

# ISRG JOURNAL OF ECONOMICS AND FINANCE (ISRGJEF)



**ISRG PUBLISHERS**

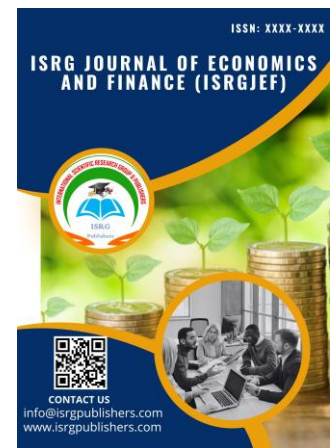
Abbreviated Key Title: ISRG J Econ Fin.

ISSN: 3048-6998 (Online)

Journal homepage: <https://isrgpublishers.com/isrgjef-2/>

Volume – 2 Issue -1 (January- February) 2025

Frequency: Bimonthly



## ANALYSIS OF INTER-REGIONAL INCOME DISPARITIES IN WEST NUSA TENGGARA PROVINCE INDONESIA 2010-2021

Sahri<sup>1\*</sup>, Helmy Fuadi<sup>2</sup>, Jalaludin<sup>3</sup>, Irwan Suriadi<sup>4</sup>

<sup>1,2,3,4</sup> Faculty of Economics and Business, University of Mataram

| Received: 08.02.2025 | Accepted: 15.02.2025 | Published: 17.02.2025

\*Corresponding author: Sahri

Faculty of Economics and Business, University of Mataram

### Abstract

Over the past decade (2011-2021), income inequality in NTB Province has tended to increase in urban areas and decrease in rural areas. The measure commonly used to see income inequality in urban and rural areas is the Gini Ratio. Measuring income inequality using the Gini Ratio has a weakness, namely that it can only measure income inequality in one area, namely urban and rural areas; and cannot measure income inequality between regions. This study aims to determine and analyze the characteristics of income inequality within regions (within-region-inequality) on Sumbawa Island and Lombok Island, the characteristics of income inequality between regions (between-region-inequality) on Sumbawa Island and Lombok Island, and the characteristics of total or overall inequality (spatial inequality) in NTB Province. The data collection methods used in this study are questionnaire, documentation, and observation. The units of analysis are districts, islands, and the province. Data analysis was carried out using the Theil Index. The results of the analysis show that income inequality in regions/islands (within-region-inequality) on Sumbawa Island and Lombok Island, NTB Province has a decreasing trend. Meanwhile, income inequality between regions (between-region-inequality) on Sumbawa Island and Lombok Island has an increasing trend. Overall, income inequality in NTB Province has a decreasing trend during the period from 2010 to 2021. Overall income inequality in NTB Province is mostly or an average of 94.77% contributed by income inequality within regions (within-region-inequality), and only 5.23% contributed by income inequality between regions (between-region-inequality) during the period from 2010 to 2021.

**Key Words:** Between-region-inequality, Theil Index, Spatial inequality, within-region- inequality.

## INTRODUCTION

Income inequality in each country has increased in the last few decades, both in developed and developing countries. According to the Asian Development Bank, the income gap between the rich and the poor has increased worldwide over the past two decades. In developing countries that have higher levels of economic growth, income inequality is getting worse (Syadullah et al., 2019). Ha further said that the significant increase in income inequality in developing countries coincided with the surge in global trade and capital inflows in developing countries (Ha, 2012).

Indonesia, which is also a developing country, cannot be separated from the problem of income inequality. The World Bank report shows that income inequality in Indonesia has increased rapidly, and 33% is caused by inequality in obtaining opportunities. In 2002, the consumption of the richest 10% of Indonesians was comparable to the consumption of the poorest 40% of Indonesians. This situation is getting worse when compared to the situation in 2014, where the same percentage was equivalent to the consumption of 54% of the poorest people in Indonesia (World Bank, 2016). The condition of income inequality in Indonesia is not much different from conditions in other countries in the Southeast Asia region. In Thailand, the richest 10% earn 35 times more than the poorest 10%, so the richest 1% control 58% of the country's wealth. In Vietnam, 210 super-rich citizens have enough income per person to lift the country's 3.2 million people out of poverty. The income of rich people in one day is more than the income of poor people in 10 years. In the Philippines, the average annual income of the top 10% of the population is 14,708 USD, while the average annual income of the lowest 10% of the population is 1,609 USD, or nine times as much as in 2015 (Syadullah et al., 2019).

