



Spatial Analysis of Transportation and Communication Sector Competitiveness in Jember District

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ABSTRACT

This study investigates the comparative advantage between sub-districts in the district of Jember using the shift-share analysis method with data periods from 2009 to 2013. From the results of the shift-share analysis, it can be seen that there are several sub-districts in Jember Regency that have competitive advantages in the transportation and communication sector and sub-districts that do not have a competitive advantage in the transportation and communication sector.

Keywords: Jember, Shift-Share Analysis, Competitive Advantage, Transportation

JEL Classification Code: O18, L91, C69

INTRODUCTION

The economic progress of a region shows the success of development even though it is not the only indicator of success (Fingleton, et al. 2017). There are two kinds of measures to assess economic growth, namely output per worker and per capita output growth. Output growth is used to assess the growth in production capacity which is affected by an increase in labor and capital in the region. Output growth per worker is often used as an indicator of changes in the competitiveness of the region (through productivity growth). Meanwhile, per capita output growth is used as an indicator of changes in economic welfare. Therefore, economic growth in each region is one of the important targets that need to be achieved in the development process. Improved transportation will increase the competitive advantage of a region, because goods and people can be transported more safely, quickly, cheaply, and precisely.

Transportation is an important component in living and living systems, government systems, and social systems. The socio-demographic conditions in a region have an influence on transportation performance in that region. The existence of a very high density will have a significant effect on the ability of transportation to serve community needs. The trend that occurs in big cities is a very high increase in population due to birth rates and urbanization. The level of urbanization implies a higher population density, both directly and indirectly reducing the competitiveness of regional transportation (Napolitano, 2013).

Transportation has a very important role in encouraging increased economic growth. Where economic growth is the main goal of development in each region or region so that various efforts are made to make it happen. In this effort, the measure that is commonly seen is the Gross Regional Domestic Product which is regularly published in terms of time from year to

year which is always published by the Central Statistics Agency. The ability to spur the growth of a region or region is highly dependent on the superiority or competitiveness of the economic sectors in the region. The development of a region also needs to accommodate the spatial structure, such as urban centers, rural centers, lagging regions, growth poles. A regional economic development and development policy should prioritize the superior sectors owned by each district or city, while still paying attention proportionally to other sectors in accordance with development potentials and opportunities.

An efficient transportation system can reduce the cost of commodities in the international market so that the competitiveness of export products increases. Good transportation will attract both foreign and national investors. This results in local government revenues increasing directly and will open up new jobs so that it will increase public consumption. Increased exports, investment, income, and consumption can have an impact on increasing local government revenue so that funds for transportation development and for other sectors will also increase. Transportation is the transfer of goods and people from their place of origin to their destination (Sánchez-Triana, et al. 2013). Transportation is a means to facilitate mobility and economic wheels which are very important and strategic, have a strategic function as a support and support for economic activities (promotion and servicing sector) carried out by the state to encourage, increase and maintain the economic growth of the community and optimize resources. economy (place and time security).

Apart from the transportation sector, the means of supporting sustainable economic growth is the communication sector. The definition of communication is the delivery of information from one person to another (Capello & Nijkamp, 2019). The communication sector plays an important

role in an extensible process of economic development because of the successful implementation of economic activities, economic actors can communicate that is not limited by distance and time. It is necessary to have the most profitable and systematic cooperation between the government and the private sector in building a comprehensive and written communication system so that an economic system that supports economic activity can be realized.

The success of regional economic development can be measured by several indicators commonly used as measurement tools. This common indicator is the Gross Regional Domestic Product (GRDP) which can be used as a reference for general economic performance as a measure of the progress of a region. Other indicators are the rate of growth, per capita income, and shifts or changes in economic structure. The level of competitiveness in a city is one measure that determines whether an area is potential for investment or not. This level of competitiveness applies globally so that cities in the world try to improve the competitiveness of their cities. The level of competition does not only occur at the national level but also at the international level.

Basically, there is no standard understanding of competitiveness or level of competitiveness. Few competitive cities are attractive to creative people and to be competitive cities. The level of competitiveness is one of the parameters that exist in the concept of a sustainable city. If the level of competitiveness of a city is higher, the level of welfare of its people will be higher. Competitiveness in a region is one of the main issues in regional development. The concept of competitiveness is essentially related to the ability of a company, city, region, and region or country in maintaining and increasing competitive advantage in a sustainable manner (Porter, 2000). Competitiveness is also defined as the ability

to produce goods and services needed as well as the ability to maintain high and sustainable income (Santoso, 2009). In other words, namely the ability of a region to create relatively high income and job opportunities as seen in external competitiveness.

