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ANALYSIS OF LEADING SECTORS IN SOUTH TANGERANG FOR DETERMINING REGIONAL DEVELOPMENT PRIORITIES

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Abstract

A sustainable economic growth becomes a main requirement for the continuity of regional economic development. Therefore, it should be concentrated on the basic sectors or leading sectors in order to create significant multiplier effect on other sectors. It is urgency for newly established regions, e.g., South Tangerang. This study aims to determine and analyze leading sectors that possess competitiveness and specialization in South Tangerang in relation with the future economic growth of South Tangerang. In addition, it also aims to project the added value or GRDP of South Tangerang in 2017. Secondary data in the form of time series sectoral GRDP at constant prices of both South Tangerang and Banten from 2010 to 2016 were obtained from BPS South Tangerang City and BPS of Banten Province. The data were analyzed using a quantitative-descriptive approach through the Location Quotient (LQ) and Shift-Share analysis. Based on the LQ method, there are nine leading sectors in 2010—2016, namely: construction; wholesale and retail trade, and repair of motor vehicles and motorcycles; accommodation and food; information and communication; real estate; corporate services; educational services; health and social services; and other services. The average LQ for these sectors is, respectively, 1.490; 1.333; 1.315; 2.969; 2.233; 3.299; 2.530; 3.663; and 2.014. Real estate has the highest values, indicating it becomes the leading sector with the highest competitive and comparative advantages.

Keywords: Leading Sector, Location Quotient (LQ), Shift-Share Analysis, GRDP

INTRODUCTION

a. Research Urgency

South Tangerang city or Kota Tangerang Selatan (best-known as Tangsel) was established based on the Law No. 32/2007, an officially announced by the Indonesian Minister of Home Affairs in 29 October 2008. It is divided into seven sub-district (*kecamatan*), namely: Ciputat, East Ciputat (*Ciputat Timur*), Pamulang, Pondok Aren, Serpong, South Serpong (*Serpong Utara*) and Setu. This city borders the Special Capital Region of Jakarta and Depok city to the east, Depok city and Bogor regency (West Java) to the south, Tangerang city to the north, and Tangerang to the west. According to the Development Planning Agency at Sub-National Level (*Bappeda) of South Tangerang city (2009, p. 1), the city has an area of 210.49 km^2 and total population of 966 thousand people with estimated density of 4,589/km^2. T*he establishment of South Tangerang as an autonomous region is based on the criteria for development, i.e., economic capacity, regional potential, socio-cultural, socio-political, population and area, in which this city is deemed to be feasible compared to other newly formed autonomous regions.

Furthermore, the establishment of South Tangerang city becomes the aspiration of the local community in which it aims at enhancing the level of public welfare. Decentralization is estimated

to shorten the range of government control thus the management of regional potential and human resources can be optimized.

The key to success in the implementation of regional autonomy is not solely relied upon the government apparatus, but also on the local community to contribute in the optimization of resources. Regional development should be adjusted with the on-going potential and aspirations of local community. The lack of priority in the implementation of regional development will lead to sub-optimal resource utilization.

Economic growth is a benchmark to estimate the increase in the development of a region from various economic sectors that indirectly illustrate the level of economic change in the area. Sustainable economic growth is the main condition for the continuity of regional economic development. Regional development is an integral part of national development. In carrying out development with limited resources, the development of the basic or leading sector must be an emphasis. Adisasmita suggested that any changes that occur in the basic sector will trigger multiplier effect in the regional economy (2005, p. 28).

One of the indicators to show the welfare rate of a region is the data of the gross regional domestic product (GRDP) on the basis of prices that are valid or on the basis of constant prices. Moreover, the welfare of a community is also indicated by the income per capita of a region, which also an indicator of economic growth.

The GRDP of South Tangerang city is basically identical with the GDP of Banten province, which consists of seventeen sectors, namely: 1) Agriculture, forestry, and fisheries; 2). Mining and quarrying; 3). Manufacturing; 4). Electricity and gas supply; 5). Water supply; 6). Construction; 7). Wholesale and retail trade, and repair of motor vehicles and motorcycles; 8). Transportation and Warehousing; 9). Accommodation and food; 10). Information and communication; 11). Financial services; 12). Real estate; 13). Corporate services; 14). Public administration, defense and compulsory social security; 15). Educational services; 16). Health and social services; 17). Other services.

Table 1.1. GRDP at Constant Price in 2000 of Regency/City in Banten Province, 2010—2016

	GRDP at Constant Price of Regency/City (Billion)						
Reg./City	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Pandeglang regency	12279.54	12984.40	13738.88	14387.88	15097.10	15996.63	16875.51
Lebak regency	12572.54	13325.63	14006.21	14887.98	15756.25	16670.89	17620.57
Tangerang regency	58099.42	62022.49	65848.28	70065.98	73828.38	77782.31	81923.99
Serang city	33840.99	35905.34	37849.64	40136.68	42300.93	44425.32	46646.86
Tangerang city	66921.38	71864.14	76945.93	81965.31	86183.52	90811.41	95621.89
Cilegon city	44676.53	47633.32	51300.21	54732.93	57261.92	59996.74	63028.89
Serang city	12549.57	13595.69	14604.64	15670.78	16745.08	17799.01	18906.10
South Tangerang city	30525.31	33214.82	36091.81	39251.54	42411.47	45465.20	48637.38
Banten province	271465.28	290545.84	310385.59	331099.11	349351.23	368216.55	387595.37

