

A Competitiveness Analysis of Economic Sector in Tuban Regency, East Java

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Abstract

This study is aimed to identify the sectors that have the competitiveness and the base sector in the regional economy. This study uses secondary data in the form of time series of Gross Regional Domestic Product (GRDP) Tuban District East Java Province from 2010-2016. This research employ the method of Location Quotient, Shift Share, and Typology Klassen in analysing the data. The result of analytical with Location Quotient method shows that the sectors included in the basic sector in Tuban Regency are agriculture, forestry and fishery sector, mining and quarrying sector, processing industry sector, electricity and gas procurement sector, water supply sector, waste processing, and recycling and construction sectors. The result of analysis by using Shift Share and Typology Klassen method shows that the sectors included in fast growing, competitive, advanced and fast growing sector in Tuban Regency are mining and quarrying sector.

Keywords : competetiveness, regional economy, shift share, location quotient, klassen typology

Introduction

The development of the global economy today is characterized by advances in information technology applied to economic activities. Technological advances can be encouraged by consumer activities, production, investment and distribution of goods and services in various countries. This economic progress can increase the economic growth of a country. In this case, it is necessary to create policies that can strengthen economic and business activities in the digital era. This is important because economic conditions in various countries have different endowment factors, so it needs a development strategy that can integrate economic resources and technological progress.

Determining the competitive advantage of a region can divide the base and non-base activities. Basic activity is the activity of exporting goods and services outside the boundaries of the economy of the community concerned. This base sector has the potential to be developed because it is capable of generating a surplus from the graft of resources (endowment) owned by the region. Non-base activities are activities that provide goods and services needed by persons residing within the boundaries of the economy of the community concerned. The only sector of activity that can increase the region's economy beyond natural growth is the activity of the base sector. Therefore, the base analysis is useful for assessing and projecting regional economic growth (Tarigan, 2014).

At the regional level, the development of the region in terms of economic aspects should be a top priority in mobilizing the national economy and improving the regional economy so that the value of GRDP can increase significantly. In this case, in the implementation of development in the regions, the thing to remember is the need to understand the mechanisms underlying the pattern of regional economic growth (Stimson et al., 2011). In some area, regional economic growth depend on economic activity and global market. In this situation according to Huggins (2003) there were three aspect to achieve competitiveness; creativity, knowledge, and environmental conditions. According to Camagni (2002) the concept of regional competitiveness is theoretically sound, due to the role

territories play in providing competitive environmental tools to firms and in processes of knowledge accumulation. Meanwhile, according to Huggins, et al (2014) the factor driven economies compete on the basis of their factor endowments, such as their natural resources and plentiful supplies of cheap labour.

Various studies have been undertaken to increase the competitiveness potential and competitive position of regional economics within the country. The results of a study conducted by Fattah and Rahman (2013) in his research gave the conclusion that Pangkep and Pinrang Regencies in South Sulawesi Province Indonesia have a high growth rate of low income level. Other areas have low economic growth rates. Using location quotient analysis shows that each district / city has different dominant economic sectors. This shows that each country has advantages that are different from the economic resources it has. The use of analytical method with Location Quotient, Shift share and Klassen Typology was also applied in Endaryanto et al (2015) research in his research in Lampung Province Indonesia. Provide information on various economic structures after the expansion of the region in Pringsewu District issued by the services sector. While in Tanggamus Regency still remind the agricultural sector. The results of the study by Nurpita and Nastiti (2016) conclude that Daerah Istimewa Yogyakarta is included in the category of developing regions and has a fast growth rate. However, development in districts has a greater degree of disparity. Based on this research, regional competitiveness based on sectors output in the regional economy. These result in line with the opinion of Martin (2005) that competitiveness has filtered down to the regional, urban, and local levels.

Tuban Regency as a fast-growing region in the economy constantly mapping the economic potential in advancing the regional economy, given the economic potential in every District in Tuban Regency for the gradual development of the region, the implementation of decentralization becomes very important. Tuban Regency is a region that has a central decentralization, which is very important that makes the District Government of Tuban develop and manage its own territory by promoting regional superior areas. Tuban Regency as an industrial city where many big companies such as Semen Gresik, Semen Holcim, and Pertamina are located in one large industrial area. In addition, it can also be seen that Tuban Regency is a coastal area in the north of East Java that has enormous potential in marine products. Overall GRDP value of Tuban Regency has increased from year to year because some sectors that can be seeded in Tuban Regency is growing rapidly. Here we can see the GRDP development on the basis of price.