Competitiveness, which is basically the ability of a region or city to foster an attraction and a productive climate for economic or business activities (Taufik, 2005). Competitiveness can be described as the productivity and capacity of the regional economy against other regions. Therefore, the government plays an important role in building a conducive economic climate for the region. The government is very closely related to the bureaucracy, so regional competitiveness is also greatly influenced by the regional bureaucracy (Jeddawi, 2009).

Jember Regency is a regency in East Java Province, Indonesia which has its capital in Jember. This district is adjacent to the Probolinggo Regency and Bondowoso Regency in the north of Banyuwangi Regency. Administratively, Jember Regency is divided into 31 districts. The majority of the population of the Jember Regency consists of Javanese and Madurese tribes. The average resident of Jember is an immigrant.

Jember Regency is an education city, for this reason, a lot of students from outside the city of Jember live in Jember. Thus, the transportation and communication sector plays an important role in regional economic development. Transportation services must be sufficiently available, cheap, and evenly distributed so that all development activities can run smoothly, in accordance with expectations, namely improving the welfare of the community. The need for transportation services will follow the direction and level of development of economic activities that will benefit from it, on the other hand, economic development is influenced by the state of the transportation system that serves it. The demand

for transportation services depends on the ups and downs of economic activities that require these transportation services (Kamaluddin, 2003).

Competitiveness is the ability of a producer to produce a commodity with good quality and low cost according to the price in the international market, marketable with sufficient profit, and able to continue its production or business activities. The concept of comparative advantage is a measure of potential competitiveness if the economy does not experience any distortion at all. The concept that is more suitable for measuring financial feasibility is competitive advantage or often called "revealed competitive advantage" which is a measure of the competitiveness of activities in actual economic conditions (Vlachvei, 2016).

Competitiveness is the result of the advantages and values of a company to produce something, either in the form of goods or services. Excellence comes from work processes carried out with good quality and professional management concepts accompanied by the contribution of the best resources such as raw materials, leadership, adequate finance, human resources, and support from sophisticated technology (Widarni & Bawono, 2020). In the theory of competitiveness, there is a theory of comparative advantage and competitive advantage which is used as a measure of the level of competitiveness.

Adam Smith proposed a theory of international trade known as the theory of absolute advantage. Adam Smith argues that if a country wants competition, free trade, and domestic spatialization, then the same thing is desired in relations between nations. Because of this, he suggested that it would be better for all countries to specialize in those commodities in which it had the absolute advantage and to import only other commodities. It said Absolute advantage if each country can produce one kind of goods at a cost that is absolutely

lower than in other countries.

The advantages of the Absolute advantage theory are the occurrence of free trade between two countries that have different absolute advantages, where there is an interaction of exports and imports, this can increase the prosperity of a country. The weakness is that if only one country has an absolute advantage, international trade will not occur because there is no profit. So the theory of absolute advantage (absolute advantage) emphasizes that the efficiency in the use of inputs (for example labor) in the production process largely determines the advantage or level of competitiveness. It is said that the absolute advantage is because each country produces one kind of goods with a cost that is absolutely lower than in other countries. Specialization on the basis of absolute advantage which is then followed by the exchange of the two countries can benefit (Nopirin, 1999).

Transportation is the transfer of goods and people from their place of origin to their destination. So that with these activities, there are three things, namely the presence of cargo being transported, the availability of vehicles as a means of transportation, and the presence of roads that can be traversed. The process of moving from the movement of the place of origin, where the transportation activity starts, and to the destination where the activity ends. For this reason, with the transfer of goods and people, transportation is one of the sectors that can support economic activity (the promoting sector) and service providers (the servicing sector) for economic development.

