of the Sumenep Regency depends on the economy of East Java province. Contrary to the results shown in the PG component, PG shows negative results, which means that the composition of the GRDP sector of the Sumenep Regency tends to slow down economic growth. The effect of sectoral proportional growth on economic growth in Sumenep Regency shows a very small influence, even minus Rp 1,131.94 billion. While the RSG component is negative, amounting to Rp900.54 billion, which indicates that comparative advantage has not been able to improve the economic development of the Sumenep Regency, where the economic figures obtained tend to be slow.

Based on the shift-share analysis carried out, among the 17 sectors for which GRDP calculations were carried out in 2016 and 2020 and then compared with the GRDP of East Java Province in 2016 and 2020, there are also two sectors with negative values, namely sector B (mining and quarrying) and sector E (water supply, waste management, sewage, and recycling). These results are different from the SLQ and DLQ calculations carried out previously, where the Mining and Quarrying sector is considered a base and prospective sector. In contrast, the results of the shift-share analysis consider mining and quarrying to be an underdeveloped sector with poor competitiveness. This is because the sector experienced a decrease in GRDP when compared between 2016 and 2020. Based on the results of the shift-share analysis, nine leading sectors were identified, including manufacturing, construction, transportation and storage, accommodation and food services, information and communication, financial and insurance, real estate, educational services, and health and social services. The most important leading sector, based on the results of the shift-share analysis, is the information and communication sector.

Graph 4. 1 Shift-Share Analysis of Sumenep Regency



Source: BPS Sumenep Regency, data processed

The shift-share analysis is divided into four quadrants in mapping the growth profile of the economic sector, where PP becomes the abscissa, and PPW becomes the ordinate. Quadrant I shows that the sector has fast growth and good competitiveness, including sectors C (manufacturing), F (construction), J (information and communication), L (real estate), P (education), and Q (health and social services). Then quadrant II shows that growth is fast but has poor competitiveness, including sector E (Water Procurement, Waste Management, Sewage, and Recycling). While in quadrant III, it shows that the sector has slow growth and poor competitiveness, namely sector B (Mining and quarrying). Finally, quadrant IV shows sectors with slow growth but good competitiveness, including sectors A (Agriculture, forestry, and fishing), D (Electricity and gas supply), G (Wholesale and retail trade; repair of motor vehicles and motorcycles), H (Transportation and storage), I (Hotels and restaurants), K (Financial and insurance services), M,N (Business services), O (Public administration, defence and compulsory social security) and R, S, T, U (Other services).

In quadrant II and quadrant IV, there is a sloping line with an angle of 45° by cutting the two quadrants, which indicates that the sector is progressive (developed) if it is at the top of the line, while if it is at the bottom of the line, it indicates a slow sector. The developed sectors include C (manufacturing), E (water supply, waste management, and recycling), F

(construction), H (transportation and storage), I (accommodation and food services), J (information and communication), K (financial services and insurance), L (real estate), P (education), and Q (health and social services). Meanwhile, the slow sectors are A (Agriculture, forestry, and fishing), B (Mining and quarrying), D (Electricity and gas supply), G (Wholesale and retail trade; repair of motor vehicles and motorcycles), M, N (Business services), O (Government administration, defence, and compulsory social security), R, S, T and U (Other services).

Then, looking at GRDP in relation to stability during the Covid-19 pandemic, it can be seen that some sectors that can still experience growth are sectors A (Agriculture, forestry, and fishing), E (Water supply, waste management, sewage, and recycling), J (Information and communication), L (Real estate), P (Education) and Q (Health services and social activities). The highest growth was in sector Q (Health Services and Social Activities) due to the need for health services and personnel at the time. Through the resilience of sector conditions that can still grow, it can be a backup for local governments to develop the sector, especially in critical times because the leading sector in mining and quarrying has volatile prices in the market.

