

## **SPILOVER EFFECTS OF PALEMBANG'S ECONOMIC GROWTH ON DISTRICTS IN SOUTH SUMATRA**

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### **Abstract**

This study investigates the spillover effects of Palembang City's economic growth on surrounding districts in South Sumatra Province using Gross Regional Domestic Product (GRDP) data from 2001 to 2023. The Granger Causality Test reveals significant one-way causality from Palembang City to districts such as Ogan Komering Ulu, Prabumulih, and Muara Enim. These effects occur through economic interactions across key sectors including manufacturing, trade, and education, indicating Palembang's role as a regional growth center. The economic growth of Palembang City affects the economic growth of surrounding areas, this is because of the complex economic interactions realized through input output linkages that permeate various sectors, ranging from the manufacturing industry, services, trade, agriculture, mining, to crucial sectors such as education.

**Keywords:** Economic Growth, ADHK GRDP, Spillover Effect, Granger Causality Test.

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## **INTRODUCTION**

Growth centers are areas that have many facilities and easy access in various ways, so that it becomes an attraction for residents to move to the area either to live or to do business. The economic growth of a region does not occur evenly in all regions, but is only concentrated in certain areas called growth centers .<sup>1</sup> The existence of a growth center in an area, of course, will be able to attract resources and economic activity from the surrounding area so as to trigger wider development in the region. A regional growth center is a cluster of industries that can generate dynamic economic growth and are interconnected with each other through input-output relationships around leading

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<sup>1</sup> Sjafrizal, *Regional Economic Analysis and its Application in Indonesia*.

industries.<sup>2</sup> Palembang is the capital city of South Sumatra Province which has a central and main role in the economy and regional development, especially in South Sumatra. Palembang is the center of government, trade, and at the same time the center of economic growth in South Sumatra, this is because the infrastructure development in Palembang is better than other districts / cities, this makes many people migrate to Palembang City. Palembang has several ports that are functioned as the center of export - import activities, namely Tanjung Api-Api Port which is the largest modern port in South Sumatra and is specifically for large-sized ships and is a logistics center and distribution of goods in the South Sumatra region, then there is Boom Baru Port which is the oldest port in Palembang and is usually used to export agricultural commodities and plantations such as rubber to several countries.

Palembang as the capital of South Sumatra Province, has a strategic geographical location, so that this city is used as a central point to connect various regions in Sumatra. There are many large industries in Palembang such as fertilizer industry, cement industry, rubber industry, concrete industry and many more. These industries will require a lot of labor and require the supply of raw materials from other regions, so that the number of industries will affect the economic activities of districts / cities in South Sumatra .<sup>3</sup> While Palembang serves as a growth pole, it remains unclear whether its development has positively influenced neighboring regions.

In addition to industrial development, population migration from outside Palembang City occurs because of relatively easy and smooth transportation access compared to migration access to other districts/cities in South Sumatra that do not yet have toll roads. The ease of transportation access aims to support population mobility in health services, education, tourism and economic interaction. This makes Palembang the region with the most population mobility and economic interaction, so that Palembang is experiencing faster economic growth than other districts / cities in South Sumatra.

Therefore Palembang City is the center of economic growth in South Sumatra and contributes the most to GRDP in the South Sumatra region, this can be seen in the table below:

**Table 1.1 Percentage Distribution of Gross Regional Domestic Product by Regency / City in South Sumatra (2019 - 2023)**

District / City		2019	2020	2021	2022	2023	Average
Ogan Ulu	Komering	3,21	3,22	3,15	2,96	2,99	3,10
Muara Enim		12,55	12,48	13,94	19,07	18,64	15,33
Palembang		33,75	33,69	32,46	30,06	30,59	32,11

<sup>2</sup> Richardson, *Regional and Urban Economics*.

<sup>3</sup> Dewi, Novianti, and Hakim, "Identifying Spatial Correlation and Factors Influencing Regional Economic Growth in Southern Sumatra."

Prabumulih	1,71	1,71	1,67	1,55	1,55	1,63
Pagar	0,61	0,61	0,60	0,55	0,55	0,58

Source: BPS, "South Sumatra in Figures 2024."