Source: Banten Province Statistics Agency (*BPS Provinsi Banten*)

Table 1.2. Growth Rate of GRDP at Constant Price of Regency/City in Banten, 2011—2016

Growth Rate of GRDP at Constant Price of Regency/City						
Reg./City	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Pandeglang regency	5.74	5.81	4.72	4.93	5.96	5.49
Lebak regency	5.99	5.11	6.3	5.83	5.8	5.7
Tangerang regency	6.75	6.17	6.41	5.37	5.36	5.32
Serang city	6.1	5.42	6.04	5.39	5.02	5
Tangerang city	7.39	7.07	6.52	5.15	5.37	5.3
Cilegon city	6.62	7.7	6.69	4.62	4.78	5.05
Serang city	8.34	7.42	7.3	6.86	6.29	6.22
South Tangerang city	8.81	8.66	8.75	8.05	7.2	6.98
Banten province	7.03	6.83	6.67	5.51	5.4	5.26

Source: Banten Province Statistics Agency (*BPS Provinsi Banten***)**

Table 1.1 shows out of eight regencies/cities in Banten, the GRDP of South Tangerang city is relatively lower than several regencies/cities in Banten. Nevertheless, Table 1.2 indicates that this city also obtains the largest economic growth. Out of seventeen sectors in South Tangerang city, most of them are leading sectors in Banten which prospectively sustain the economy of South Tangerang city.

The basic or leading sector is mainly linked to a form of comparison, including at the international, national and regional levels. At the international level, leading sectors are those which able to compete with the products generated by the same sectors of other countries. Meanwhile, at the national level, a leading sector is that which able to compete with the same sector produced by other regions at national market or regional market. A basic or leading sector has to export its production to other regions, on the contrary, non-basic sector has to import particular products from other regions.

Studies on the economic potential of leading sectors is very important for the future development planning, particularly in the implementation of regional autonomy where the proliferation of (administrative) region will have an impact on the potential and resources possessed by the parent region.

From the background, it is essential to determine and identify the economic sectors of South Tangerang city, Banten province, for the development planning and implementation as an effort to support the economic growth in the era of regional autonomy.

b. Problem Statement

1. Which basic/leading sectors out of seventeen sectors in South Tangerang city with outstanding comparative advantage based on the location quotient (LQ) method?
2. Which basic/leading sectors out of seventeen sectors in South Tangerang city with outstanding competitiveness and specialization based on the shift-share method?
3. How is the growth rate of the basic / leading sectors in South Tangerang city in 2010 to 2016?
4. How is the projection of sectoral added-value or GRDP of South Tangerang city in 2017?

c. Research Objectives

1. To determine and analyze the basic/ leading sectors in South Tangerang city with outstanding comparative advantage, based on the location quotient (LQ) method.
2. To determine and analyze the basic/ leading sectors in South Tangerang city with competitiveness and specialization, based on the shift-share method.
3. To determine the priority of leading sectors in the economic development of

South Tangerang city in the future.

4. To project the sectoral added-value or GRDP of South Tangerang city in 2017.

Literature Review

a. Literature Review

1. The Economic Basic Theory

A series of economic theories attempts to accomplish the changes at regional level that emphasize the relationship among regional economic sectors. The simplest and most popular theory is the economic basic theory developed by Harry W. Richardson. This theory argues that the main determinant of regional economic growth is associated directly to product and service from outside regions (as cited in Arsyad, 1999).

The activities of regional economic are classified into two sectors, namely basic and non-basic sectors. Basic activities are export-oriented activities of both goods and services that extent the boundaries of respective economic area, while non-basic activities are locally oriented activities that provide goods and services for the needs of the community within an economic boundary. The role of basic sectors entails its capacity as the primary mover in the regional development. The larger the export of a region, the higher the rate of its economic growth, and vice versa. Furthermore, each change occurs in the basic sector will bring a multiplier effect in the regional economy (Adisasmita, 2005:28).

The basic sectors are the backbone of the regional economy due to their elevated competitive advantage. Meanwhile, the non-basic sectors are perceived to be less potential yet they are vital in supporting the basic sectors or as service industries (Sjafrizal, 2008, p. 89).

Implicitly, the distinction of the regional economies into two sectors exemplifies a causal relationship in which they constitute the basis for the establishment of economic basic theory. High variation of basic activities in a region will augment the sources of income, leading to the increase in the demand for goods and services produced by respective region and eventually the higher volume of non-basic activities. On the contrary, the low variation of basic activity will decrease the demand for the products derived from non-basis activities, implying the lower source of income for respective region. Essentially, the basic activity plays a role as a prime mover. This assumption conceives an understanding that a region owns a leading sector if this sector is able to win competition with others owned by other regions and have export-oriented capacity (Suyatno, 2000, p. 146).