4.3. BASE SECTOR ANALYSIS OF SAMPANG REGENCY

By using location quotient analysis in Sampang Regency, 5 basic sectors out of 17 sectors were obtained. The basic sectors of Sampang Regency include Sector A (Agriculture, Forestry, and Fishing), Sector B (Mining and Quarrying), Sector F (Construction), Sector O (Government Administration, Defense, and Compulsory Social Security), and Sector P (Education). The basic sector with the highest average LQ is Sector B (Mining and Quarrying). This is because Sampang Regency is one of the regencies in East Java with natural resources of the type of excavation C, also supporting its regional income.

Table 4. 3 Results of SLQ and DLQ Index Calculation in Sampang Regency 2016-2020

	Business Sector (2010 Series)	LQ	DLQ	INTERPRETATION		FINAL INTERPRETATION	TYPE
				LQ	DLQ		
A	Agriculture, Forestry, and Fishery	2.71	0.14	base	non-prospective	base, non-prospective	III
B	Mining and Quarrying	4.03	9.45	base	prospective	base, prospective	I
C	Manufacturing Industry	0.12	0.40	non-base	non-prospective	non-base, non-prospective	IV
D	Electricity and Gas Procurement	0.13	72.17	non-base	prospective	non-base, prospective	II
E	Water Supply, Waste Management, Sewage and Recycling	0.78	0.21	non-base	non-prospective	non-base, non-prospective	IV
F	Construction	1.02	0.56	base	non-prospective	base, non-prospective	III
G	Wholesale and Retail Trade; Repair of Cars and Motorcycles	0.94	0.33	non-base	non-prospective	non-base, non-prospective	IV
H	Transportation and Warehousing	0.35	8.13	non-base	prospective	non-base, prospective	II
I	Provision of Accommodation and Drinking Meals	0.08	1.10	non-base	prospective	non-base, prospective	II
J	Information and Communication	0.97	0.56	non-base	non-prospective	non-base, non-prospective	IV
K	Financial and Insurance Services	0.52	1.23	non-base	prospective	non-base, prospective	II
L	Real Estate	0.78	0.77	non-base	non-prospective	non-base, non-prospective	IV
M,N	Corporate Services	0.37	0.68	non-base	non-prospective	non-base, non-prospective	IV
O	Government Administration, Defense, and Compulsory Social Security	2.08	0.24	base	non-prospective	base, non-prospective	III
P	Education Services	1.17	0.35	base	non-prospective	base, non-prospective	III
Q	Health and Social Services	0.79	0.23	non-base	non-prospective	non-base, non-prospective	IV

Business Sector (2010 Series)	LQ	DLQ	INTERPRETATION		FINAL INTERPRETATION	TYPE
			LQ	DLQ		
R,S,T,U Other services	0.66	0.002	non-base	non-prospective	non-base non-prospective	IV

Source: BPS Sampang Regency, data processed

Meanwhile, the DLQ obtained results on assessing which sectors are prospective in the future, calculated by the economic growth of Sampang Regency and East Java Province. Based on the DLQ calculation, 5 sectors are considered prospective with a DLQ value ≥ 1. The five sectors include Sector B (Mining and Quarrying), Sector D (Electricity and Gas Supply), Sector H (Transportation and Storage), Sector I (Accommodation and Food Services), and Sector K (Financial Services and Insurance). This prospective sector means that the sector has the potential to grow in the future. In DLQ, the sector with the highest value is electricity and gas supply. Although it has a smaller GRDP value compared to Sector B (Mining and Quarrying), the Electricity and Gas Procurement Sector has a more stable upward trend compared to the Mining and Quarrying Sector. This is why the DLQ of the Electricity and gas supply sector is the highest.