Based on the table above, it is very clear that Palembang is the only city that contributes the most to GRDP in South Sumatra in the last 5 years, which ranges above 30%. However, the above data also shows that there has been an economic gap between regions, because other regions contribute very little to the GRDP of South Sumatra.

Planned, directed and sustainable economic development in creating a prosperous society is not an easy thing to do, this is related to the potential of different resources in each region, because of these differences, of course, it will have the potential to cause differences in the level of community welfare in each region and this will later lead to gaps in each region.

This is an important reason why equitable development must be created because it ensures a balance of economic growth and minimizes disparities between regions<sup>4</sup>. Economic growth is an increase in output from year to year which is used as one of the important indicators in economic development, as for the most important thing is that the economic growth potential of a region can be influenced by the economic growth of surrounding areas, so that the influence will also give rise to spatial linkages.<sup>5</sup>

The spillover effect is a consequence of interdependence or even linkage from one region to another, this activity is influenced by economic interactions between regions and this also contributes to the growth of GRDP of a region<sup>6</sup>. The following is GRDP data in the 5 parent districts/cities before expansion in South Sumatra, which can be seen in the table below:

**Table 1.2 GRDP at Constant Prices in Districts / Cities in South Sumatra (Billion Rupiah) 2019 - 2023**

PDRB	2019	2020	2021	2022	2023
Ogan Komerling Ulu	9.867.729	9.866.721	10.116.558	10.683.324	11.229.121
Muara Enim	41.581.529	41.594.540	44.236.766	48.099.370	52.228.236

<sup>4</sup> Zainuri, "The Urgency of the Islands Province Spatial Planning Legal Policy in the National Spatial Planning System."

<sup>5</sup> Capello, "Spatial Spillovers and Regional Growth."

<sup>6</sup> Qibti and Hendarto, "Analysis of the Spillover Effect of Economic Growth Between Districts / Cities in the Purwomanggung Region of Central Java Year 1988-2018."

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Palembang	104.239.386	103.952.690	107.182.552	112.814.827	118.587.136
Prabumulih	5.387.821	5.377.927	5.541.968	5.822.367	6.102.103
Pagar Alam	2.233.768	2.234.267	2.332.447	2.445.823	2.552.103

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Source: BPS South Sumatra Province.

Based on the data above, it can be seen that the GRDP of each regency / city in South Sumatra Province has increased from year to year, but the data shows that the city that has the highest GRDP is still held by Palembang City, then in second place is Muara Enim Regency and for the last place is Pagar Alam City. There are three types of spillover effects including technological spillover effects, industrial spillover effects and growth spillover effects. The growth spillover effect means that the economic growth of a region encourages the economic growth of surrounding areas through economic interactions and inter-regional interactions.

However, this is different from what happens in the field even though Muara Enim, Pagar Alam, and Prabumulih are close to Palembang but economic growth in these districts / cities has not increased like Palembang City, so here it can be seen that there is an economic gap because Palembang being the center of the economy tends to attract qualified human resources and capital from other regions which causes other regions to experience a lack of qualified human resources and difficulties to develop.

There have been many studies on the spillover effect in recent years, some of the previous studies show and prove different results. The results of research by Laksono, Rustiadi, and Siregar, "Negative Spatial Spillover of Economic Growth Between Districts/Cities in East Java Province. found a negative effect of *growth spillover* between districts/cities in East Java. Research by Wibisono and Kuncoro, "The Spillover Effect of Inter-District/City Growth in East Java Province Year 2001–2013." which shows districts/cities that are classified as developed and fast growing in 2001 - 2013 are centered in the central region of East Java Province, this area is shown by Surabaya City<sup>7</sup>. In the same year also conducted research by Sari and Wahed, "Spillover Effect Analysis of Regency / City Economic Growth in Bakorwil V Jember East Java Using VECM Analysis." which analyzes the *spillover effect* of district / city economic growth in the Bakorwil V Jember East Java region using the VECM analysis method. The results also show that the relationship of economic growth between regions in the Bakorwil V Jember region is mostly two-way. This means that in addition to being able to provide a spillover impact of growth, it also receives the spillover impact of economic growth from other

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<sup>7</sup> Wibisono and Kuncoro, "The Spillover Effect of Inter-District/City Growth in East Java Province Yearly 2001–2013."