2. Comparative Advantage

Comparative advantage is an economic activity that is more profitable and valuable than other activities based on a comparison (Tarigan, 2012, p. 80). The current, relevant comparison is the added value, which covers the entire production costs and selling prices. A study on the comparative advantage of a region is useful particularly for policy makers in order to facilitate the structural changes in the regional economy towards sectors with comparative advantages. As a result, the development of such sectors can be hastened regardless the sluggish pressure of the market mechanisms.

3. The Location Quotient (LQ)

Basically, the location quotient technique presents a relative comparison between the sectoral advantages of an investigated region and the advantages owned by a benchmark region or wider area. It is applicable when identifying the magnitude of the role of a sector/industry in a region to the magnitude of the role of such sector/industry in national level (Tarigan, 2012, p. 82). The extensively used variables are added value (income level) and number of jobs. The LQ is computed as follows:

$$LQ = \frac{x_i/_{GRDP}}{X_i/_{GNP}}$$

where:

x_i = added value of sector *i* in a region
GRDP = gross regional domestic product
X_i = added value of sector *i* in a nation
GNP = gross national product

The resulting LQ may be interpreted in the following manner:

LQ > 1.0, the role of sector *i* in the region is greater than the role of sector *i* at national

level. Indirectly, the value indicates that the region has greater comparative advantage in sector *i*, since the region is able to produce these products efficiently and export them. Sector *i* becomes a basic sector.

LQ ≤ 1, the role of sector *i* in the region is smaller than the role of sector *i* at national level. The region needs to import particular products from sector *i.* This sector is a non-basic sector for the region.

The LQ analysis is very simple if it is applied in 'one shot analysis'. Nevertheless, the result will be interesting if it is carried out as a time series, in which it is analyzed for a certain period of time hence it can incite an analysis of factors that either accelerate or delay of a regional development than the national average.

4. The Shift-Share Analysis

The shift-share analysis describes differences in the growth rates, by sector (industry) and by regions, compared to national growth. It also describes or specify the causes of change in selected variables by isolating various factors that allegedly cause such a change in the industrial structure of a region, in terms of the regional growth from a period to the next period in which it also elaborates the determinants in the regional growth of various sectors in relation to the national economy.

Furthermore, the shift-share analysis is also known as the industrial mix analysis due to its attributable to the composition of the existing industries that significantly influence the growth rate of the region. It analyzes whether an industry owned by a region belongs to the industries that are fast growing nationally and whether that industry is suitable to be located in that region. The variables used in this analysis are employment and added value (income level).

4.1 Concept and Definition

The increase in total regional employment (ΔE_r) is explained in the forms of regional shift component and national share component (Tarigan, 2012, p. 86).

1. National Share is the increase in the regional employment in which the proportion of change is the same rate as the nation during a study period. It is an advanced criterion to measure either the region is fast or slow growing compared to the national growth.
2. Regional Shift is a deviation from the national share in regional employment growth. Positive deviation means the share of fast growing sectors in a region while negative deviation means the share of slow growing sectors in a region to national employment growth. In each region, net shift is divided into two components distinguish the external and internal elements of regional growth, namely:
   a. Proportional shift (*P*) is the structural component or industrial mix that measures the change in the net regional shift as the result of the composition of the industrial sectors in the region. Regions that specialize in sectors that are fast growing nationally will have a positive *P*, while regions which sectors are slow growing or declining will have a negative *P*. This component is a result of the national external factors.
   b. Differential shift (*D*) or the locational or regional component measures the net regional shift of particular industrial sectors that are either

fast or slow growing between the region and the nation as the result of internal or locational factors. Regions with locational advantages such as abundant/efficient natural resources will have a positive *D*, while those with locational disadvantages will have a negative *D*. This component is a result of the differential factors in a respective region.

By using algebraic notation, the relationships between the components as elaborated previously can be stated as follows:

✓ $\Delta E_r = \Delta E_{r,t} - \Delta E_{r,t-n}$ → formula applied to the total employment in a region. That is, the growth in regional employment is the number of jobs in the final year (t) minus the number of jobs in the initial year (t-n).

✓ $\Delta E_{r,i} = \Delta E_{r,i,t} - \Delta E_{r,i,t-n}$ → formula applied to the total employment per sector in a region. That is, the growth in regional employment of sector *i* is the number of employment of sector *i* in the final year (t) minus the number of employment of sector *i* in the initial year (t-n).

The growth of regional employment of sector *i* can be clarified by inputting the components of National Share, Proportional Shift and Differential Shift as follows:

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

Where:

$NS_{i,t} = E_{r,i,t-n}(E_{N,t}/E_{N,t-n}) - E_{r,i,}$

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

Or

$$P_{r,i,t} = \left[\frac{\Delta E_{N,i,t}}{E_{N,i,t-n}} - \frac{\Delta E_{N,t}}{E_{N,t-n}}\right] E_{r,i,t-n}$$

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

Or

$$D_{r,i,t} = \left[\frac{\Delta E_{r,i,t}}{E_{r,i,t-n}} - \frac{\Delta E_{N,i,t}}{E_{N,i,t-n}}\right] E_{r,i,t-n}$$

The inclusion of the above variables is elucidated as follows:

- The role of **National Share (NS_i)** is if there is a change in the regional employment in sector *i* is in line with the proportion of the national employment change, on average.
- **Proportional Shift ($P_{r,i}$)** is to estimate the influence of sector *i* on the national employment change related to sector *i* on a specific region.
- **Differential shift ($D_{r,i}$)** is to describe a deviation between the regional change in sector *i* and the national change in sector *i*.