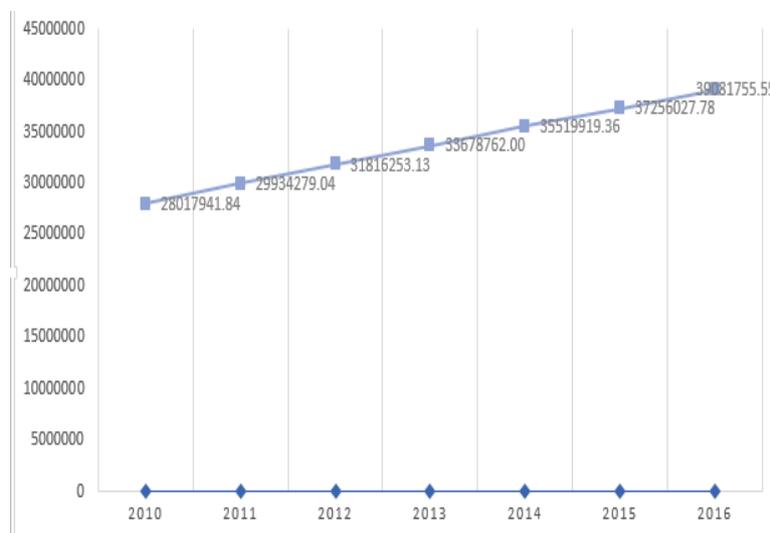


Figure 1 Gross Regional Domestic Product at Price Constant Tuban Regency in 2010-2016 (in millions rupiah).

Source: Central Bureau of Statistics of Tuban Regency, 2018, processed data

Regency Economics Changes in the period of 2010-2016 have an increasing rate of output development. Its GRDP rate increased from IDR28,017, 941.84 in 2010 increased to IDR39,081,755,55. The increase in aggregate output indicates a movement in economic activity spread across various sectors and in various regions. The shifting of industrial sector from Surabaya and Gresik area gave a multiplier effect to the economic development in Tuban Regency. The economy of the region becomes dynamic and the more generated derivative economic activities are created. This development indicates a reliable regional economic competitiveness in the constellation of the national economy and the rapidly changing global economy. In this case the ability of the regional economy to improve its competitiveness can be a force in supporting the sustainability of development in the region.

Observing economic development when viewed from GDRP on the basis of constant price of Tuban Regency, it is interesting to analyze the level of economic competitiveness in Tuban Regency in East Java. It is also interesting to conduct an analysis of the leading sector and the shift of existing sector as the impact of the economic development of East Java province Indonesia.

Methods

This study uses secondary time series data during 2010-2016. Secondary data required by GRDP on the basis of constant prices of Tuban Regency and East Java Province in 2010-2016. The data are sourced from BPS of East Java Province which can be accessed through <http://jatim.bps.go.id> page. While method of data analysis used in this research is method of Location Quotient analysis, Shift Share analysis method and method of analysis of Typology Klassen.

Location Quotient Analysis

Location Quotient (LQ) is a comparison of the magnitude of the role of a sector or industry in an area to the magnitude of the role of the sector or industry nationally. There are many variables that can be compared, but the common ones are value (income level) and number of employment. (Tarigan, 2014: 82) The following are used added value (income level) as follows:

$$LQ = \frac{x_i/v_t}{X_i/V_t}$$

Information:

LQ = Location Quotient Coefficient

x_i = Value added sector i in Tuban Regency

v_t = Total value added in Tuban Regency

X_i = Value added sector i in East Java Province

V_t = Total value added in East Java Province

From the formula above, there are three categories of calculation results LQ in the regional economy, namely: If the value of $LQ > 1$, then the relevant sector in the study area is more specialized than the reference area. That is, the sector in the regional economy in the study area has a comparative advantage and is categorized as the base sector. If the LQ value < 1 , the relevant sector in the study area is less specialized than the reference region. The sector is categorized as a non-base sector. If the value of $LQ = 1$, then the sector concerned only sufficient needs in the study area.