regions<sup>8</sup>. Economic growth in the Bakorwil V Jember region has a different impact from each region. Jember Regency does not have a *spillover effect* on other regions, while Probolinggo City, Lumajang Regency, Bondowoso Regency, Situbondo Regency and Banyuwangi Regency have a *spillover effect* on each region. The impact of the *spread effect* in the development activities of each region in the Bakorwil V Jember region is greater than the *backwash effect*. This is in accordance with what Perroux hypothesized in the growth pole theory. While several studies have analyzed spillover effects in East Java and Northern Sumatra, limited research has examined how Palembang, as a growth center, influences surrounding districts in South Sumatra. This study aims to fill that gap for Analysis of the Spillover Effect of Palembang City's Economic Growth on Surrounding Regions in South Sumatra Province

Empirical studies need to be carried out, especially studies on the spillover effects of economic growth, this is because the theory of growth centers that have been carried out in various regions certainly still raises the pros and cons, so from the above phenomenon, it makes researchers interested in raising the topic of analyzing the spillover effects of Palembang City's economic growth on the economic growth of districts / cities in South Sumatra Province.

## RESEARCH METHODS

Quantitative data is data that can be measured in units of a numerical scale or numbers<sup>9</sup>. In this study, the type of data used is quantitative data in the form of numbers. Quantitative data on GRDP at constant prices from 5 districts / cities in South Sumatra, during the period 2001 - 2023. This study also uses supporting data in the form of GRDP distribution percentage data and economic structure data of 5 districts / cities in South Sumatra. The variables in this study are economic growth and spillover effects, the data used in this study are secondary data in the form of *time series* during the period 2001 - 2023. The data used in this study are data on Gross Regional Domestic Product (GRDP) at Constant Prices (ADHK) from 5 districts / cities in South Sumatra consisting of Palembang City, Ogan Komering Ulu Regency, Muara Enim Regency, Prabumulih City, and Pagar Alam City. These districts / cities are the parent districts / cities before the expansion in South Sumatra. The data was obtained from the Central Bureau of Statistics (BPS) of South Sumatra Province. The method used in this research is *Granger Causality Test* with *Vector Autoregressive* (VAR) approach, data processing is done using Eviews13 application.

In this study, researchers used quantitative descriptive analysis techniques, according to Sugiyono, quantitative descriptive analysis is used to analyze data by describing or describing the data that has been collected, as it is without intending to make conclusions that apply to the public<sup>10</sup>. The analysis technique used in this research is descriptive quantitative using the *Granger Causality Test* method. This study uses the *Granger*

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<sup>8</sup> Sari and Wahed, "Spillover Effect Analysis of Regency / City Economic Growth in the Bakorwil V Jember East Java Region Using VECM Analysis."

<sup>9</sup> Kuncoro, *Quantitative Methods: Theory and Applications for Business & Economics Edition* 5.

<sup>10</sup> Darwin, Mamondol, and Alparis, *Research Methods for Quantitative Approaches*.

*Causality Test* method or the granger causality test, the Granger causality test is the most popular method, this test aims to examine whether A precedes B, or B precedes A, or the relationship between A and B is reciprocal. This study is grounded in growth pole theory, which posits that development in a dominant region can generate spillover effects through sectoral linkages and spatial interactions.

In other words, this test is a method to determine whether the dependent variable can be influenced by the independent variable and on the other hand, the independent variable can occupy a position on the dependent variable, or to see the causal or reciprocal relationship between the two research variables so that it can be known whether the variables statistically affect each other, have a unidirectional relationship or there is no relationship at all. The following is a general model of the granger causality test<sup>11</sup> :

$$Y_t = \sum a_i Y_{t-i} + \sum b_j X_{t-j} + v_t \quad (6)$$

$$X_t = \sum c_i X_{t-i} + \sum d_j Y_{t-j} + \mu_t \quad (7)$$

This research uses the granger causality test with the VAR approach, here are some steps that must be taken before conducting the granger causality test including: stationary test, determining the optimal lag, VAR stability test, and *granger* causality test.