Based on the results of calculations carried out by the Central Statistics Agency (BPS), it also shows that income inequality in Indonesia has tended to increase in urban and rural areas over the last decade and a half. In 2007, the Gini Ratio in urban areas was 0.374 and in rural areas it was 0.302. Meanwhile, in urban + rural areas, the Gini Ratio in 2007 was 0.376. In 2021, the Gini ratio in urban areas will increase to 0.401, while in rural areas it will increase to 0.315. Likewise, in urban + rural areas, the Gini ratio increases to 0.384. Income inequality has increased in the last decade not only at the national level, but also at the provincial level and including in the Province of West Nusa Tenggara (NTB). Over the last decade (2011 – 2021) the Gini Ratio in NTB Province has tended to increase in urban areas, while in rural areas it has tended to decrease. In March 2011 the Gini Ratio in urban areas was 0.380, while in rural areas it was 0.336. After that, the Gini Ratio fluctuated for a decade, so that in March 2021 it was 0.413 for urban areas, and for rural areas it was 0

To determine the level of income inequality, apart from using the Gini Ratio, BPS also uses World Bank criteria. In line with the calculation results using the Gini Ratio, the results obtained using the World Bank criteria also show the same thing. The level of income inequality in urban areas in March 2021 was worse compared to inequality in rural areas. The percentage of expenditure for the bottom 40 percent of the population in urban areas is 15.84 percent, and is included in the moderate inequality category. Meanwhile, the percentage of expenditure for the bottom 40 percent of the population in rural areas is 19.27 percent, and is included in the low inequality category (BPS, 2021).

Measuring income inequality using the Gini Ratio and World Bank Criteria has a weakness, namely that it can only measure income inequality within one region (within-region-inequality) and cannot measure income inequality between regions (between-region-inequality). Therefore, in this research the two types of inequality will be measured simultaneously using the Theil Entropy Index. According to Kuncoro, the most significant advantage of the Theil Entropy Index is that this index can differentiate inequality "between regions" and inequality "within one region" (Kuncoro, 2013).

## LITERATURE REVIEW

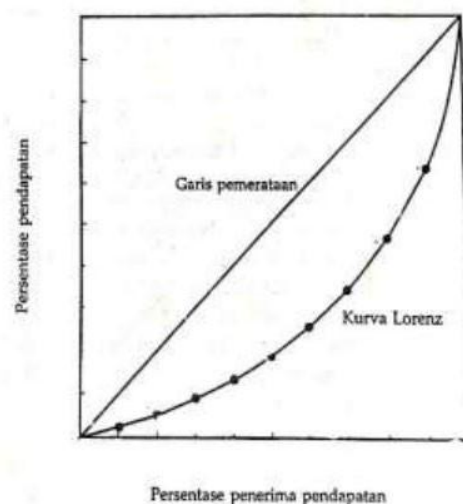
### Measures of Income Inequality

The problem of income inequality, which is often called inequality, whether between individuals, households, groups, sectors or regions, is a problem that always exists in every country and persists all the time. At one time the level of income inequality in a region or country is in the low category, and at other times it is in the high category (Daryanto & Hafizrianda, 2010). For this reason, several statistical interpretation methods are needed to show the condition of income inequality in a region or country at different times, or in different countries at the same time (Lorenz, 1905). There are several methods that can be used to measure income inequality which have been developed by several experts (Daryanto & Hafizrianda, 2010; Kuncoro, 2013), including: (1). Lorenz curve; (2). Gini Ratio; (3). Theil Index; and (4). L Index.

### Lorenz curve

Conrad Lorenz introduced a curve that could be used to measure income inequality in his article entitled: "Methods of Measuring the Concentration of Wealth" published by the American Statistical Association in 1905 (Lorenz, 1905). That is why the curve he developed and introduced is called the Lorenz Curve. Since its discovery in 1905, the Lorenz curve has been widely used to measure income inequality. Hoyt used the Lorenz curve to measure income inequality in the United States in 1923 (Hoyt, 1923), and it is still used today. The Lorenz curve is a curve with a two-dimensional shape, where the horizontal axis shows the cumulative while the vertical axis shows the cumulative percentage of total income.