Shift Share Analysis

Shift share analysis is generally used to analyze the role of a sector or the shift of a sector in the region to the same sector in the national economy. Shift share analysis is a quantitative method that can be used to measure economic performance of local government (Khusaini, 2015). This method does not require the collection of primary data (Yasin, et al, 2004). In this case the shift-share analysis is used to compare the difference in growth rate of the sector (industry) in a narrow region called a region with a larger area called national. (Tarigan, 2014: 85, Chilian, 2015).

Shift Share formula as follows:

$$\Delta E_{r, I, t} = (N S_i + P_{r, I} + D_{r, i})$$

$$N S_i, t = E_{r, I, t-n} (E_{N, t} / E_{N, t-n}) - E_{r, I, t-n}$$

$$P_{r, i, t} = \{(E_{N, I, t} / E_{N, I, t-n}) - (E_{N, t} / E_{N, t-n})\} \times E_{r, I, t-n}$$

$$D_{r, i, t} = \{E_{i, r, t} - (E_{N, I, t} / E_{N, I, t-n}) E_{r, I, t-n}\}$$

Information:

Δ = Change, year end (year t) minus the beginning year (year t-n)

N = Province / Regional

E = Total GRDP

t = year

$N S_i$ = National share

$P_{r, i}$ = Proportional Shift

$D_{r, i}$ = Differential shift

r = City

i = sector

t-n = initial year

Shift share analysis has three components (Tarigan, 2014: 86-89): (a). National Share (N) calculation results will illustrate the role of sector i in the District grow faster or slower than the growth of the average Province based on the top ranking; (b). Proportional Shift (P) calculations show that if P is (+), sector i grows faster in the district than the province. Whereas, if P is worth (-), it means that sector i grows more slowly in the District than the Province; (c). Differential Shift (D) or Competitive Position calculations show that if D is (+) then sector i is more competitive in the District compared to Province, whereas if D is valuable (-) it means sector i is more competitive in Province than Regency.

Klassen Typology

The Klassen Typology analysis is used to see the description of the growth patterns and structure of each economic sector. A description of the pattern and structure of regional growth can be used to forecast future economic growth prospects in the future. In addition, it can be used as a consideration in determining regional development policies.

According to regional typology, can be divided into four classifications that are Quadrant I, Sectors are advanced and growing rapidly (developed sector). This quadrant is a quadrant of a sector-specific growth rate in GRDP (s_i) greater than the sector's growth rate in the reference GRDP (s) and has a sector contribution value to GRDP (s_{ki}) greater than the sector's contribution to GRDP the reference area (s_k). This classification is denoted by $s_i > s$ and $s_{ki} > s_k$.

Quadrant II, advanced but stagnant sector. This quadrant is a quadrant whose sector growth rate in GRDP is smaller than the sector's growth rate in the reference GDRP (s), but has a sector contribution value to GRDP (s_{ki}) greater than the sector's contribution to GDRP of the reference area (s_k). This classification is denoted by $s_i < s$ and $s_{ki} > s_k$.

Quadrant III, potential sector or still is able to develop (developing sector). This quadrant is a quadrant of a sector-specific growth rate in GRDP (s_i) greater than the sector's growth rate in the reference GDRP (s), but has a sector contribution value to GRDP (s_{ki}) that is smaller than the sector's contribution to GDRP area that became reference (s_k). This classification is denoted by $s_i > s$ and $s_{ki} < s_k$.

Quadrant IV, the sector is relatively underdeveloped (underdeveloped sector). This quadrant is a quadrant of a certain sector growth rate in GRDP that is smaller than the sector's growth rate in the reference GDRP (s) and also has a sector contribution value to GRDP (s_{ki}) that is smaller than the sector's contribution to GDRP of the reference area (s_k). This classification is denoted by $s_i < s$ and $s_{ki} < s_k$.

Table 1. Economics Clasifictaion Sector by *Typologi Klassen*

Quadran I Developed and fast growing sector (<i>developed sector</i>) $si > s$ and $ski > sk$	Quadran II <i>stagnant sector</i> $si < s$ and $ski > sk$
Quadran III <i>Developing sector</i> $si > s$ and $ski < sk$	Quadran IV <i>underdeveloped sector</i> $si < s$ and $ski < sk$

Source: Syafrizal, 2008; Munandar and Winarko, 2015

Results

Location Quotient (LQ) Analysis

If the calculation result of LQ analysis in Tuban Regency in each sector has LQ value more than one indicates that the role of the sector is prominent in the region and able to export some of the added value it produces or is the superior and base sectors. Conversely, if the calculation shows LQ value that is smaller than one means only able to meet the market within the district of Tuban itself.