The granger causality test basically assumes that information is relevant to forecast or predict whether there is a spillover effect of Palembang City's economic growth on the economic growth of districts/municipalities in South Sumatra Province. Granger causality testing is done with the help of the *Eviews12* application. Based on the above, the *granger* causality test in this study is formulated as follows:

$$\begin{aligned} \text{LogPDRB}_{PLGt} = & \sum_{i=1}^{i=q} a_1, \Delta \text{LogPDRB}_{PLGt-i} + \sum_{i=1}^{i=q} a_2, \Delta \text{LogPDRB}_{OKUt-i} + \\ & \sum_{i=1}^{i=q} a_3, \Delta \text{LogPDRB}_{PBMt-i} + \sum_{i=1}^{i=q} a_4, \Delta \text{LogPDRB}_{MEt-i} + \\ & \sum_{i=1}^{i=q} a_5, \Delta \text{LogPDRB}_{PGAt-i} + e_t \end{aligned}$$

$$\begin{aligned} \text{LogPDRB}_{OKUt} = & \sum_{i=1}^{i=q} a_6, \Delta \text{LogPDRB}_{OKUt-i} + \sum_{i=1}^{i=q} a_7, \Delta \text{LogPDRB}_{PLGt-i} + \\ & \sum_{i=1}^{i=q} a_8, \Delta \text{LogPDRB}_{PBMt-i} + \sum_{i=1}^{i=q} a_9, \Delta \text{LogPDRB}_{MEt-i} + \\ & \sum_{i=1}^{i=q} a_{10}, \Delta \text{LogPDRB}_{PGAt-i} + e_t \end{aligned}$$

<sup>11</sup> Kuncoro, *Quantitative Methods: Theory and Applications for Business & Economics Edition* 5.

$$\begin{aligned}
 \text{LogPDRB}_{PBMt} &= \sum_{i=1}^{i=q} a_{11} \Delta \text{LogPDRB}_{PBMt-i} + \sum_{i=1}^{i=q} a_{12} \Delta \text{LogPDRB}_{PLGt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{13} \Delta \text{LogPDRB}_{OKUt-i} + \sum_{i=1}^{i=q} a_{14} \Delta \text{LogPDRB}_{MEt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{15} \Delta \text{LogPDRB}_{PGAt-i} + e_t \\
 \text{LogPDRB}_{MEt} &= \sum_{i=1}^{i=q} a_{55} \Delta \text{LogPDRB}_{MEt-i} + \sum_{i=1}^{i=q} a_{56} \Delta \text{LogPDRB}_{PLGt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{57} \Delta \text{LogPDRB}_{OKUt-i} + \sum_{i=1}^{i=q} a_{58} \Delta \text{LogPDRB}_{PBMt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{59} \Delta \text{LogPDRB}_{PGAt-i} + e_t \\
 \text{LogPDRB}_{PGAt} &= \sum_{i=1}^{i=q} a_{64} \Delta \text{LogPDRB}_{PGAt-i} + \sum_{i=1}^{i=q} a_{65} \Delta \text{LogPDRB}_{PLGt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{66} \Delta \text{LogPDRB}_{OKUt-i} + \sum_{i=1}^{i=q} a_{67} \Delta \text{LogPDRB}_{PBMt-i} + \\
 &\quad \sum_{i=1}^{i=q} a_{68} \Delta \text{LogPDRB}_{MEt-i} + e_t
 \end{aligned}$$

Description: LogPDRB= Logarithm of Gross Regional Domestic Product; PLG = Palembang City; OKU = Ogan Komering Ulu Regency; OKI = Ogan Komering Ilir Regency; ME = Muara Enim Regency; LHT = Lahat Regency; MBA = Musi Banyuasin Regency; PBM = Prabumulih City; PGA = Pagar Alam City; LLG = Lubuk Linggau City;  $\alpha(1,2,...)$  = Constant;  $t - 1$  = lag value of each variable;  $\Delta$  = first difference operator.  $e_t$  = error;  $e_t$  = first difference operator.

Unidirectional causality occurs when economic growth in region i causes economic growth in region q, but economic growth in region q does not cause economic growth in region i. Then for bidirectional causality occurs when economic growth in region i causes economic growth in region q, and vice versa, economic growth in region q causes economic growth in area i.