If income is in a state of perfectly equal distribution, then the Lorenz curve will be in the form of a diagonal line with degree 45°. Conversely, if the Lorenz curve is further away from the diagonal line, then the distribution of income will be increasingly unequal (Todaro & Smith, 2003)



Source: Todaro & Smith, 2003

At each point on the diagonal line, the percentage of income received is exactly the same as the percentage of the number of recipients. This means that if the population is 50 percent then the income that will be distributed to them will be 50 percent, if the population is 75 percent then the income that will be distributed to them will also be 75 percent. Thus, the Lorenz curve, which is positioned like a diagonal line, shows perfect equality (Daryanto & Hafizrianda, 2010; Todaro & Smith, 2003).

### Gini Ratio

Corrado Gini introduced his famous index called the Gini Index and also commonly called the Gini Ratio for the first time in a 1912 book published in Italian under the name "Variabilità e Mutabilità" (Variability and Mutability). Gini defines the index as "the average difference of all observed quantities" (Ceriani & Verme, 2012). The Gini Ratio was developed by the Gini from the Lorenz curve, so that the Gini Ratio is the ratio between the area of inequality on the Lorenz curve and the area of perfect inequality or the diagonal line (Daryanto & Hafizrianda, 2010).

There are many methods used to measure the Gini Ratio, but those commonly used in various studies are as follows:

$$GR = 1 - \sum_{i=1}^n f_{pi} x (Fc_i + Fc_{i-1})$$

Where :

The Gini ratio is a measure of aggregate inequality whose number ranges from 0 to 1. If the Gini coefficient is 0, it means perfect equality, whereas if it is 1, it means perfect inequality. In practice, the Gini Ratio for countries with high levels of income inequality ranges from 0.50 to 0.70, while for countries with low levels of income inequality it ranges from 0.20 to 0.35 (Todaro & Smith, 2003).

### Theil Index

The concept of entropy of a distribution is basically an application of information theory concepts in measuring economic inequality and industrial concentration. The concept of entropy was introduced for the first time by Hendri Theil, so it is known as the Theil Entropy Index or often called the Theil Index. The empirical study conducted by Theil using the Theil index offers a sharp view of regional income per capita and income disparities, as well as international disparities (Kuncoro, 2013). Therefore, according to Daryanto, the measure of inequality that is always used in all studies of household income is the Theil index (Daryanto & Hafizrianda, 2010).

Compared with other instruments for measuring income inequality, the Theil index has advantages, namely that the inequality measure in the Theil index can be composed into inequality within the region itself (within-region-inequality), and inequality between regions (between-region-inequality). Thus, using the Theil index allows comparisons to be made over a certain time and provides details in smaller geographic subunits, for example gaps between regions within a country (Kuncoro, 2013). Because it is possible that inequality does not occur between regions but occurs within the region itself, and conversely, inequality occurs between regions but does not occur within the region itself, or it is possible that inequality occurs as a whole (Daryanto & Hafizrianda, 2010).

To measure overall inequality, more specifically in the Indonesian context, the Theil index can be expressed in (Kuncoro, 2013):

$$I(y) = \sum_{i=1}^N y_i \log \frac{y_i}{N}$$

Where :

I (y) is the Theil index for all of Indonesia

yi is the share of province i in Indonesia's total GDP

N is the total number of provinces in Indonesia

Meanwhile, to measure income inequality between islands in Indonesia, the following equation can be used:

$$I(y) = \sum_{r=1}^R Y_r \log \frac{Y_r}{N_r/N} + \sum_{r=1}^R Y_r \left[ \sum_{i \in r} \frac{y_i}{Y_r} \log \frac{y_i/Y_r}{N_r} \right]$$

Where :

Yr is the share of GDP of all provinces in r,

Nr is the number of provinces in island r,

R is the total number of main islands in Indonesia,

The first part of the formula measures the degree of inequality in GRDP according to the share of islands in Indonesia, while the second part measures the degree of difference in the share of provincial GRDP within each island. The Theil index value ranges from 0 to 1. A Theil index value that is close to 0 indicates a low gap, and conversely a Theil index value that is close to 1 indicates a high gap