Based on the results of the calculation of LQ shows the sector that includes the leading sectors (bases) from 2010 to 2016 there are six sectors in Tuban District namely agriculture, forestry and fishery with an average LQ of 1.45, mining and quarrying sector 1.70, manufacturing sector 1.03, electricity and gas procurement sector 3.34, water procurement sector, waste treatment, waste and recycling 6.13 and construction sector 1.38.

Based on the contribution of the six basic sectors, the manufacturing sector contributes the largest where the largest cement processing industry is PT. Semen Gresik Tbk and PT. Holcim Indonesia Tbk which becomes economic base that is able to absorb labor as well as become exporter company located in the region of Tuban Regency. Government planning in this case is necessary where by utilizing the development of the sector it is expected to encourage other sectors to contribute to develop, so the economy as a whole will grow even better.

While the agriculture, forestry and fishery sector become the base sector is more caused by the area of land owned by each District in Tuban Regency there are many agricultural land and as one of the largest teak producing area in East Java. In the fishery sub-sector cannot be denied also because the northern borders directly with the Java sea so that Tuban Regency as one of the largest marine fish producing region in East Java.

Shift Share

Shift Share analysis is used to compare differences in growth rate as a sector (industry) in the area under study with national territory. Another purpose of this analysis is to determine the performance or productivity of regional economic work compared to the national economy (Tarigan, 2014: 85). The analysis is also used to determine the economic growth in a region as an indicator of regional economic growth. In addition, it is also used to analyze the competitiveness of economic sectors in an area. GDRP is one of the economic indicators that show the effort in observing the change of regional economic structure.

From table 3, it can be seen that Tuban Regency has fluctuated economic growth. In the period 2010-2011 until the period 2015-2016, the component of National Share Tuban Regency is positive that shows the economy of Tuban Regency grows faster than the economy of its reference region, that is East Java Province. In 2011-2012 is the year with the highest economic growth. With the value added GRDP 1,563.88 billion rupiah, but in the year 2012-2013 value of National Share Tuban Regency decreased with the value of 989.30 billion rupiah. In the period of 2013-2014 increased by 1,211.83 billion rupiah, the decline occurred in the period 2014-2015 growth value of 1,188.74 and in the period 2015-2016 decreased 890.14 billion rupiah. This condition is caused by the condition of Indonesia's

economy is less stable starting from the decline in the value of the rupiah against the dollar until the fuel oil increase, so that affect economic growth in the Tuban Regency.

The following table results calculation Shift Share Analysis Tuban District:

Table 2. Development of National Share in Tuban Regency Per Economic Sector in 2010-2016
(in million Rupiah)

YEAR	Eri,t-n A	ENt/EN,t-n B	(axb) C	NS (c-a) D
2010-2011	28,481.85	1.04	29,626.52	1,144.67
2011-2012	30,448.85	1.05	32,012.73	1,563.88
2012-2013	32,377.26	1.03	33,366.56	989.30
2013-2014	34,272.22	1.04	35,484.05	1,211.83
2014-2015	36,145.33	1.03	37,334.07	1,188.74
2015-2016	37,890.33	1.02	38,780.47	890.14

Source : processed data

Through the calculation of Proportional Shift can be seen that sectors that have a positive average value is the economic sector specializing and growing fast compared to East Java Province and the negative value indicates a slower economic sector when compared with the same sector in the Province of East Java.

Three sectors that have high positive rates in Tuban Regency are big and retail trade sector; average car and motorcycle repair of 23.41, information and communication sector averaged of 46.91, and the financial and insurance services averaged of 17.85.

Sectors that have a positive but low average are 6 sectors of the economy such as mining and quarrying with an average of 2.71, transportation and warehouse sectors averaging of 1.99, accommodation and food beverage sectors averaging 4.66, real estate sector averaged 3.26, education services sector averaged 5.03, and health services and social activities averaged 4.42.

There are 8 economic sectors in Tuban Regency which have negative mean value such as agriculture, forestry and fishery sector have average -150.30, average processing industry sector -13.67, electricity and gas procurement sector average -24.29, water procurement, waste processing, valleys and recycling averages of -4.07, average construction sector -3.29, average service sector -0.08, government administration, defense and compulsory social security -24.03, and other service sectors averaging -5.57.