## RESULT AND DISCUSSION

The spillover effect can occur due to a relationship of interconnectedness or even dependence between regions, which is inseparable from the influence of other regions that are rich in potential resources and have regional proximity. The relationship between one region and another can have a one-way and two-way relationship that can be seen from the calculation results with the *Granger Causality Test*.

**Table 1.3 Granger Causality Test Results**

District/City	Palembang City	District. OKU	Prabumulih City	Muara Enim Regency	City Pagar Alam
F-Statistic does not Granger					
PLG City		3.56603**	6.68094*	3.18837**	1.63835
OKU District	2.29096		8.00724*	4.03824*	3.89423**
City	2.29950	2.60621		0.47707	3.78555**
ME district	2.72336	1.59658	0.40530		0.47288
PGA City	0.49257	0.16907	26.8982	4.41492*	

*Source: Data processing results with eviews13, 2025*

Notes: Sign (\*) Significance in 5% real level and (\*\*) in 10% level.

Based on the results of the *granger causality test*, it is known that there is a causal relationship between the economic growth of Palembang City and several districts / cities in South Sumatra Province. This can be seen in the probability value F significance at the level  $\alpha = 0.05$  and  $0.10$ . The results also show that there are many one-way and two-way causality relationships.

### 1. Spillover Effect of Palembang City's Economic Growth

The results of the research through the *Granger Causality Test*, show that the economic growth of Palembang City only affects the economic growth of OKU Regency, and Muara Enim Regency at a significance of  $<10\%$  and Prabumulih City  $<5\%$ . The economic growth of Palembang City only provides a spillover effect to the surrounding regencies / cities including OKU, Muara Enim and Prabumulih Regencies, the spillover effect provided is in the form of a *spread effect*.

The one-way causality relationship between the economic growth of Palembang City and OKU Regency, Muara Enim, Prabumulih City is seen in the flow of input outputs as well as Palembang City to OKU Regency, this can be seen in economic activities where the mining and energy sector is the mainstay sector that makes the largest contribution in second place to economic growth in OKU Regency. Ogan Komering Ulu (OKU) has several large factories that are quite well-known and contribute significantly to the economy of the surrounding area, including: PT Semen Baturaja (Persero) Tbk, this is the first and only cement company in South Sumatra. The factory is located in Baturaja, OKU Regency which is one of the largest cement factories in Indonesia. Semen Baturaja is an important part of infrastructure development in South Sumatra and the city that is doing a lot of development on its infrastructure is Palembang City. Semen Baturaja industry products are an important part of infrastructure development in South Sumatra, including in Palembang City. The one-way causality relationship between Palembang City and Muara Enim Regency is seen in the activities of Muara Enim known as one of the largest



coal producing areas in Indonesia. Coal produced by Muara Enim is the main commodity marketed to various regions including Palembang. Palembang as the provincial capital is the center of industry and trade in South Sumatra, there are many industries in Palembang that need coal supplies from Muara Enim as fuel, such as the cement industry, paper industry, textile industry, and chemical industry. This is in accordance with the opinion of Richardson (1978) which states that the regional growth center is a set of industries that can produce dynamic economic growth and are interrelated with each other through input-output relationships around leading industries. Furthermore, a one-way causality relationship between the economic growth of Palembang City and Prabumulih City, this can be seen in Palembang as the capital of South Sumatra Province, is the center of trade and distribution of goods and services. Agricultural and industrial products from Prabumulih such as rubber, and other crops, are marketed and distributed through Palembang<sup>12</sup>. Prabumulih relies on transportation infrastructure in Palembang, such as ports and airports to support economic activities. Prabumulih people can seek employment opportunities in Palembang, especially in the industrial, service and trade sectors. Palembang also has complete education and training facilities, Prabumulih people can access education and training in Palembang to improve the quality of human resources. This finding is in line with the theory put forward by Perroux (1950), which suggests that the growth center is a collection of industries that will be able to drive and encourage economic growth in the surrounding area. The findings this time are that Palembang as a growth center affects the economic growth of Prabumulih City.