Transportation is the movement of people's behavior in space both in carrying themselves and carrying goods. Economic activities and transportation are closely related, where both can influence each other. Economic growth is related to transportation because due to economic growth, the mobility of a person increases, and the need for movement increases beyond the

capacity of available transportation infrastructure. It can be concluded that transportation and the economy are closely related. On the one hand, transportation can encourage an increase in the economic activity of a region, because, with the transportation infrastructure, an area can increase its economic activity. But on the other hand, due to high economic activity where economic growth increases, transportation problems will arise, due to traffic congestion, so the need for additional transportation routes to compensate for the high economic activity (Tamin, 1997).

A region can increase its economic growth through sectoral measures as measured by the Gross Regional Domestic Product (GRDP). Where one of the sectors in the Gross Regional Domestic Product (GRDP) is the transportation and communication sector. Transportation is the transfer of goods and people from their place of origin to their destination.

The process of moving from the movement of the place of origin, where the transportation activity begins, and to the destination where the activity has ended. For this reason, with the transfer of goods and people, transportation is one of the sectors that can support economic activity (the promoting sector) and service providers (the servicing sector) for economic development. Meanwhile, communication is the process of delivering information (messages, ideas, ideas) from one party to another.

In general, communication is carried out verbally and verbally and can be understood by both parties. Communication is a delivery to inform, change attitudes, opinions, or behavior either directly or indirectly. Communication can also be said as a system that is formed, maintained, and modified with the aim that signals are sent and received according to the rules (Fidelmiro, 2004). To increase regional economic growth, in the transportation and communication sector in each district there is the influence of regional share, in-

dustrial mix, allocation, as well as the influence of specialization and competitiveness. against industrial competitiveness in each region and regional economic growth.

METHODOLOGY

The method used in this study is the Shift Share Esteban Marquillas to see which regions have a competitive advantage. With the following equation: The form of the shift-share analysis equation and its components, in general, are as follows:

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

where i is student in economics, j is Research areas from 31 sub-districts in Jember Regency, D_{ij} is change in the sector i in the Jember area, N_{ij} is National Growth Sector i in the Jember, M_{ij} is industrial mix / mixed industrial sector i in the Jember sub-district, C_{ij} is competitive advantage in the Jember area (sub-district)

The sector used in this research is the transportation and communication sector which is denoted by (y) , as follows:

$$D_{ij} = y * ij - y_{ij}$$

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

$$M_{ij} = y_{ij}(r_{im} - r_n)$$

$$C_{ij} = y_{ij}(r_{ij} - r_{im})$$

where: y_{ij} is transportation and communication sector in the jember area (sub-district), $y * ij$ is the transport and communication sector in area j at the end of the analysis year (sub-district), r_{ij} is growth rate of the transportation and communication sector in region j (sub-district), r_{in} is growth rate of the transportation and communication sector in region n (Jember district), r_n is the average growth rate of the transportation and communication sector in region n (Jember district). y_{in} is transportation and communication sector in area n

(Jember district), y^* in is the transport and communication sector in the region at the end of the analysis year (Jember district), y_n is number of transportation and communication sectors in n regions (Jember district), $y^* n$ is total transportation and communication sector in region n at the end of the analysis year (Jember district).

RESULT AND DISCUSSION

The results of Esteban Marquillas' shift-share analysis show that there are districts in certain years that do not have specialties. There are changes every year. As explained in Table 1, the effect of the allocation of the transportation and communication sector in Kabupaten Jember is not always positive and not always negative. A positive Aij value indicates that the transportation sector in a given year has an allocation effect. And if the Aij value in the transportation and communication sector in a certain period is negative, then in that year the transportation and communication sector does not have an allocation effect. With the Aij calculation contained in Esteban Marquillas' shift-share analysis, it will be known which districts have a positive allocation effect value for five consecutive years and which districts have only a positive Aij value for a few years. The following is a table that shows the Aij value in 31 Districts.

In Table 1, it is explained that the first is Patrang District. In Patrang District, the Aij value in the transportation and communication sector in 2009 was positive at 46416052.38. This shows that in 2009 the Patrang District had an allocation effect. From 2009 to 2011 the allocation effect was positive. However, in 2012 there was a decrease that the Aij value was -1655451,498. This means that in 2012 there was no allocation effect, and followed by the same 2013 did not have an allocation effect of -315621.9024.