Economic sector in Tuban Regency there are 11 sectors that have positive average value and able to grow fast in East Java with the same economic sector. While the other 8 economic sectors in Tuban Regency with negative value means cannot grow quickly if compared with the same sector in East Java.

Based on Differential Shift Share Method, shows that Tuban Regency has quite a lot of sectors that can be competitive, through the calculation of Differential Shift, it can be seen that from 17 economic sectors, 13 of them are sectors that have competitiveness opportunities in East Java with the same sector. It can be seen from the positive value on Differential Shift calculation in the table.

It is known that there are 13 economic sectors that have positive value in Tuban Regency in the calculation of Differential Shift with the highest value found in agriculture, forestry and fishery sector with an average value of 77.53. Positive value in 13 sectors shows that these sectors have competitiveness when compared with the economy of East Java Province.

Other sectors that have positive values include mining and quarrying, electricity and gas procurement, water supply, waste processing, waste and recycling, construction, transportation and warehousing, accommodation and drinking, financial and insurance services, real estate, corporate

services, education services, health services and social activities, and other services. Sectors that have a positive average score in Tuban Regency should be further developed in order to have a better impact on the economy of Tuban Regency.

Meanwhile, 4 other sectors that have negative value include processing industry, construction, information and communication, and government administration, defense and social security obligatory. This shows that the sector that has negative value has a low competitiveness when compared to the same sector in East Java Province.

Klassen Typology

Based on comparative calculation by utilizing growth rate and economic sector contribution value in Tuban Regency compared to growth rate and contribution of economic sector in East Java Province can be seen classification of GRDP based on Typology Klassen analysis in table 6 as follows.

Table 3. Classification of GDRP Sector in Tuban Regency Year 2010-2016 Based on Klassen Typology

<p style="text-align: center;">Quadrant I</p> <p>Sectors that go forward and grow rapidly (developed sector)</p> <p>$s_i > s$ and $s_{ki} > s_k$</p> <p>a. Agriculture, forestry, and fisheries b. Mining and excavation c. Procurement of electricity and gas d. Water supply, waste processing, waste and recycling</p>	<p style="text-align: center;">Quadrant II</p> <p>Sector advanced but depressed (stagnant sector)</p> <p>$s_i < s$ and $s_{ki} > s_k$</p> <p>a. Construction b. Adm. government, defense and compulsory social security c. Processing industry Sector advanced but depressed (stagnant sector)</p>
<p style="text-align: center;">Quadrant III</p> <p>Potential sector or still can be developed (developing sector)</p> <p>$s_i > s$ and $s_{ki} < s_k$</p> <p>a. Wholesale and retail trade; car and motorcycle repairs b. Transportation and warehousing c. Provision of accommodation and eating drink d. Educational services e. Health services and social activities f. Other services</p>	<p style="text-align: center;">Quadrant IV</p> <p>The sector is relatively underdeveloped (under developed sector)</p> <p>$s_i < s$ and $s_{ki} < s_k$</p> <p>a. Information and communication b. Financial services and insurance c. Real estate d. Company services</p>

Source: Processed Data

From table 6, it can be seen in Tuban Regency there are 4 sectors included in advanced and rapidly growing sector covering agriculture, forestry and fishery sector, mining and quarrying sector, electricity and gas procurement sector and water supply sector, waste processing, waste and cycle. The sectors including the advanced but depressed sector are 3 sectors, namely construction, government administration, defense and mandatory social insurance and processing industries. Quite a considerable number of sectors are included in the three awareness as potential sectors or can still be developed there are 6 sectors and the relative sector lags behind in quadrant four there are 4 sectors.