## 2. Spillover Effects of Economic Growth in Ogan Komering Ulu (OKU) Regency

The results of the research through the *Granger Causality Test*, show that the economic growth of Ogan Komering Ulu (OKU) Regency is able to provide a spillover effect on most districts / cities in South Sumatra including Prabumulih City, Muara Enim Regency, and Pagar Alam City. The spillover *effect* given to each region has a *spread effect* and a *backwash effect*. OKU Regency provides a *spread effect* on Muara Enim Regency, Prabumulih City, and Pagar Alam City, while the *backwash effect* occurs in Palembang City which is the capital of South Sumatra Province. This is considering that the economic structure of Ogan Komering Ulu (OKU) Regency in the last 5 years is dominated by 5 business fields which include the manufacturing industry sector 19.68%, wholesale and retail trade, car and motorcycle repair 18.91%, agriculture, forestry and fisheries 15.91%, mining and quarrying 13.51% and construction 12.27%. The mining and energy sector is the mainstay sector that contributes the most to economic growth in OKU Regency. This sector provides a source of energy for households, industrial raw materials and a source of regional income.

Ogan Komering Ulu Regency has the production and potential of mining materials in the form of natural gas located in Peninjauan and Lubuk Batang sub-districts, namely 5 KKS (Cooperation Contracts) and 1 KKS respectively. Meanwhile, the production and potential of mining materials in the form of geothermal is located in Ulu Ogan District. Ogan Komering Ulu (OKU) has several large factories that are quite famous and contribute significantly to the economy of the surrounding area, including: PT Semen

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<sup>12</sup> Richardson, *Regional and Urban Economics*.

Baturaja (Persero) Tbk, this is the first and only cement company in South Sumatra. The factory is located in Baturaja, OKU Regency which is one of the largest cement factories in Indonesia. Semen Baturaja is an important part of the infrastructure development of regions in South Sumatra .<sup>13</sup>

This is in line with the theory that there are several types of spillover effects, including the industrial spillover effect seen from the formation of economic relations in various regions, both as suppliers and as customers. Furthermore, there is a growth spillover effect, which is characterized by increased economic growth in an area that will increase demand for goods and services in other areas, so that this encourages economic growth in the surrounding area. This is what makes OKU Regency provide spillover effects to several districts/cities including Prabumulih City, Muara Enim Regency, and Pagar Alam City .<sup>14</sup>

### 3. Spillover Effect of City's Economic Growth Prabumu

The results of the research through the *Granger Causality Test*, show that the economic growth of Prabumulih City is able to provide a spillover effect on Pagar City. But on the other hand Prabumulih also turned out to be a city that received spillover effects from several districts / cities such as Palembang City and OKU Regency. Based on the granger causality results, it is known that there is a one-way relationship between Prabumulih and its surrounding areas, some of these relationships are *spread effects* and some are *backwash effects*.

Prabumulih City is one of four cities in South Sumatra Province, Prabumulih is a transit city located in the middle of the South Sumatra transportation hub. Its strategic location has caused Prabumulih to develop as a trade and service city that meets the needs of the Prabumulih community and surrounding communities passing through South Sumatra. The economic structure of Prabumulih City in the last 5 years is dominated by five categories including wholesale and retail trade, car and motorcycle repair 25.12%, construction 17.55%, processing industry 10.46%, mining and quarrying 9.66% & real estate 7.88%.

The road network connecting Prabumulih City with Pagar Alam is also quite good, making it easier for economic interactions to occur, especially in the distribution of goods and services to the region concerned. This is also in line with research conducted by Dainty where the spillover effect will arise due to the interrelationship between regions, considering that this will not be separated from the influence of other regions that have potential resources and have administrative proximity. It can be seen that the distance

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<sup>13</sup> Dewi, Novianti, and Hakim, "Identifying Spatial Correlation and Factors Influencing Regional Economic Growth in Southern Sumatra."

<sup>14</sup> Capello, "Spatial Spillovers and Regional Growth."

between Prabumulih City and Pagar Alam is quite close so it is not surprising that these areas have economic interactions .<sup>15</sup>

This finding is also in line with research conducted by Rosyadi & Yulyanti, where economic growth in Pekanbaru City from 2010 - 2019 was due to the encouragement of economic activity from the trade, processing industry and manufacturing sectors. The increase in economic growth in Pekanbaru City is not entirely from the role of economic activity in Pekanbaru, this is also due to the impact of other regional economic activities such as Siak Regency, Kampar Regency, and Pelalawan Regency which also contribute to economic growth in Pekanbaru City which is directly adjacent<sup>16</sup> . This is due to the existence of priority sectors that have an important role such as the processing sector and the oil palm plantation sub-sector which can increase the increase in population consumption, so that the spillover of increased economic activity in Siak, Kampar and Pelalawan Regencies will continue to be felt by Pekanbaru City.