Furthermore, it should be noted that to view the effect on the overall study area, the figure for each sector must be added. The equation is as follows:

$$\Delta E_r = (NS + P_r + D_r)$$

Where:

$$NS_t = \sum_{t=1}^{n} \{E_{r,i,t-n}(E_{N,t}/E_{N,t-n}) - E_{r,i,t-n}\}$$

$$P_{r,t} = \sum_{t=1}^{n} [\{(E_{N,i,t}/E_{N,i,t-n}) - (E_{N,t}/E_{N,t-n})\} x E_{r,i,t-n}]$$

$$D_{r,t} = \sum_{t=1}^{n} [\{E_{r,i,t} - (E_{N,i,t}/E_{N,i,t-n})\} - E_{r,i,t-n}]$$

Subsequently, further equation is computed as follows:

$\sum E_{N,i,t} = E_{N,t}$

$\sum E_{r,i,t} = E_{r,t}$

And so on.

4.2 Projection

The projection for national employment for each sector for year $t + m$ can be carried out by using the following equation:

$NS_{i,t+m} = E_{r,i,t}(E_{N,t+m}/E_{N,t}) - E_{r,i,t}$

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

$$D_{r,i,t+m} = D_{r,i,t} \times (E_{N,i,t+m}/E_{N,i,t})$$

Or,

$$E_{r,i,t+m} = E_{r,i,t}\left[\frac{E_{N,i,t+m}}{E_{N,i,t}} + \frac{m}{n}\frac{D_{r,i,t}}{D_{r,i,t-n}}\right]$$

Where:

Δ = The change, year *t* minus year *t-n*

N = National/national territory/superior area

r = Region or analyzed area

E = Employment

i = Industrial sector

T = Year

t-n = Initial year

t+m = Projected year

Ns = National Share

P = Proportional Shift

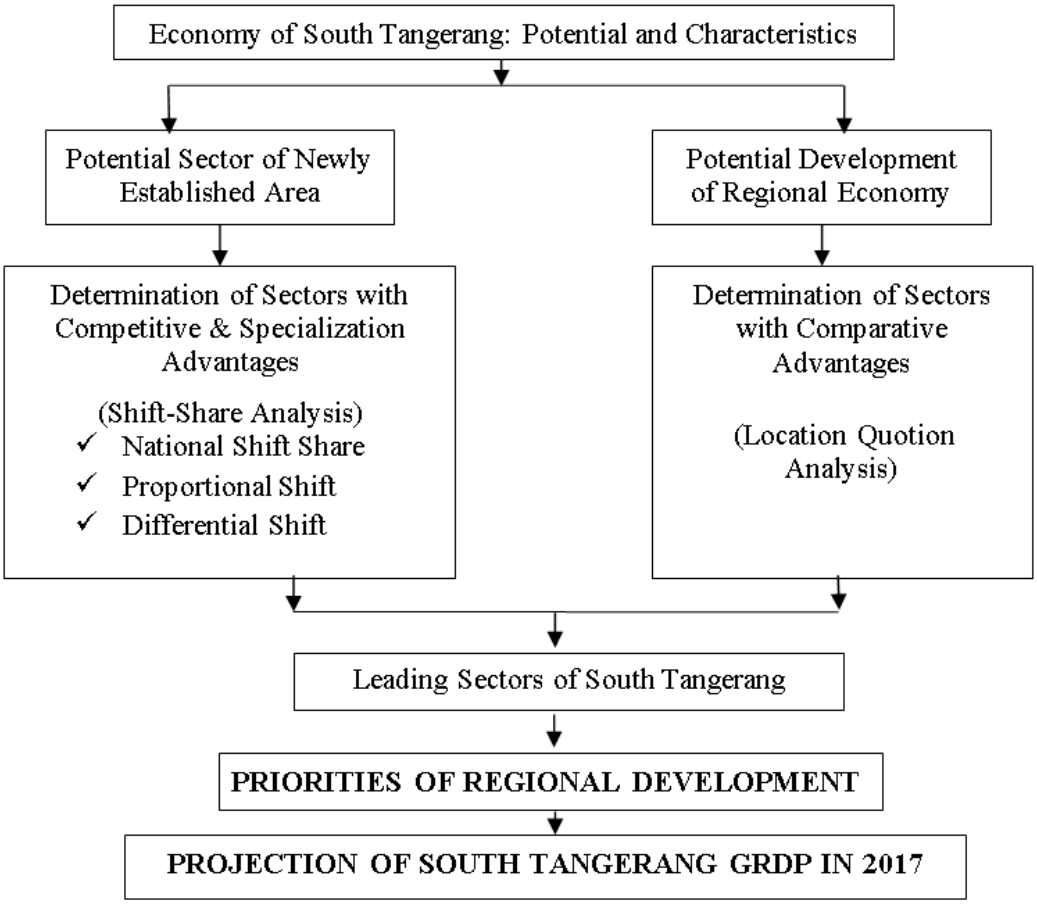
D = Differential Shift

c. Related studies

According to Fadillah (2016) in a study entitled Analysis of Leading Sectors in South Tangerang City (*Analisis Sektor Unggulan Di Kota Tangerang Selatan*), leading sectors relatively have a competitive and specialized advantages in which in South Tangerang city, they include: construction; wholesale and retail trade, and repair of motor vehicles and motorcycles; accommodation and food; information and communication; real estate; and corporate services.

Furthermore, in a study entitled Study on the Development of the South Tangerang City based on Leading Sectors Approach (*Studi Pengembangan Wilayah Tangerang Selatan Melalui Pendekatan Sektor-Sektor Unggulan*), Jamalia (2011) argued that based on the LQ approach, economic sectors that become leading sectors due to their advantages include: financing, leasing and business services; services; construction; transportation and communication; trade, hotel and restaurant; and electricity, gas and clean water supply. Furthermore, based on the shift-share analysis, leading sector with rapid growth is the trade, hotel and restaurant sector.

d. Theoretical Framework



Research Method

a. Study Area and Period

The present study was carried out in South Tangerang city, Banten province. The sectoral GRDP of South Tangerang city was obtained from the Central Bureau of Statistics (BPS) of South Tangerang on Jl. Gaperta No. 311, Medan. Meanwhile, the data of Banten Province GRDP was obtained from the Central Bureau of Statistics (BPS) of Banten province on Jl. Asrama No. 179, Medan. Subsequently, secondary data collection, data compilation and processing, and data analysis were conducted in May—July 2018.

b. Data Type and Source

The secondary data analyzed in this study are the data of sectoral GRDP of South Tangerang and sectoral GRDP of Banten at constant prices in 2000. The retrieved data is time series data of 2010—2016. The data were obtained from various related institutions, clarified as follows:

1. The Central Bureau of Statistics (BPS) of South Tangerang (*Tangerang Selatan Dalam Angka 2010-2016*).
2. The Central Bureau of Statistics (BPS) of Banten (*Banten Dalam Angka 2010-2016*).

c. Operational Definition, Assumptions and Limitations

- ✓ **Leading sectors** are sectors in South Tangerang that are able to compete with the same sector produced by other regions in the national or domestic market (Banten province) hence the sector is able to export its products to other regions.
- ✓ **Location Quotient (LQ)** is a method of comparing the role of a sector/industry in a region (South Tangerang city) to the role of the sector/industry in a benchmark (Banten province).

- ✓ **Shift-Share Analysis** is a method of comparing the difference in the growth rates of a sector in a region (South Tangerang city) to a benchmark (Banten province), and describing the causes of change in selected variables by isolating various factors that allegedly cause such a change in the industrial structure of a region, in terms of the regional growth from a period to the next period in which it also elaborates the determinants in the regional growth of various sectors in relation to the national economy.
- ✓ **Gross Regional Domestic Product (GRDP)** is the overall gross added value of economic activities in South Tangerang city in the current year, which is projected through GRDP per year in 2010—2016 in billion rupiah.

d. Data Collection Technique

In this study, the data were obtained through library research, i.e., from the publications issued by BPS of South Tangerang City, BPS of Banten Province, and Bank Indonesia (the Regional Economic Study).

e. Data Analysis Technique

1. Location Quotient *(*LQ) Analysis

The LQ technique is used to identify the internal potential of South Tangerang city and later, to distinguish which sectors are the basic sectors and non-basic sectors. The formula used to calculate LQ is as follows:

$$LQ = \frac{x_i / vi}{X_i / Vi}$$

Where:

LQ = Location Quotient (LQ) value

x_i = GRDP of sector *i* of South Tangerang

vi = Total GRDP of South Tangerang

X_i = GRDP of sector *i* of Banten

Vi = Total GRDP of Banten

The resulting LQ may be interpreted in the following manner:

LQ > 1.0, the role of sector *i* in South Tangerang is greater than the role of that sector in Banten. Implicitly, the value indicates that South Tangerang possesses high comparative advantage in sector *i*, since it is able to produce the products efficiently and export them. Sector *i* becomes a basic sector in South Tangerang.

LQ ≤ 1, the role of sector *i* in South Tangerang is smaller than the role of that sector in Banten. In other words, South Tangerang needs to import particular products from sector *i.* This sector is a non-basic sector in South Tangerang.

2. Shift – Share Analysis

Shift-share analysis is used to identify whether an industry situated in South Tangerang is included in the industries that are fast growing in Banten and whether that industry is suitable to be developed in South Tangerang. In this study, the variables are value added variables (regional income level) or Gross Regional Domestic Product (GRDP) at constant prices. The formula of shift-share analysis is as follows:

$$\Delta GRDP_{r,i} = \Delta GRDP_{r,i,t} - \Delta GRDP_{r,i,t-n} \quad (1)$$

This formula is applicable for total GRDP per sector in South Tangerang. That is, the increase in GRDP of sector *i* is the amount of GRDP sector *i* in the final year (t) minus the GRDP of sector *i* in the initial year (t-n).