Thus, the calculation of LQ in terms of SLQ and DLQ in Sampang Regency for 17 sectors is grouped into four types. In type I, the sector calculations have SLQ and DLQ values ≥ 1. The sector in Sampang Regency with SLQ of 4.03 and DLQ of 9.45 is Sector B (Mining and Quarrying). While in Type II Sampang Regency, there are 4 sectors included in Type II, including Sector D (Electricity and Gas Procurement), Sector H (Transportation and Warehousing), Sector I (Accommodation and Food Services), and Sector K (Financial Services and Insurance). Then the sector in Sampang Regency has 4 sectors in Type III, namely Sector A (Agriculture, Forestry and Fishing), Sector F (Construction), Sector O (Government Administration, Defense, and Compulsory Social Security), and Sector P (Education Services). Finally, in Type IV in Sampang Regency, there are 8 sectors, including Sector C (Manufacturing), Sector E (Water Supply, Waste Management, Refuse and Recycling), Sector G (Wholesale and Retail Trade; Automobile and Motorcycle Repair), Sector J (Information and Communication), Sector L (Real Estate), Sectors M,N (Business Services), Sector Q (Health Services and Social Activities), and Sectors R,S,T,U (Other Services). From the above information, it is found that Sampang Regency can focus on Type I sectors, namely Sector B (Mining and Quarrying), and can develop Type II sectors that have prospective value in the future, considering that its Type I sectors are non-renewable natural resources.

The results on the base sector are consistent with the research of Mubarok (2019), which states that the mining and quarrying sector is one of the base sectors of Sampang Regency. The mining and quarrying sector is the base sector and has not changed since the GRDP research conducted by Abadi (2020), Rosita et al. (2019), and Wiprapto (2015). Thus, it shows that there has been no shift from the base sector to other economic sectors in Sampang Regency.

4.4. SHIFT-SHARE ANALYSIS OF SAMPANG REGENCY

Based on the shift-share analysis carried out, among the 17 sectors for which GRDP calculations were carried out in 2016 and 2020 and then compared with the GRDP of East Java Province in 2016 and 2020, there is also a mining and quarrying sector that has a negative value. These results are different from the SLQ and DLQ calculations carried out previously, where the mining and quarrying sector is considered as a base and prospective sector. Meanwhile, in the results of the shift-share analysis, the mining and quarrying sector is considered an underdeveloped sector and has poor competitiveness. This is because the sector experienced a decrease in GRDP when compared between 2016 and 2020. Based on the shift-share analysis results, 7 leading sectors are considered developed and have high competitiveness, including construction, wholesale and retail trade, transportation and storage, accommodation and food services, information and communication, financial services and insurance, and educational services. The following are the results of the shift-share analysis conducted in Sampang Regency.

Table 4. 4 Calculation Result of Shift Share Value of Sampang Regency in 2016-2020 (billion rupiah)

	Sectors	NGij	PGij	RSGij	NSij	PG+RSG	RSG
		Billion	Billion	Billion	Billion		
A	Agriculture, Forestry, and Fishery	561.10	-494.40	159.35	-335.05	Undeveloped	High Competitiveness
B	Mining and Quarrying	416.10	-193.67	-384.17	-577.84	Undeveloped	Poor Competitiveness
C	Manufacturing Industry	66.14	19.23	-21.45	-2.22	Undeveloped	Poor Competitiveness
D	Electricity and Gas Procurement	0.70	-0.73	0.45	-0.29	Undeveloped	High Competitiveness
E	Water Supply, Waste Management, Sewage and Recycling	1.40	0.70	-0.47	0.22	Developed	Poor Competitiveness
F	Construction	155.53	22.28	167.39	189.67	Developed	High Competitiveness
G	Wholesale and Retail Trade; Repair of Cars and Motorcycles	307.43	-41.83	49.14	7.31	Developed	High Competitiveness
H	Transportation and Warehousing	17.78	-10.83	13.12	2.29	Developed	High Competitiveness
I	Provision of Accommodation and Drinking Meals	7.36	-0.41	1.43	1.02	Developed	High Competitiveness
J	Information and Communication	95.49	130.02	54.68	184.70	Developed	High Competitiveness
K	Financial and Insurance Services	23.70	-5.01	11.60	6.59	Developed	High Competitiveness
L	Real Estate	24.74	11.88	-8.56	3.32	Developed	Poor Competitiveness
M,N	Corporate Services	5.26	-0.99	-1.91	-2.90	Undeveloped	Poor Competitiveness
O	Government Administration, Defense, and Compulsory Social Security	82.88	-26.04	2.29	-23.75	Undeveloped	High Competitiveness
P	Education Services	53.55	27.73	28.80	56.53	Developed	High Competitiveness
Q	Health and Social Services	9.57	11.59	-2.96	8.63	Developed	Poor Competitiveness
R,S,T,U	Other services	17.41	-16.88	-0.55	-17.43	Undeveloped	Poor Competitiveness
	TOTAL	1,846.13	-567.37	68.17	-499.20		

