



Analysis of Revenue Inequality and Development of Leading Economic Sectors of District and City in Banten Province, Indonesia

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Abstract

The imbalance of inter-regional economic development is a common phenomenon that occurs in the process of economic development of a region. This interregional inequality was originally caused by differences in natural resource content and differences in demographic conditions in each region. As a result of these differences, the ability of an area to increase economic growth and encourage the development process also becomes different. Therefore, it is not surprising that in every region there is usually a relatively developed region and a relatively underdeveloped region. This study aims to analyze how big the level of income inequality that occurs between regencies/cities in Banten Province. Identifying the base sector in each district/city in Banten Province, and predicting the base sector in the future in each Regency/City of Banten Province. Data used in this study is secondary data in the form of time series data to see Developments and changes that occur over a period of time. Data analysis used in this research is Location Quotient (LQ), Dynamic Location Quotient (DLQ), Williamson and Thiel Index. The results of this study are inequality that occurred in Banten is measured by using Williamson Index included in the category of Medium Inequality. On the measurement of Thiel Entropy Index, inequality in Lebak Regency is the lowest and Cilegon city has the highest imbalance in Banten Province.

Keywords: Imbalances of Economics, Economics Growth, Location Quotient, williamson Index

1. Introduction

The big problem generally faced by developing countries including Indonesia is the economic gap or inequality in income distribution between high-income groups and low-income groups and the poverty level or the number of people below the poverty line (Nazli et al., 2021; Fadliansah et al., 2021; Wijayanti et al., 2021). Inequality of economic development between regions is a common phenomenon that occurs in the process of economic development of a region. Inequality between these regions was initially caused by differences in the content of natural resources and differences in demographic

conditions found in each region (Kalfin et al., 2021; Maulana et al., 2020; Reza, 2013). As a result of these differences, the ability of a region to increase economic growth and encourage the development process is also different. Therefore, it is not surprising that in each region there are usually developed regions and underdeveloped regions (Hidayat and Asmara, 2017; Bunnell et al., 2013; Pravitasari et al., 2018).

Improving economic inequality cannot be ruled out simultaneously in an effort to encourage economic growth. However, improvements in the quality of economic growth are expected to suppress widening inequality. The public perception survey conducted by the World Bank showed that most Indonesians rated income distribution in Indonesia as “very unequal” or “not equal at all” (Zulfikar et al., 2021; Fijay et al., 2021). Banten Province is a province that has a fairly high economic growth. Since 2011-2015 GRDP growth has always been higher than Indonesia's economic growth (See Table 1).

Table 1. Growth Rate of Gross Regional Domestic Product at Constant Prices 2010 Banten and Indonesia (percent), 2011–2015

Year	Banten	Indonesia
2011	7.03	6.17
2012	6.83	6.03
2013	7.13	5.56
2014	5.47	5.02
2015	5.37	4.79

Banten Province consists of 4 Cities and 4 Regencies which have inequality in the development of each region. Initial identification can be seen from the ratio of Gross Regional Domestic Revenue (GRDP) of each Regency/City region to Banten's GRDP can be seen in Table 2.

Table 2. Percentage of Contribution to Total Gross Regional Domestic Product of All Regencies/Cities in Banten Province (percent), 2012–2015

No	District	Year			
		2012	2013	2014	2015
1	Pandeglang	4.47	4.35	4.23	4.21
2	Lebak	4.47	4.43	4.32	4.31
3	Tangerang	21.38	21.32	21.29	21.2
4	Serang	12.43	12.17	11.94	11.7
	City				
5	Tangerang	24.73	25.03	25.72	26.2
6	Cilegon	16.38	16.34	16.26	16.2
7	Serang	4.58	4.62	4.57	4.54
8	Tangerang Selatan	11.55	11.74	11.66	11.64

Advancing a region can be done by encouraging the growth of the base sector of the economy, because the base sector can encourage the growth of the non-base economic sector in the area. The concentration of regional economic activity can be measured using the Location Quotient (LQ) index (Darius et al., 2021). This index can be calculated using data on the added value of each economic activity as contained in the GRDP of each region or by using data on the number of employees (employment) for each sector.