Similarly, Prabumulih also receives spillover effects from surrounding areas such as Palembang and OKU Regency. This happens because where economic growth in Prabumulih is not entirely from the role of economic activity in the city of Prabumulih alone but the impact of economic activity in neighboring areas can be from increased trade, investment and tourism.

Like the one-way causality relationship from Palembang City to Prabumulih, where the economic growth of Palembang City can affect the economic growth of Prabumulih City. This is because Palembang is the center of trade and distribution of goods in South Sumatra. Prabumulih as a neighboring region, is very dependent on Palembang to get supplies, both consumption needs and industrial needs, not only that Prabumulih can also market its products in the Palembang market.

Palembang offers more job opportunities than Prabumulih, causing some Prabumulih residents to choose to work in Palembang both in the formal and informal sectors. Not only that, Palembang also has better transportation infrastructure than Prabumulih, such as airports, ports and toll roads. This facilitates accessibility between Prabumulih and Palembang, both for business trips, studies and tourism. Likewise, the relationship between OKU Regency and Prabumulih City can occur due to administrative proximity and the flow of goods and services to these areas. This is also in line with economic growth in a region does not always spread evenly to other regions, this is because the spillover effect is divided into two, namely there is a spread effect and a return effect .<sup>17</sup>

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<sup>15</sup> Dainty Juliet Roring, Christie Natalia Rumagit, and Artha Malau, "Spillover Effect Analysis of City and Regency Economic Growth in North Sulawesi Province (Manado, Bitung, Minahasa, North Minahasa)."

<sup>16</sup> Rosyadi and Yulyanti, "The Effect Of Regional Spillovers On Economic Growth In Pekanbaru City, Riau Province, Indonesia."

<sup>17</sup> Amdan and Sanjani, "Analysis of Factors Affecting Economic Growth in Indonesia."

#### 4. Spillover Effect of Economic Growth in Muara Enim Regency

The results of the research through the *Granger Causality Test*, show that the economic growth of Muara Enim Regency does not have a spillover effect on the surrounding areas. But on the contrary, Muara Enim Regency is a regency that receives spillover effects from many districts / cities such as Palembang City, OKU Regency, and Pagar Alam City. Based on the *granger causality* results, it is known that there is a one-way relationship between the surrounding areas and Muara Enim, this relationship is a *backwash effect* due to the polarization of economic activities due to agglomeration.

Agglomeration in Muara Enim, especially in the mining area has driven the growth of leading sectors such as coal mining and related trade and services sectors. The main focus of economic activity and attracting investment and labor, creates economic polarization between areas that have natural resources and other areas that lack natural resources. The agglomeration created in Muara Enim will certainly attract labor from various regions, creating a larger and more diverse labor market. But it also leads to polarization in terms of wages and employment opportunities, where workers with high skills and good education tend to get higher wages and better employment opportunities in agglomeration areas.

Muara Enim is known as one of the largest coal producing areas in Indonesia. Coal produced by Muara Enim is the main commodity marketed to various regencies/cities in South Sumatra including Palembang. Palembang City as the capital of the province requires a lot of coal supply as fuel to meet various needs for power plants, cement industry, paper industry, textile industry, and chemical industry.

The regional growth center is a group of industries that can produce dynamic economic growth and are interrelated with each other through input-output relationships around leading industries. Muara Enim Regency also receives spillovers from surrounding regencies such as Pagar Alam City. This can be seen in Pagar Alam City which is famous for its agricultural products such as vegetables, tea, and fruits. These products can be supplied to Muara Enim to meet the consumption needs of the community and the food processing industry in Muara Enim .<sup>18</sup>

Economic growth in Muara Enim is also influenced by economic growth in Palembang City, Ogan Komering Ulu Regency and Pagar Alam City, this can be seen as Palembang has a larger and more diverse market than Muara Enim. This makes Palembang an attractive regional trade center for producers and consumers from Muara Enim. Mining and quarrying products from Muara Enim are also marketed through the port in Palembang City, then the people of Muara Enim also need Palembang to get consumer goods and other needs that are not available in their area. Muara Enim also absorbs labor from surrounding areas such as Pagar Alam and OKU, so it is not surprising that Muara Enim provides a *backwash effect* to the surrounding area.