Then the second one is Sumbersari District in 2009 which has an al-

location effect of 67573323.49. In 2010 there was a decline, namely Aij was negative by -808816.6924, then in 2012 it was -37694.7269 and in 2013 it was -90761.02133. Furthermore, there was Kaliwates District in 2010, Aij had a negative value of -30739,043 and in 2013 it was -63557.8. Then there is the Rambipuji District where the Aij value is negative, namely in 2010 of -101423.6803, 2012 of -242004.6568, and 2013 of -50192.92081. Furthermore, there is the District of Wuluhan, the Aij value is negative, namely, in 2010 it was -600705.0722 and in 2013 it was -31190.85856.

Silo sub-district which is a sub-district after Wuluhan district where Aij is negative, namely in 2012 it was -256866.5167 and in 2012 it was -657107.4743. Then there is Jelbuk Aij District with a negative value, namely in 2010 amounting to -75246.36557 and in 2013 amounting to -1375.213129. Furthermore, in Ledokombo District, negative Aij values were found in 2010 of -151120.4227 and in 2013 of -14273.1922. Tanggul sub-district negative Aij value, which occurred in 2010 amounting to -119518.1441, in 2012 amounting to -272966.191, and in 2013 amounting to -56323.59198. Pakusari District in 2010 amounted to -102399,7182 and in 2013 amounted to -982.48833.

After that, there was Bangsalsari Aij District with a negative value, namely in 2010 amounting to -620210,934 and in 2013 amounting to -167867.76323. Sukorambi District occurred in 2010 amounting to -96799.12118 and in 2013 amounting to -63366538.53. Then there is the Arjasa District which only happened in 2011, which amounted to -142 69161.3. Furthermore, Jombang District where the Aij value is negative, namely in 2010 it was -141074.5698 and in 2013 it was -2518.473468. Umbulsari subdistrict, the allocation effect is negative, namely in 2012 amounting to -258724.7564 and in 2013 amounting to -10728.0344.

Table 1
Analysis of Shift Share Esteban Marquillas Aij value (allocation effect) in the Transportation and Communication Sector in 31 Districts, Kabupaten Jember

Districts	Aij				
	2009	2010	2011	2012	2013
1. Patrang	46416052.38	575153.51	1.08799.637	-1655451.498	-315621.9024
2. Sumbersari	67573323.49	-808816.6924	1.61484.634	-37694.7269	-90761.02133
3. Kaliwates	71616889	-30739.043	159.962	198398.8	-63557.8
4. Rambipuji	21673086.59	-101423.6803	49865520931	-241004.6568	-50192.92081
5. Wuluhan	35584489.75	-600705.0722	72657878266	198807.9008	-31190.85856
6. Silo	25872619.31	-256866.5167	60433895399	-657107.4743	4722294.936
7. Kalisat	15295391.16	35426.8588	3154824514	1690892.417	1289061.99
8. Jelbuk	5987313.385	-75246.36557	424802493.7	35491.36417	-1375.213129
9. Ledokombo	10735226.21	-151120.4227	25351601565	15608.26548	-14273.1922
10. Tanggul	39513028.02	-119518.1441	56033896371	-272966.191	-56323.59198
11. Pakusari	8169342.891	-102399.7182	11906232678	53846.84881	-982.48833
12. Bangsalsari	33390194.28	-620210.934	80538125828	262164.4231	-16787.76323
13. Sukorambi	4753744.358	-96799.12118	11525963273	48858.27392	-63366538.53
14. Arjasa	1188834249	8746083.121	-14269161.3	62827158.94	100390776.5
15. Jombang	7156068.085	-141074.5698	17340204047	67353.09678	-2518.473468
16. Umbulsari	25334750.5	-258724.7564	36336759918	85193.80055	-10728.0344
17. Ajung	12536880.56	-228605.3701	30343927013	111040.0232	-5151.480013
18. Ambulu	40813637.63	-511103.1735	96199886867	-20355.501	-52730.56996
19. Gumukmas	17630445.42	-250341.7739	4.1688E+10	30320.796	-18947.6787
20. Kencong	-290934378.7	-186080.743	37258333725	-27271.3576	-22260.0317
21. Balung	18048623.11	-125476.4699	41898965912	-143926.442	-36422.99082
22. Semboro	8032979.934	-149459.197	19322917633	62444.39343	-4021.487912
23. Jenggawah	15646993.85	-203249.4091	36472047804	-72297.68319	-26346.83812
24. Mumbulsari	8247164.393	-155770.0627	19865241570	67155.94798	-3834.478972
25. Mayang	6656427.539	-666250.2364	14944526071	-147820.1697	224283.2666
26. Tempurejo	12743555.37	-180422.3231	30192846164	21631.51791	-13970.90637
27. Puger	44163280.51	-1781335.309	1.06276E+11	335510.9366	-23247.94346
28. Sumberbaru	28430165.05	-549847.9566	68756331797	252525.9121	-11415.8999
29. Sumberjambe	9031728.755	-214613.5684	22066494965	133030.6559	1519.941393
30. Sukowono	11356195.88	-140171.0038	26858052943	133030.6559	-7752683.531
31. Panti	12735288.54	-280809.6584	30982100895	158767.605	-694.446377