### L - Index

Income inequality as measured by the L-index was first introduced by Bourguignon in 1979 in his article entitled: Decomposable Income Inequality Measures (Bourguignon, 1979). According to Kuncoro, the L-index is often referred to as a measure of the average log deviation, because this measure provides the standard deviation of log (y) (Kuncoro, 2013). Only the Theil index and L - index have been proven to be measures of income inequality that can be composed into two components, namely within-inequality and between-inequality components (Bourguignon, 1979; Daryanto & Hafizrianda, 2010). Meanwhile, according to Kuncoro, the main advantage of this index is that at one point in time, this index provides a measure of the degree of concentration (or dispersion) of spatial distribution in a number of regions and sub-regions within a country (Kuncoro, 2013). Therefore, various empirical studies show that analysis using this index has proven to be very useful in analyzing changes in industrial location patterns. The L-index is calculated using the following equation (Bourguignon, 1979):

$$L = \log \left( \frac{1}{n} \sum_{i=1}^n y_i \right) - \frac{1}{n} \sum_{i=1}^n \log y_i.$$

Where :

yi is per capita income according to income group, i n is the number of income groups

A lower L-index value indicates a low gap, and conversely a higher L-index value indicates a high gap.

### Previous Research

The long history of a country is related to income inequality in the country concerned. The results of research conducted by Vu on 128 countries that were founded from 3500 BC to 2000 AD show that there is a relationship between the age of a country and income



inequality. In very old and young countries, income inequality is higher compared to middle-aged countries (Vu, 2021). It seems that income inequality occurs throughout the world in every country, and persists from time to time (Borjas, 2013). In European countries, there was sharp economic inequality between the rich and the poor at the end of the 20th century, and in this period there was also increasing income inequality. The results of Bourguignon's research show that during the two centuries, namely the 19th and 20th centuries, income inequality among countries in the world became increasingly high. The Gini coefficient has increased by 30 percent, and the Theil index increased by 60 percent in the period between 1820 and 1992 (Bourguignon & Morrisson, 2002). As an illustration, the richest country in the world, namely Luxembourg, enjoyed a gross national income per capita that was more than 90 times that of the poorest country, namely Sierra Leon, in 2000 (McKay, 2002).

According to Duru, global inequality has brought countries in the world back to the situation hundreds of years ago. Inequality has moved in cycles fueled by war and disease, technological disruption, access to education, and redistribution. However, although income inequality has soared within countries, income inequality between countries in the world has decreased dramatically (Duru-Bellat, 2017). Furthermore, Stiglitz stated that after entering the 21st century, income inequality in European countries became lower, while in the United States it increased. Therefore, in terms of equal distribution of income, the United States has lagged behind any country in Europe. The top one percent of Americans now take in nearly twenty-five percent of national income each year. The income of the top one percent has increased 18 percent in the last ten years (Purwanto, 2016; Stiglitz, 2011). Meanwhile, those in the middle class feel that they have suffered for a long time, their income has barely changed in the last thirty years (Stiglitz, 2012).

In Denmark for 140 years (1870 – 2010), income inequality has decreased over several phases, and then increased since the 1980s, but is still in the low inequality category (Atkinson & SØgaard, 2016). Likewise, the results of Souza's research in Brazil, which examined income inequality from 1926 to 2015. In the 1920s, income inequality was at high inequality, and increased again substantially until the late 1930s and early 1940s. Income inequality in Brazil peaked in the period 1942 – 1943, and decreased in the early post-war years, but rose again in the mid-1960s and 1980s, and fell again in the early 1990s (Souza, 2018).

The condition of income inequality in Indonesia is not much different from conditions in other countries, including countries in the Southeast Asia region. The results of Akita's research in 2002 using the Theil index showed that between 1993 and 1997, when Indonesia's average annual growth rate exceeded 7%, regional income inequality increased significantly. This is mainly caused by increasing inequality within provinces, especially in Riau, Jakarta and West and East Java (Akita & Alisjahbana, 2002). Furthermore, research was carried out by Sulistyaningrum in 2021, using the Theil index for decomposition analysis and quantile regression analysis to analyze each income class. The results of his research show that male workers in the lower classes have higher incomes than female workers. In addition, workers with elementary education levels experience higher inequality than workers with other levels of education.