The change in GRDP sector *i* by including National Share, Proportional Shift, and Differential Shift is stated in the following formula:

$$\Delta PDRB_{r,i,t} = (NS_i + P_{r,i} + D_{r,i} \quad (2)$$

Where:

$NS_{i,t}$ = $GRDP_{r,i,t-n}$ ($GRDP_{N,t}$ / $GRDP_{N,t-n}$) - $PDRB_{r,i,t-n}$

$P_{r,i,t}$ = {($GRDP_{N,i,t}$ / $GRDP_{N,i,t-n}$) – ($GRDP_{N,t}$ / $GRDP_{N,t-n}$)} x $GRDP_{r,i,t-n}$

$D_{r,i,t}$ = {$GRDP_{r,i,t}$ – ($GRDP_{N,i,t}$ / $GRDP_{N,i,t-n}$) $GRDP_{r,i,t-n}$}

The inclusion of the above variables is elucidated as follows:

- The role of **National Share (NS_i)** is if there is a change in the GRDP of sector *i* in South Tangerang is in line with the change in the average GRDP of Banten. National share predicts whether the growth rate of South Tangerang is faster or slower than Banten.
- **Proportional Shift ($P_{r,i}$)** figures out the influence of GRDP of sector *i* in Banten to the change in GRDP of sector *i* in South Tangerang. The value is positive if South Tangerang specializes in fast-growing sectors in Banten, while the value is negative if South Tangerang specializes in slow-growing sectors in Banten.
- **Differential shift ($D_{r,i}$)** describes a deviation between the changes in sector *i* in South Tangerang and in Banten. The value is positive if South Tangerang has locational advantages, i.e., abundant/efficient natural resources, while the value is negative if the city has locational disadvantages.

3. GRDP Projection Analysis

To project the GRDP of South Tangerang in the subsequent year (2018), the formula is as follows:

$$NS_{i,t+m} = GRDP_{r,i,t}(GRDP_{N,t+m} / GRDP_{N,t}) - GRDP_{r,i,t}$$

$$P_{r,i,t+m} = \{(GRDP_{N,i,t+m}/GRDP_{N,i,t}) - (GRDP_{N,t+m}/GRDP_{N,t})\} \times GRDP_{r,i,t}$$

$$D_{r,i,t+m} = D_{r,i,t} \times (GRDP_{N,i,t+m}/GRDP_{N,i,t})$$

Or,

$$GRDP_{r,i,t+m} = GRDP_{r,i,t}\left[\frac{GRDP_{N,i,t+m}}{GRDP_{N,i,t}} + \frac{m}{n}\frac{D_{r,i,t}}{D_{r,i,t-n}}\right]$$

Where:

Δ = The change, final year (*t*) minus initial year (*t-n*)
N = National (Banten province)
r = Region (South Tangerang city)
GRDP = Added value/income level (Gross Regional Domestic Product)
i = Industrial sector
T = Year
t-n = Initial year
t+m = Projected year
Ns = National Share
P = Proportional Shift
D = Differential Shift

Results and Discussion

a. Results

1. Location Quotient Analysis of South Tangerang in 2010—2016

The LQ analysis is used to distinguish the economic sectors in GRDP into the basic and non-basic sectors. It describes the role of a sector in South Tangerang city compared to the role of that sector at the provincial level, i.e., Banten province.

The results of the LQ analysis have shown that from 2010 to 2016, there are 9 (nine) basic or leading sectors in South Tangerang, namely: 1). Construction; 2). Wholesale and retail trade, and repair of Motor vehicles and motorcycles; 3). Accommodation and food; 4). Information and communication; 5). Real estate; 6). Corporate services; 7). Educational services; 8). Health and social services; and 9). Other services. The average LQ for each sector is, respectively, 1.490; 1.333; 1.315; 2.969; 2.233; 3.299; 2.530; 3.663; and 2.014. Furthermore, there are 8 (eight) non-basic sectors, namely: 1) Agriculture, forestry, and fisheries; 2). Mining and quarrying; 3). Manufacturing; 4). Electricity and gas supply; 5). Water supply; 6). Transportation and Warehousing; 7). Financial Services; 8). Public administration, defense and compulsory social security. The average LQ for these sectors is respectively, 0.049; 0.000; 0.305; 0.081; 0.534; 0.439; 0.442; and 0.585.

The results of the LQ analysis have shown that the economic structure or pattern of South Tangerang is dominated by the secondary sector or services sector, which is a specific characteristic of urban areas.

It confirms the phenomenon of urban areas where the livelihoods are intended towards non-agricultural sectors. It is, however, reasonable due to limited agricultural land in urban areas hence it is hardly possible to have sufficiently large agricultural land. Moreover, in urban areas, land has a high economic value and function, including to carry out activities for industries, trading, and settlements.