The weakness of LQ is that the basic sector criteria are static which only provides an overview at one point in time. This means that the base sector this year will not necessarily occur in the base sector in the future, on the contrary, the sector that is not based at this time may occur in the base sector in the future. Knowing the weakness of LQ so that it can be known repositioning or sector changes, a variant of LQ called Dynamic Location Quotient (DLQ) is used, namely by introducing the growth rate with the assumption that each sectoral value added and GRDP has its own average annual growth rate over a period of time. the initial year and the distance year.

Departing from the phenomenon of inequality in development, it is necessary to conduct a study that can identify the local economic potential of the region in Banten as an effort to reduce the economic disparity of the community between regions. This study aims to map the districts/cities in Banten that are still underdeveloped and at the same time identify and estimate what potential can be developed to reduce economic disparities between regions.

Based on the description of the problems that have been described above, this research is interested in discussing the leading and future sectors in the Regency and City in increasing the GRDP growth of Banten Province. Determination of the leading sector and the basis of agriculture in each region needs to be done to determine the level of potential of each region in the province of Banten. The existence of superior sector data in each region, a sustainable policy can be made in improving the economy in the agricultural sector. From the results of the study, it is hoped that it can be a reference for local governments in developing superior sectors and the basis for sustainable development in the agricultural sector.

2. Research methodology

2.1. Research Methods

The research method used is descriptive quantitative method. The descriptive method is used to describe systematically, factually, and accurately about the facts that occur in the field. Descriptive method is used to interpret the data and the results of data analysis. The quantitative method used to analyze the data uses formulas that are in accordance with the theme under study.

2.2. Data Types and Sources

The data used in this study is secondary data in the form of time series data to see developments and changes that occur over a certain period of time. Secondary sources are sources that do not directly provide data to data collectors (Setiawan et al., 2021). Secondary data can also be said as data that is not directly collected by researchers, can be obtained from publications by government agencies or other sources. In this study, the data used are published data by the Central Statistics Agency (BPS) of Banten Province. While the supporting data obtained from several sources or other literature related to the research.

2.3. Data analysis

Analysis of the data used in this study is the analysis of Location Quotient (LQ), Dynamic Location Quotient (DLQ), Williamson's Index and Theil's Index. The stages of research data analysis are given as follows:

2.3.1 The Level of Inequality in Banten Province

The magnitude of inequality that occurs in Banten Province, the author uses the Williamson Index and Theil Index

$$IW = \frac{\sqrt{\sum_{i=1}^n (Y_i - Y)^2 (f_i/n)}}{y}$$

where:

Y_i = GRDP per capita in District/city i

Y = GRDP per capita in Banten Province

f_i = Total population in Regency/city i

n = Total population in Banten Province

The Williamson Index test criteria are as follows (Yoda and Febriani, 2020):

- Close to 0-0.34 including low gap level.
- Between 0.35-0.80 including a moderate level of inequality.
- Above 0.80 includes a high level of inequality.

2.3.2 Theil Index

Theil index (Td) formulation is as follows (Conceição and Galbraith, 2000):

$$T_d = \sum_{i=1}^n \sum_{j=1}^n \{Y_{ij}/Y\} \log [\{Y_{ij}/Y\}/\{n_{ij}/N\}]$$

where

Y_{ij} = GRDP per capita of district i in province j

Y = Total GRDP per capita of all provinces j

n = Total population of district i in province j

N = Total population of the entire Province

2.3.3 Base Sector in Banten Province

Looking for the basic economic sector produced in Banten Province whether it is a leading economic sector or not, Location Quotient (LQ) analysis is used. The amount of LQ is obtained by using the formula:

$$LQ = (vi / vt)/(Vi / Vt)$$

where :

LQ = Location Quotient Index

vi = Income (GDP) of sector/sub-sector i in the Regency/City area in Banten province

vt = Total Income (GDP) in the Regency/City area in the province of Banten

Vi = Income (GDP) of sector/sub sector i in Banten Province

Vt = Total Income (GDP) in Banten Province

$LQ > 1$ = Base sector.