Furthermore, Ajung Subdistrict, namely the value of the negative allocation effect occurred in 2010 amounting to 228605.3701 and 2013 -5151.480013. After Ajung District, there is Ambulu District, which is a negative Aij value in 2010 of -511103.1735, in 2012 it was 20355.501 and in 2013 it was 52730.56996. Then in

Gumukmas District, the Aij value was also negative in the same year as other Districts, namely in 2010 amounting to 250 341.7739 and in 2013 amounting to 18947.6787. Kencong District, the negative value in Aij in 2009 was -290934378.7, in 2010 it was -186080,743, in 2012 it was -27271.3576 and in 2013 it was -22260.0317.

Furthermore, there is a negative Balung District in 2010 amounting to -125476.4699, in 2012 amounting to -143926.442 and in 2013 amounting to -36422.99082. The Aij value in Semboro District was negative in 2010 of -149459,197 and in 2013 it was -4021.487912. Then there is Jenggawah District, there is a negative Aij value in 2010 of -203249.4091, in 2012 of -72297.68319, and in 2013 of -26346.83812. Mumbulsari District, negative Aij value occurred in 2010 amounting to -155770.0627 and in 2013 amounting to -3834.478972.

Furthermore, Mayang Aij Sub-district was negative in 2010 amounting to -666250.2364 and in 2012 amounting to -147820.1697. Tempurejo Sub-district was negative in 2010 amounting to -180422.3231 and in 2013 amounting to -13970,90637. Then the Puger District which has a negative Aij value in 2010 was -1781335.309 and in 2013 it was -1781335.309. The District of Sumberbaru also had a negative Aij value in the same year as the other districts, namely in 2010 of -549847.9566 and in 2013 of -11415.8999. Then in Sukowono District, the negative Aij value in 2010 was -140171.0038 and in 2013 it was -7752683,531. The last one is Panti District, the negative Aij value also occurred in 2010 amounting to -280809.6584 and in 2013 amounting to -694.446377.

From the explanation of Table 1, it is known that the results of the negative allocation effect occurred in 2010, 2012, and 2013. This was due to the relatively small increase in macroeconomic growth from 2009 to 2010. So that it affects the transportation and communication sector in Jember Regency. in 2010 the economic growth of Jember Regency increased only by 6.05 percent. This is due to the decreasing influence of the world global crisis, such as decreasing export value and foreign demand for plantation and industrial products that do have export quality. With this incident, the results of the allocation ef-

fect in the transportation and communication sector were negative in almost all sub-districts of Kabupaten Jember. Because some transportation and communication systems do not operate much when the export of a commodity decreases

CONCLUSION

From the results of the shift-share analysis, it can be seen that there are several sub-districts in Jember Regency that have competitive advantages in the transportation and communication sector and sub-districts that do not have a competitive advantage in the transportation and communication sector. The result of Esteban Marquillas's modification of Shift Share analysis shows that the sub-district that specializes in the period 2009 to 2013 is Kalisat District.

Balung District, because it can be seen that the positive Nij value from 2009-2013 shows that the Transportation and Communication sector in Balung District is growing faster than the national average growth. Then also supported by the influence of a positive industrial mix that specializes in the Transportation and Communication sector in Balung District.

So that the sector is superior in Balung District. Semboro Sub-district, because it can be seen that the Transportation and Communication sector in Semboro District has a positive value on the positive impact of the industrial mix, the performance of this sector is also superior to other sectors. The results of the modified Shift Share analysis of Esteban Marquillas show that the Transportation and Communication sector which has competitive and specialized advantages is in Balung and Semboro Districts.

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