The educational services is one of the basic sectors in South Tangerang. It is evidenced by the increasing number of the provision of educational services, including the availability of educational facilities and infrastructure ranging from primary to secondary educational level. The Education Office (*Dinas Pendidikan*) of South Tangerang publishes there are 512 kindergartens with 2,440 teachers and 94 *raudhatul atfhal* (Islamic kindergarten) with 445 teachers, 306 elementary schools with 6,001 teachers and 84 *madrasah ibtidaiyah* (Islamic elementary school) with 994 teachers, 173 junior secondary schools with 2,641 teachers and 44 *madrasah tsanawiyah* (Islamic junior secondary school) with 746 teachers, 152 senior high schools with 2,768 teachers and 17 *madrasah aliyah* (Islamic senior secondary school) with 279 teachers

Based on the LQ analysis, the health and social services become the sector with the highest LQ value (3.663). It is verified by the data of health facilities as retrieved from the Health Office (*Dinas Kesehatan*) in 2017, in which there are 17 hospitals, 11 maternity homes, 25 public health center/*Puskesmas*, 820 toddler-elderly health services/ *Posyandu*, and 386 clinics. Moreover, there are reliable, high number of healthcare workers including 358 medical personnel, 1,622 nurses, 616 midwifes, 96 pharmacists, and 104 non-medical staffs. In addition, there are 629 specialists, 358 general practitioners, and 104 dentists.

2. Shift-Share Analysis of South Tangerang in 2010—2016

The shift-share analysis is similar to the location quotient method in which both of them compare the growth rates of various sectors (industries), between South Tangerang and Banten. Nevertheless, shift-share analysis has an advantage of providing an explanation about the causes of whether an industry/sector located in South Tangerang is classified into fast-growing industry/sector in Banten province, and whether an industry/ sector is suitable to be developed in South Tangerang.

Based on the shift-share analysis, the change in GRDP of South Tangerang = Total GRDP of South Tangerang in 2016 – Total GRDP of South Tangerang in 2012 = 48,637.38 billion – 36,091.81 billion = **12,545.58 billion**. It can be stated in the following formula:

The change in GRDP of South Tangerang =
Total *NS* + Total *P* + Total *D*
= 9,004.622 + 2,396.547 + 1,144.407
= 12,545.58 billion

Based on the estimation, seven sectors have negative proportional shift value, namely: 1). Agriculture, forestry and fisheries; 2). Manufacturing; 3). Electricity and gas supply; 4). Water supply; 5). Wholesale and retail trade, and repair of motor vehicles and motorcycles; 6). Public administration, defense and compulsory social security; 7). Health and social services with the value of proportional shift of -0.662, -330.021, -9.894, -0.082, -211.317, -0.849, -46.406, respectively.

The regions which sectors have negative proportional shift value have structural disadvantages, implying the regions specialize in slow-growing sectors in Banten province. One of the reasons of the slow growing sector of electricity and gas supply in South Tangerang is the lack of optimal infrastructural management that eventually hampers business development and public services. Meanwhile, the manufacturing sector grows leisurely due to the lack of harmony in industrial interrelations in South Tangerang.

On the contrary, there are ten sectors with structural advantages, namely: 1). Mining and quarrying; 2). Construction; 3). Transportation and warehousing; 4).

Accommodation and food; 5). Information and communication; 6). Financial services; 7). Real estate; 8). Corporate services; 9). Educational services; 10). Other services, with the value of proportional share of 0; 726.297; 9.750; 49.255; 1,313.084; 67.080; 586.620; 116.333; 60.480; and 66.880, respectively. It indicates that these sectors specialize in fast-growing sectors in Banten Province.

Of the sectors that have structural advantages, the information and communication sector has the highest structural advantages as indicated by its highest proportion share value, of 1,313.084. It illustrates that this sector is the fastest growing sector in Banten.

Based on the shift-share analysis, there are five sectors with locational disadvantages, namely: 1). Agriculture, forestry and fisheries; 2). Construction; 3). Financial services; 4). Health and social services; 5). Other service, with the value of shift differential of – 22.299; -15.161; -17.109; -89.272; and -49.124. It indicates that these sectors are less profitable in South Tangerang.

In contrast, as many as twelve sectors have locational advantages, namely: 1). Mining and quarrying; 2). Manufacturing; 3) Electricity and gas supply; 4). Water supply; 5). Wholesale and retail trade, and repair of motor vehicles and motorcycles; 6). Transportation and warehousing; 7). Accommodation and food; 8). Information and communication; 9). Real estate; 10). Corporate services; 11). Public administration, defense and compulsory social security; and 12). Educational services, with the value of differential shift of 0; 120.421; 13.204; 0.142; 83.349; 196.689; 17.411; 194.268; 498.196; 132.071; 29.275; and 52.345, respectively. It indicates that these sectors are suitable to be developed in South Tangerang.

In overall, based on the location quotient (LQ) and shift-share analysis, there are three leading sectors in South Tangerang, i.e., Accommodation and food, Information and communication, and Real estate. The LQ value of these sectors is greater than 1, their share value is proportional, and their differential shift is positive. Furthermore, of these three leading sectors, the real sector becomes the most superior sector in South Tangerang as indicated by its highest national share value compared to the other two sectors.