$LQ < 1$ = Non-base sector.

If the LQ index shows a number greater than or equal to 1, it can be said that sector i in the Banten region is the base sector. If LQ is less than 1, the sector is a non-basic sector. By knowing the basic sector, this sector will receive more priority to be developed as a regional potential of Banten Province.

The LQ method is static which only provides an overview at a certain time, so to overcome the weaknesses of this method, the Dynamic Location Quotient (DLQ) method is used with the following formulation (Deinne and Ajayi, 2021).

$$DLQ = \frac{1 + g_{ij}/1 + g_j}{1 + G_i/1 + G_j}$$

Description:

DLQ : Dynamic Location Quotient Index

g_{ij} : Average GRDP growth rate of sector i Regency/City in Banten province

g_j : Average GRDP growth rate for all district/city sectors in Banten province

G_i : Average GRDP growth rate for sector i in Banten Province

G_j : Average GRDP growth rate of all sectors in Banten Province

3. Results and Discussion

3.1. Geographical Location and Circumstances

Banten Province is one of the provinces in Indonesia located in the western part of Java Island with an area of 9,662.92 km². Banten Province is an expansion area of West Java Province, Banten Province has been separated since 2000 by the decree of Law Number 23 of 2000. Currently, Banten Province consists of four regencies and four cities, namely Pandeglang Regency, Lebak Regency, Tangerang Regency, Serang Regency, Serang City, Cilegon City, South Tangerang City, Tangerang City.

3.2. Climate

The climate of the Banten region is strongly influenced by the Monsoon Wind (Monsoon Trade) and La Nina or El Nino waves. During the rainy season (November - March) the weather is dominated by westerly winds (from Sumatra, the Indian Ocean south of India) which combine with winds from Asia that pass through the South China Sea. August), the weather is dominated by easterly winds which causes the Banten region to experience severe drought, especially in the northern coastal region, especially during El Nino. The average temperature in 2015 was 27.3° C, where the highest temperature was 36.7° C and the lowest was 19.6° C. The average humidity was 78.7%.

3.3. Demographic Condition

Population or human resources are both the subject and the object of development activities carried out in an area. A large population can be a strength as well as a burden in supporting the success of development in an area. The composition of the population of an area based on age and gender will describe the number of people who are classified as unproductive (0-14 years), productive (15-64 years), and unproductive (more than 64 years).

The magnitude of the value of the ratio can be obtained in the following way.

$$DR = \frac{\text{Population (0-14 years)} + \text{Population (65 years and over)}}{\text{Resident (15-64 years old)}} \times 100\%$$

$$DR = \frac{3,417,496 + 372,158}{8,165,589} \times 100\%$$

$$DR = 46.41\% = 46\%$$

The value of the Dependency Ratio of Banten Province in 2015 was 46%, this value shows that every 100 people of productive age must bear 46 people who are not productive. This figure is relatively high due to the large number of people of unproductive age who are dependent on the productive age population, which is almost half of the total population of productive age.

$$SR = \frac{\text{male population}}{\text{female population}} \times 100\%$$

$$SR = \frac{6.097.184}{5.858.059} \times 100\%$$

$$SR = 104.08 = 104\%$$

The amount of the Banten Province Sex Ratio in 2015 was 104%, this value indicates that for every 100 female residents there are 104 male residents. In addition to the Dependency Ratio and Sex Ratio, the population density of Banten Province in 2015 can be calculated by comparing the total population with the area owned, while the population density level of Banten Province in 2015 is as follows:

$$\text{Population density} = \frac{\text{Total population (people)}}{\text{Area (Km}^2\text{)}}$$

$$\text{Population density} = \frac{11,955,243 \text{ People}}{9,662.92 \text{ Km}^2}$$

$$\text{Population density} = 1,164.14 \text{ People / Km}^2 = 1164 \text{ People / Km}^2$$

Based on the above calculation, it is known that the population density level of Banten Province in 2015 was 1,380 people/km², meaning that every 1 Km² Banten area is inhabited by 1,380 people, the population density of Banten Province is included in the type-high density.