Elementary school students experience higher inequality than workers with other levels of education. In addition, higher

inequality occurs among urban workers in both the upper and lower classes, compared to workers in rural areas. From the quantile regression analysis, the results show that income inequality between men and women is decreasing (Sulistyaningrum & Tjahjadi, 2022). At the regional level, research conducted by Wijaya in Yogyakarta Province in 2020 showed that inequality in the Yogyakarta region was widening with a Theil index value of 0.686 (Wijaya et al., 2021).

## Research Methodology

### Research Location

The research was carried out in all districts/cities in NTB Province. The location for this research was chosen purposively based on the consideration that West Nusa Tenggara Province in the last decade had the fifth lowest level of economic growth, after West Papua, Aceh, Riau Province, and the lowest was East Kalimantan Province.

The data collection methods used in this research are questionnaires, documentation, and observations related to the data required according to the research objectives. Observation is a direct survey in the field through observation, research and data or information collection on aspects directly or indirectly related to the object under study.

### Data Types and Sources

The data collected and used in this research consists of secondary data, sourced from the district/city Central Statistics Agency and/or the Central Statistics Agency of West Nusa Tenggara Province in the period 2010 – 2021.

### Data analysis

Data analysis is the process of systematically searching and compiling data obtained from interviews, field notes and documentation, by organizing the data into categories, describing it into units, synthesizing it, arranging it into patterns, choosing what is important and what will be studied, and making conclusions so that it is easily understood by oneself and others. To measure income inequality in NTB Province, data analysis was carried out using the following formula:

$$I(y) = \sum_{i=1}^N y_i \log \frac{y_i}{N}$$

Where :

$I(y)$  is the Theil index for the entire NTB Province

$y_i$  is the share of district/city  $i$  in the total GDP of NTB Province.

$N$  is the total number of districts/cities in NTB Province

Meanwhile, to measure income inequality between islands in NTB Province, the following equation can be used:

$$I(y) = \sum_{r=1}^R Y_r \log \frac{Y_r}{N_r/N} + \sum_{r=1}^R Y_r \left[ \sum_{i \in r} \frac{y_i}{Y_r} \log \frac{y_i/Y_r}{N_r} \right]$$

Where :

$Y_r$  is the GDP share of all districts/cities in  $r$ ,

$N_r$  is the number of districts/us in island  $r$ ,

$R$  is the total number of main islands in NTB Province.

A lower Theil index value indicates a low gap, and conversely a higher Theil index value indicates a high gap.

# RESULTS AND DISCUSSION

## Economic Structure of West Nusa Tenggara Province

Over the last decade (2010 – 2021) the economic structure of West Nusa Tenggara (NTB) Province has not changed much. The Agriculture, Forestry and Fisheries sectors still rank first in the GRDP structure of NTB Province with an average contribution of 22.83%. The second place is occupied by the Mining and Quarrying sector with an average contribution of 19.57. Then the third place that makes the largest contribution to the GDP of NTB Province is the Wholesale and Retail Trade sector; Car and Motorbike Repair with an average contribution of 12.73%. Meanwhile, the sectors that made the lowest contribution to the GRDP of NTB province in the last decade were the Corporate Services sector with an average contribution of 0.16%, the Electricity and Gas Procurement sector with an average contribution of 0.08%, and the Water Procurement, Waste Management, Waste and Recycling sector with an average contribution of 0.07%.