The results of this study are in accordance with research by Camagni (2002) :Martin (2005) and also Huggins, et al (2014). Regional competitiveness can be built from regional economic strengths supported by available economic resources in the region. Tuban Regency is one of region that growth

fast among regency in east java province. Mapping economic activity and the economic potential in regional can impose the process as well as. Tuban Regency is one of region that growth faster among regencies in east java province. Mapping economic activity and the economic potential in regional can push process the development well. The endowment factor in Tuban Regency like : agriculture and mining have regional competitiveness. But in this case, regional people must anticipate the global market with strengthening in human capital and information technology. Besides that, this research result also gives the information that there were still disparities in economic activity in Tuban Regency. In the LQ method, the mean value of economic sector from year the 2010-2016 show extrem value from 0.16 (Provision of Accommodation and Drinking) to 6.13 (Water Supply, Waste Management, Waste and Recycling). This information accordance with research result of Nurpita and Nastiti (2016) that concluded that Daerah Istimewa Yogyakarta is included in the category of developing regions and has a fast growth rate. However, development in districts has a greater degree of disparity. Finally this research result give the implication that regional competitiveness isn't not only about growth, but the important thing is about usefulness of endowment factors and equity in economic activity in regional.

Conclusions

Based on the results of analysis and discussion of the superior sector and economic competitiveness of Tuban Regency in 2010 until 2016, it can be concluded as follows:

1. Location Quotient analysis shows economic sectors that has classification as base sector in four districts studied such as in Tuban Regency there are six sectors that are agriculture, forestry and fishery sector, mining and quarrying sector, processing industry sector, electricity and gas, water procurement, waste processing, waste and recycling and construction sectors.
2. Shift Share analysis result in Tuban Regency Result of Proportional Shift calculation showing positive value ($PS > 0$) fast growing sector such as mining and quarrying sector, big trading and retail sector; car and motorcycle repair, transportation and warehousing sectors, accommodation and drinking-food sector, information and communications sector, financial and insurance services sector, real estate sector, education sector and health sector and social activities. The calculation of the Differential Shift component of the sector indicates a positive value ($DS > 0$) which means that the sector has competitiveness such as agriculture, forestry and fishery sector, mining and quarrying sector, electricity and gas procurement sector, water supply sector, waste and recycling, large and retail trade sectors; automobile and motorcycle repair, transportation and warehousing sectors, accommodation and feeding sector, insurance and financial services sector, real estate sector, corporate services sector, education sector, health services sector and social activities, other services sectors.
3. The result of Typology Klassen analysis shows that the economic sector in Tuban Regency which is included in quadrant I (advanced and growing rapidly) is agriculture, forestry and fishery sector, mining and quarrying sector, electricity and gas procurement sector, and water procurement sector, waste, waste and recycling. The sectors included in quadrant II (advanced but depressed) are construction sector, government administration sector, defense and mandatory social insurance and manufacturing industry sector. Economic sectors included in quadrant III (potential or still developing) such as large and retail trade sector; car and motorcycle repair, transportation and warehousing sectors, accommodation and drinking-food sector, education sector, health services and social services, and other services sectors. The sectors included in quadrant IV (relatively underdeveloped) are information and communication sector, financial services and insurance sector, real estate sector and company service sector.
4. Shift Share and Typology Klassen analysis makes it easy to know the potential sector of Tuban Regency. The Shift Share component of Proportional Shift component is growing rapidly compared to the same sector in East Java, Differential Shift to see the competitiveness of a sector and Typology Klassen to see the classification of advanced and rapidly growing sectors. So it is known that fast growing, competitive, advanced and fast growing sector in Tuban Regency is

mining and quarrying sector. Types of mining and excavation owned by Tuban Regency are non-metallic mineral mining such as limestone, phosphate, clay, dolomite, ball clay, pedel, quartz sand, and so on. The mining potential of Tuban Regency is spread almost all areas of Tuban Regency. The potential of mining in Tuban Regency can provide benefits in the form of increased regional income and can open new jobs for the population. Most of the people living in the vicinity of mining sites work for these mining companies as mining, so that the existence of mining activities can help increase people's income.

Suggestions

Based on the above conclusions, then some suggestions that can be given are:

1. Creating a more conducive business climate, such as through the ease of investment procedures, the availability of facilities and business infrastructure, the smooth distribution of goods and services, security stability in order to mobilize all sectors of the economy in Tuban.
2. Prioritize the development of economic development in sectors that have potential or still to be developed such as the big and retail trade sector; car and motorcycle repair, transportation and warehousing sectors, accommodation and food and beverage sector, education sector, health services and social services, and other services sectors.
3. In support of increasing economic growth through the regional economic sectors as for some supporting actions such as improving the quality of human resources in each sector of the economy by improving the quality of education and conducting training on prospective workers.
4. Government must allocate the economic resources in many area (city or regency) to decrease disparity in economic activity.

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