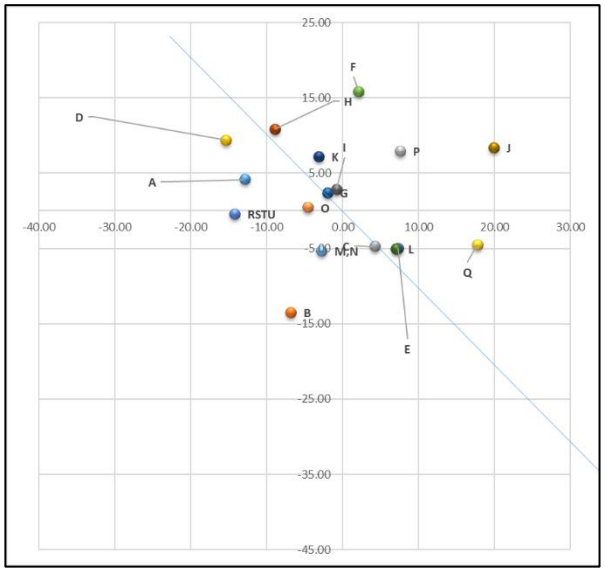
Source: BPS Sampang Regency, data processed

The sectoral GRDP value of Sampang Regency changed from the GRDP value from 2016 to 2020, which increased by Rp226.05 billion or 5.90% from 2016. The national growth component (NG) shows that the GRDP of East Java Province influenced the GRDP growth of Sampang Regency by Rp1846.13 billion. The positive value of NG shows that the GRDP economy of Sampang Regency depends on the economy of East Java Province. Meanwhile, the PG component shows negative results, which means that the sectoral composition of Sampang Regency's GRDP tends to slow economic growth. The effect of sectoral proportional growth on the economic

growth of Sampang Regency shows a very small effect of minus Rp567.37 billion. Meanwhile, the RSG component had a positive value of Rp68.17 billion, indicating that the comparative advantage could increase the economic development of Sampang Regency, and the sectoral growth accelerated.

Based on the shift-share analysis conducted, there are seven sectors with negative net shift values (assessment of whether a sector is developed or not), namely sector A (Agriculture, forestry, and fishing), B (Mining and quarrying), C (Manufacturing), D (Electricity and gas supply), M,N (Business services), O (Government administration, defense and compulsory social security) and sector R,S,T,U (Other services). This differs from the calculation of SLQ and DLQ, where the mining and quarrying sector is considered a base and prospective sector. On the other hand, in the results of the shift-share analysis, the mining and quarrying sector is considered an underdeveloped sector with poor competitiveness. This is because the sector experienced a decline in GRDP when compared between 2016 and 2020. This indicates a shift in economic structure to other sectors with GRDP growth from 2016 to 2020, such as the construction sector, which has the highest net shift value. But this construction sector has decreased when the pandemic occurred.

Graph 4. 2 Shift-Share Analysis of Sampang Regency



Source: BPS Sampang Regency, data processed

The shift-share analysis is divided into four quadrants in mapping the growth profile of the economic sector. Quadrant I shows that the sector has fast growth and good competitiveness, including sectors F (Construction), J (Information and Communication), and P (Educational Services). Then quadrant II shows that the growth is fast but has poor competitiveness, including sectors C (Processing Industry), E (Water Procurement, Waste Management, Sewage, and Recycling), L (Real Estate), and Q (Health Services and Social Activities). While in quadrant III, it shows that the sector has slow growth and poor competitiveness, namely Sector B (Mining and Quarrying), M,N (Corporate Services), and R,S,T,U (Other Services). Finally, quadrant IV shows sectors with slow growth but good competitiveness, including sectors A (Agriculture, Forestry, and Fisheries), D (Electricity and Gas Procurement), G (Wholesale and Retail Trade; Car and Motorcycle Repair), H (Transportation and Warehousing), I (Accommodation and Food Supply), K (Financial and Insurance Services), and O (Government Administration, Defense, and Compulsory Social Security).