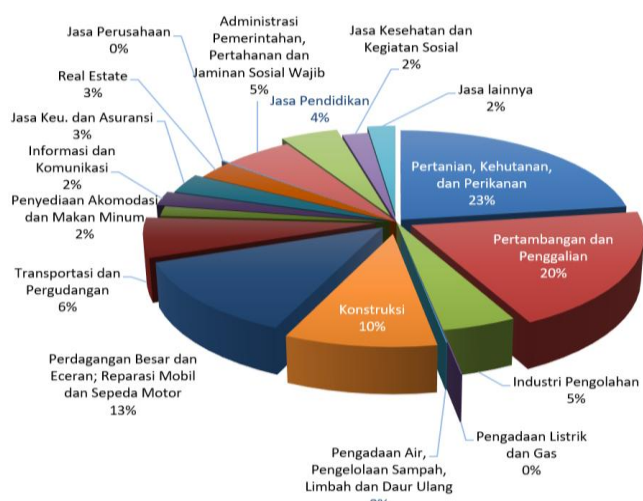
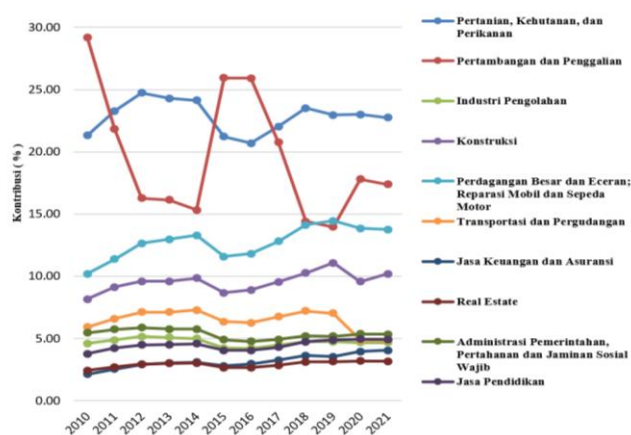


Figure 1: Average Sector Contribution to NTB Province's GRDP 2010 – 2021

If we look at the ten sectors that have made the largest contribution to the GDP of NTB Province over the last decade, their position has not changed significantly. This means that over the last decade, the economic structure of NTB Province has not experienced a significant transformation, still relying on the Agriculture, Forestry and Fisheries sectors.



The contribution of the Agriculture, Forestry and Fisheries sectors in the period 2010 – 2021 ranged from 20.7% (2016) to 24.7% (2012). When the Covid-19 pandemic hit all regions in Indonesia

in 2019 and 2020, including NTB Province, several economic sectors such as the construction sector, wholesale and retail trade sectors; Car and Motorcycle Repair, and the Transportation and Warehousing sector's contribution has decreased. Meanwhile, the contribution of the Agriculture, Forestry and Fisheries sectors to the GRDP of NTB Province continues to increase, although the increase is not too large, namely from 22.94% (2019) to 23.01% in 2020.

The contribution of sectors in the economic structure of NTB Province tends not to change much, except for the Mining and Quarrying sector. In the period 2010 – 2021 the contribution of the Mining and Quarrying sector fluctuated a lot. In 2010 the contribution of the Mining and Quarrying sector to the GRDP of NTB Province was 29.19%. In the following four years, the contribution continued to decline, so that in 2014 it was 15.32%. Then in 2015 the contribution increased to 25.94%, and in the following years it fell and increased again so that in 2021 the contribution was 17.37%.

If viewed by sector, the Agriculture, Forestry and Fisheries sectors have the highest average contribution to the GRDP of NTB Province. Meanwhile, if we look at it by district/city, the district/city that has the highest average contribution in the period 2010 - 2021 is West Sumbawa Regency, namely 19.35% on average. Then followed by East Lombok and Central Lombok Regencies, namely 14.45% and 12.15% respectively. The district/city with the lowest contribution to the GRDP of NTB Province is Bima City, namely 2.97% on average.

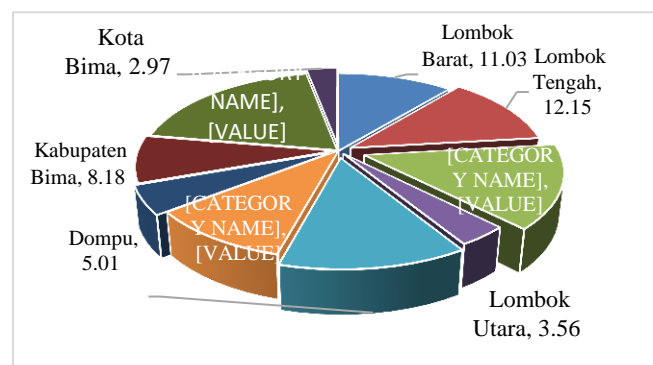


Figure 3: Average District/City Contribution to NTB Province's GRDP 2010 – 2021 (%)

The position of each district/city in contributing to the GRDP of NTB Province has not changed much in the period 2010 - 2021. West Sumbawa Regency is the district that makes the largest contribution to the GRDP of NTB Province. The next order is East Lombok Regency, Mataram City and Central Lombok Regency.