The real estate sector includes renting, selling or other intermediary activities in the marketing or purchasing of real estate and the provision of real estate services and other related services that can be carried out and owned by individually or by others based on contract services. This sector also includes building construction or rental activities. Real estate is property in the form of land and buildings.

The growth of the real estate sector is measured by the increase in added value in the property sector, both residential and industrial needs. The development of property in the form of apartments has grown massively in South Tangerang. Geographically, it has a very strategic position that supports the center of economic growth in South Jakarta, Depok, Sawangan, and South Tangerang regency.

In addition, apartments become the most suitable living place in order to accommodate the younger generation of the upper middle class. With a range from 15 to 25 million per square meter, the price of site housing in South Tangerang is definitely high. As a reasonable alternative, buying an apartment can be a solution. It triggers the concentration of real estate sector in South Tangerang hence it has a comparative advantage compared to Banten province.

GRDP Projection Analysis of South Tangerang in 2017

No	Sector	GRDP of South Tangerang 2016	GRDP of Banten 2017	GRDP of Banten 2016	(b)	Index	Differential Shift	PDRB Tangsel 2012			PDRB Tangsel 2017
		E r,i,t	E N,i,t+m	E N,i,t		m/n	D r,i,t	E r,i,t-n		(b) + (c X d)	(a) X (e)
		(a)	E N,i,t+m / E N,i,t = (b)			(c)	D r,i,t / E r,i,t-n = (d)		(d)	(e)	
1	Agriculture, forestry, and fisheries	111.29	23034.86	22123.09	1.041	1	-22.299	107.44	-0.208	0.834	92.779
2	Mining and quarrying	0.00	2850.85	2870.48	0.993	1	0.00	0.00	0.00	0.993	0.000
3	Manufacturing	4990.75	144219.15	139073.54	1.037	1	120.421	4161.97	0.029	1.066	5319.801
4	Electricity and gas supply	50.65	4179.58	4158.64	1.005	1	13.204	37.89	0.349	1.354	68.556
5	Water supply	23.50	396.92	369.93	1.073	1	0.142	18.76	0.008	1.081	25.394
6	Construction	6474.34	39224.02	36307.71	1.080	1	-15.161	4612.44	-0.003	1.077	6973.092
7	Wholesale and retail trade, and repair of motor vehicles and motorcycles	8227.23	54651.24	51486.46	1.061	1	83.349	6686.87	0.012	1.074	8835.488
8	Transportation and Ware-housing	1423.84	27286.37	25131.76	1.086	1	196.689	974.31	0.202	1.288	1833.342
9	Accommodation and food	1439.22	9924.7	9165.73	1.083	1	17.411	1098.49	0.016	1.099	1581.205
10	Information and communi-cation	7740.78	23173.72	21373.06	1.084	1	194.268	4988.77	0.039	1.123	8694.367
11	Financial services	577.45	12013.82	11572.36	1.038	1	-17.109	422.15	-0.041	0.998	576.073
12	Real Estate	8806.00	34538.74	32003.54	1.079	1	498.196	6179.46	0.081	1.160	10213.526
13	Corporate services	1614.22	4182.02	3875.63	1.079	1	132.071	1093.10	0.121	1.200	1936.872
14	Public administration, defense and compulsory social security	490.58	7125.98	6813.81	1.046	1	29.275	369.87	0.079	1.125	551.883
15	Educational Services	3448.34	12197.11	11354.62	1.074	1	52.345	2669.50	0.020	1.094	3771.819
16	Health and Social Services	1911.86	4903	4542.41	1.079	1	-89.272	1638.69	-0.054	1.025	1959.471
17	Other services	1307.35	6057.63	5601.58	1.081	1	-49.124	1032.10	-0.048	1.034	1351.563
	Total	48637.38	409959.69	387824.35				36091.81			

Conlusion and Recommendation

a. Conclusion

Based on the location quotient (LQ) method, nine sectors have competitive advantages to be classified as leading sector in South Tangerang in 2010—2016, namely: Construction; Wholesale and retail trade, and repair of motor vehicles and motorcycles; Accommodation and food; Information and communication; Real estate; Corporate services; Educational services; Health and social services; Other services. The LQ value for each sector is, respectively, 1.490; 1.333; 1.315; 2.969; 2.233; 3.299; 2.530; 3.663; and 2.014.

Furthermore, based on the location quotient (LQ) and shift-share analysis, there are three leading sectors in South Tangerang, i.e., Accommodation and food, Information and communication, and Real estate. The LQ value of these sectors is greater than 1, their share value is proportional, and their differential shift is positive. Moreover, of these three leading sectors, the Real estate becomes the most superior sector in South Tangerang as indicated by its highest national share value compared to the other two sectors.

b. Recommendation

The methods employed in the present study, i.e., LQ and SS, are internal analysis in which both only analyze data from the sectors discussed in the study. Consequently, the conclusion is solely made based on the existing data. Later, to obtain a more comprehensive result for sector development, a macro analysis and the inclusion of other factors that may influence the sector development sector are required.

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