In quadrant II and quadrant IV, there is a sloping line with an angle of 45^o by cutting the two quadrants, which indicates that the sector is progressive (developed) if it is at the top of the line, while if it is at the bottom of the line, it indicates a slow sector. The developed sectors include sectors E (Water Procurement, Waste Management, Sewage, and Recycling), F (Construction), G (Wholesale and Retail Trade; Car and Motorcycle Repair), H (Transportation and Warehousing), I (Provision of Accommodation and Drinking Food), J (Information and Communication), K (Financial and Insurance Services), L (Real Estate), P (Education Services), and Q (Health Services and Social Activities). Meanwhile, the slow sectors are A (Agriculture, Forestry, and Fisheries), B (Mining and Quarrying), C (Manufacturing Industry), D (Electricity and Gas Procurement), M, N (Corporate Services), P (Educational Services), and Q (Health Services and Social Activities).

Then when viewed from GRDP related to stability during the Covid-19 pandemic, it can be seen that some sectors that can still experience growth are Sector A (Agriculture, Forestry, and Fisheries), E (Water Procurement, Waste Management, Waste, and Recycling), J (Information and Communication), L (Real Estate), P (Educational Services), and Q (Health Services and Social Activities). The highest growth was in sectors J (Information and Communication) and Q (Health Services and Social Activities), given the need for health services and personnel during the pandemic response. In addition, due to the pandemic limiting activities outside the home, it is not surprising that people will communicate more through mobile phones or spend time through electronic media means, which results in the growth of the information and communication sector. Through the resilience of the sector conditions that can still grow, it can be a backup for local governments to develop the sector, especially during critical times, because the leading sectors in mining and quarrying have volatile prices in the market.

5. CONCLUSIONS AND SUGGESTIONS

5.1. CONCLUSIONS

Based on the description that has been tested, it can be concluded that of the 17 sectors in the GRDP of Sumenep Regency and Sampang Regency from 2016 to 2020, they have the same main base sector, namely the mining and quarrying sector. This is because both

regencies have the same resource, namely, karst wall clusters as the main producer of type C minerals in the form of phosphates. Meanwhile, in the shift-share analysis, in both regencies, the mining and quarrying sector is not a leading sector. In Sumenep Regency, which is the leading sector (developed sector and has competitiveness), 9 leading sectors are obtained, including the manufacturing industry sector, construction, transportation and warehousing, provision of accommodation and meals, information and communication, financial services and insurance, real estate, education services and health services and social activities. The main leading sector of Sumenep Regency, based on the results of the shift-share analysis, is the information and communication sector. Meanwhile, in Sampang Regency, there are 7 leading sectors based on shift-share analysis, including the construction sector, wholesale and retail trade, transportation and warehousing, provision of accommodation and meals, information and communication, financial services and insurance, and education services. The highest result of the shift-share analysis in Sampang is the construction. Despite having competitive base-prospective and developed sectors, the role of other non-base sectors cannot be ignored because the existence of the base sector is expected to help the development of non-base sectors into base and non-prospective sectors into prospective sectors.

5.2. SUGGESTIONS

The governments of Sumenep Regency and Sampang Regency must evaluate other sectors that have not become base or leading sectors. This is because the base sector of the economy in both regencies is the mining and quarrying sector which is not a renewable resource. With volatile resource prices in the market and vulnerable to falling when exposed to critical times, such as a pandemic, other sectors are needed that are considered prospective to be developed in the future, considering that the sector can still grow during the Covid-19 pandemic.

6. IMPLICATIONS AND LIMITATIONS

The research was conducted based on secondary data without involving information on the real conditions in the field. It is hoped that further research can add explanations or information from the Regional Revenue Agency, if possible, to add economic information on the two regions that have not been included in this study.

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