3.4. Williamsons Index Analysis Results

Banten Province has various kinds of economic structures in each Regency and City, this is expected to cause inequality between regions. Based on the analysis of the Williamson Index, inequality in Banten Province can be seen in Table 3.

Table 3. Results of Analysis of the Williamsons Index in Banten Province in 2011-2015

Year	Williamson Index
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2011	0.6354
2012	0.6402
2013	0.6405
2014	0.6355
2015	0.6317
Average	0.63666

3.5. Results of Theil Entropy Index Analysis

In addition to measuring the level of inequality in Banten Province in this study, apart from being analyzed using the Williamson Index (Taher et al., 2021; Hartati, 2021), Theil's Entropy Index analysis was also used. Based on Theil's Entropy inequality analysis, the level of inequality in Banten Province can be seen in Table 4.

Table 4. The level of inequality that occurs in Banten Province

District/City	Year					Mean
	2011	2012	2013	2014	2015	
Dis Pandeglang	0.25	0.25	0.26	0.26	0.27	0.26
Dis Lebak	0.23	0.23	0.24	0.25	0.26	0.24
Dis Tangerang	0.37	0.36	0.34	0.33	0.32	0.34
Dis Serang	0.82	0.82	0.84	0.86	0.88	0.84
City Tangerang	1.36	1.35	1.35	1.34	1.33	1.35
City Cilegon	9.94	10.11	10.15	10.09	10.06	10.07
City Serang	1.03	1.04	1.06	1.08	1.09	1.06
City Tangerang Selatan	0.81	0.81	0.82	0.83	0.83	0.82
Total	14.82	14.98	15.06	15.04	15.04	14.99

3.6. Results of Analysis of Base Sector Determination in Regencies and Cities in Banten Province in 2015

Location Quotient (LQ) analysis is an analytical technique to determine the state of a sector in an area, whether the base sector or non-base sector. If the value of LQ > 1 , then this indicates that there is a concentration of activity in sector *i* relatively compared to the total area or there is a concentration of activity in sector *i*. Or in other words, the area concerned has the potential to export in these activities. If the LQ value < 1 , then sector *i* has a relatively smaller share compared to activities that are generally found in all regions. Or in other words, the sector in question has an import tendency.

Based on the results of the LQ Analysis by Sector in Banten Province in 2015, the basic economic sectors spread across various regencies and cities based on the LQ value are as follows:

- a) The agriculture, forestry and fisheries sectors, which are the basic economic sectors, are located in the regencies of Lebak, Pandeglang, Serang and Tangerang, this is because the Lebak and Pandeglang regencies have the largest GRDP income in the agriculture, forestry and fisheries sectors.
- b) The Mining and Quarrying Sector, which is the basic economic sector, is located in the Regencies of Lebak and Pandeglang. This happened because the contribution of the Mining and Quarrying sector GDP from Lebak and Pandeglang Regencies to the Mining and Quarrying Sector GDP in Banten Province was very large, reaching 96%.
- c) The manufacturing sector, which is the basic economic sector, is located in Tangerang Regency, Serang Regency, Tangerang City and Cilegon because these areas have the largest GRDP from the manufacturing sector.
- d) The Electricity and Gas Procurement Sector, which is the basic economic sector, is in the procurement of Tangerang Regency and Cilegon City.
- e) The Water Supply, Waste Treatment, and Waste Recycling Sector which is the basic economic sector is located in Cilegon City, this happens because Cilegon City provides the largest contribution to the Water Supply and Waste Management sector in Banten Province, there are many industrial activities that also make Water Supply and Waste Management sectors are needed in Cilegon City.
- f) The construction sector, which is the basic economic sector, is located in Tangerang Regency, Serang City and South Tangerang.
- g) Wholesale and Retail Trade Sector; Car and Motorcycle Repairs, which are the basic economic sectors, are located in Lebak Regency, Serang City and South Tangerang. Lebak Regency is the base sector for Wholesale and Retail Trade; Repair of Cars and Motorcycles because the GRDP of Lebak Regency in this sector is the second largest contributor to GRDP in Lebak Regency.
- h) The transportation and warehousing sector, which is the basic economic sector, is located in Tangerang City. Tangerang City is the base sector in the Transportation and Warehousing sector because Tangerang City has an airport that is able to provide a large GRDP compared to other areas that do not have an airport.
- i) The accommodation and food and drink provision sector, which is the basic economic sector, is located in Lebak Regency, Pandeglang Regency, Serang City and South Tangerang. Pandeglang has the highest LQ value in this sector, this is appropriate considering that Pandeglang has various tourist attractions so that the Accommodation and Food and Drink sector becomes the basic sector.
- j) The Information and Communications Sector, which is the base economic sector, is located in the cities of Tangerang, Serang and South Tangerang.
- k) The Financial Services and Insurance Sector, which are the basic economic sectors, are located in Tangerang Regency and Serang City.
- l) The Real Estate Sector, which is the basic economic sector, is located in Pandeglang Regency, Serang City and South Tangerang.
- m) The Company's Service Sector, which is the base economic sector, is located in Tangerang City and South Tangerang
- n) The Government Administration, Defense and Mandatory Social Security sectors, which are the basic economic sectors, are located in the Regencies of Lebak, Pandeglang, Serang and Serang City.
- o) The Education Services Sector, which is the basic economic sector, is located in the Regencies of Lebak, Pandeglang, Serang, Serang City and South Tangerang.
- p) The Health Services and Social Activities Sector, which is the base economic sector, is located in Serang City and South Tangerang.
- q) Other Service Sector, which is the basic economic sector, are located in Serang City, South Tangerang and Lebak Regency.