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<sup>18</sup> Laksono, Rustiadi, and Siregar, "Negative Spatial Spillovers of Economic Growth Between Districts/Cities in East Java Province."

## 5. The Spillover Effect of Palembang City's Economic Growth on Pagar City

The results of the research through the *Granger Causality Test*, show that the economic growth of Pagar Alam City is able to provide a spillover effect on districts / cities in South Sumatra, including Muara Enim. But on the other hand, the economic growth of Pagar Alam City also turned out to be a city that received spillover effects from several districts / cities such as Prabumulih City and OKU Regency. Based on the results of *granger causality*, it is known that there is a one-way relationship between Pagar Alam and its surrounding areas, some of these relationships are *spread effects* and some are *backwash effects*.

Causality between Pagar Alam City and Muara Enim Regency. This can be seen because Pagar Alam City provides a spillover effect to the district / city in the form of natural resources or agricultural products from Pagar Alam City. Pagar Alam is an area rich in natural resources and is also known as one of the largest vegetable and fruit producing areas in South Sumatra, fertile soil conditions and a favorable climate certainly make this area very potential for agricultural and plantation activities. Vegetables and fruits from Pagar Alam are generally of good quality, fresh and more natural because they are taken and picked directly from the farmers' gardens. Pagar Alam has extensive and productive agricultural land, so that the agricultural products obtained are able to meet the needs of other districts / cities around Pagar Alam including Muara Enim.

This is in line with the theory put forward by (Capello, 2009) that specialization encourages production specialization in each region, thereby increasing the efficiency and competitiveness of the region. Pagar Alam has specialization, especially in the agricultural, plantation and tourism sectors, the existence of this specialization forms a supply chain because of economic relations in various regions, both as suppliers and as customers. In connection with this specialization, this is the main reason why Pagar Alam's economic growth can affect the economic growth of the surrounding regencies / cities.

Pagar Alam is also famous for its natural tourist destinations in the form of Mount Dempo, Thousand Stairs, Green Paradise, Tea Gardens, Teban Gheban Lake, Dempo Park and many more. So it is not surprising that many tourists visit Pagar Alam for recreation and entertainment. The economic growth of Pagar Alam City is also influenced by OKU Regency and Prabumulih City, this can be seen that many Prabumulih and OKU City people come to Pagar Alam for tourism, of course this activity will increase regional income for Pagar Alam City so that indirectly the economic growth of Pagar Alam City has also increased. Economic growth in a region is also driven by the economic growth of the surrounding areas. Similarly, economic growth in the city of Pagar Alam can be influenced by economic growth in Prabumulih City and Ogan Komering Ulu Regency.<sup>19</sup>

## CONCLUSION

The results showed that there is a relationship between the economic growth of Palembang City on the economic growth of regencies / cities in South Sumatra, the

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<sup>19</sup> Mukhlis, "Agglomeration of Manufacturing Industries, Economic Growth, and Interregional Inequality in South Sumatra, Indonesia."

relationship given is one-way. This means that the economic growth of Palembang City is able to have a spillover effect on economic growth in other districts / cities in South Sumatra, including Ogan Komering Ulu Regency, Prabumulih City, and Muara Enim Regency. The economic growth of Palembang City affects the economic growth of other districts / cities this is because of the complex economic interactions realized through input output linkages that permeate various sectors, ranging from the manufacturing industry, services, trade, agriculture, mining, to crucial sectors such as education . Given that Palembang City is the center of economic growth in South Sumatra, it is not surprising that the economic growth of Palembang City can affect and provide spillover effects to the surrounding areas. These findings suggest that to achieve more equitable development, regional planners should strengthen infrastructure and industrial linkages in peripheral areas to better harness spillover benefits from Palembang

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