3.7. Results of DLQ Analysis in Regencies and Cities in Banten Province in 2011-2015

DLQ analysis is an analytical technique that can be used to determine changes in the position of the economic sector in the future. It can mean that a sector that is currently a leading sector will not necessarily be a leading sector in the future. If the value of DLQ ≥ 1 , then an economic sector is a leading sector in the future, while the value of DLQ < 1 , then a sector is not a leading sector in the future.

The calculation results show that in some areas there is a repositioning of the base sector, this repositioning occurs because the growth rate in the base sector increases every year only slightly, even in some where the growth rate is negative in certain years.

4. Conclusion

Based on the results of the analysis, the conclusion of this study is that the inequality that occurs in Banten is measured using the Williamson Index, which is included in the category of Medium Inequality. In the measurement of Theil's Entropy Index, inequality in Lebak Regency is the lowest and Cilegon City has the highest inequality level in Banten Province. The base sector in 2015 in the Regency and City in Banten Province, namely;

- ✓ Pandeglang Regency is the economic base of the sector; Mining and excavation; Agriculture, Forestry, and Fisheries; Government Administration, Defense and Mandatory Social Security; Provision of Accommodation and Food and Drink; Education Services.
- ✓ Lebak Regency is the economic base of the sector; Mining and excavation; Agriculture, Forestry, and Fisheries; Government Administration, Defense and Mandatory Social Security; Provision of Accommodation and Food and Drink; Education Services.
- ✓ Tangerang Regency is the economic base of the sector; Electricity and Gas Procurement; Financial and Insurance Services; Construction; Processing industry; Agriculture, Forestry, and Fisheries.
- ✓ Serang Regency is the economic base of the sector; Agriculture, Forestry, and Fisheries; Processing industry; Government Administration, Defense and Mandatory Social Security; Education Services.
- ✓ Tangerang City is the economic base of the sector; Transportation and Warehousing; Information and Communication; Company Services; Processing industry.
- ✓ City of Cilegon is the economic base of the sector; Electricity and Gas Procurement; Water Supply, Waste Treatment, Waste Recycling; Processing industry.
- ✓ Serang City is the economic base of the sector; Government Administration, Defense and Mandatory Social Security; Provision of Accommodation and Food and Drink; Wholesale and Retail Trade; Car and Motorcycle Repair; Construction; Health Services and Social Activities.
- ✓ South Tangerang City is the economic base of the sector; Health Services and Social Activities; Company Services; Information and Communication; Education Services; Real Estate

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