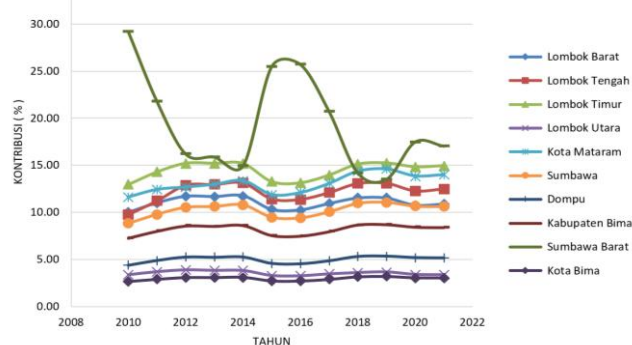


Figure 3: Average District/City Contribution to NTB Province's GRDP 2010 – 2021 (%)

The position of each district/city in contributing to the GRDP of NTB Province has not changed much in the period 2010 - 2021. West Sumbawa Regency is the district that makes the largest contribution to the GRDP of NTB Province. The next order is East Lombok Regency, Mataram City and Central Lombok Regency.

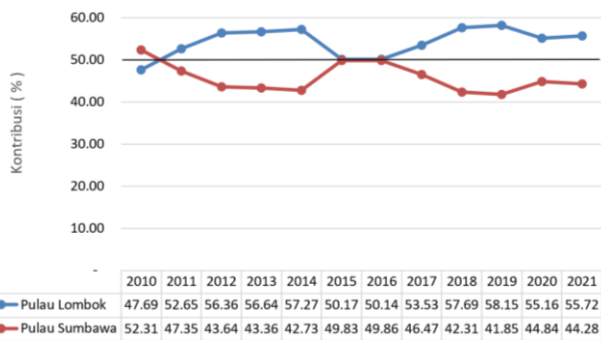


Figure 5: Development of Island Contribution to NTB Province's GRDP in 2010 – 2021

The position of the island of Lombok in contributing to the GRDP of NTB Province for a decade was above the island of Sumbawa, except in 2010. However, if you look at the size of the contribution of each island, there is not much difference. This means that the contributions of the islands of Lombok and Sumbawa to the GDP of NTB Province are almost equal.

### Economic Growth of West Nusa Tenggara Province

During the period 2010 to 2021, the economy of NTB Province experienced an average growth of 3.06% per year. When compared with the average national economic growth, the economic growth rate of NTB Province is lower than the national economic growth, namely 4.51% per year. Judging from the trends over the last decade, the economic growth of NTB Province has experienced quite large fluctuations. In 2011, the economy of NTB Province grew negatively by 3.91%, and in 2012 the growth was still negative at 1.54%.

The economy of NTB Province began to grow positively since 2013, namely by 5.16%. The highest growth rate was achieved in 2015, namely 21.76%. This growth rate of 21.16% is the highest economic growth rate in all provinces in Indonesia.

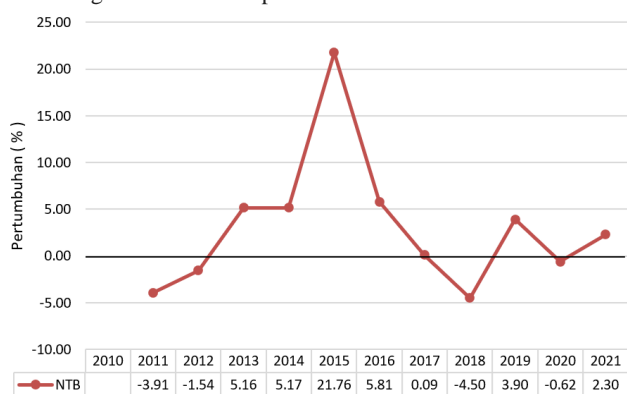
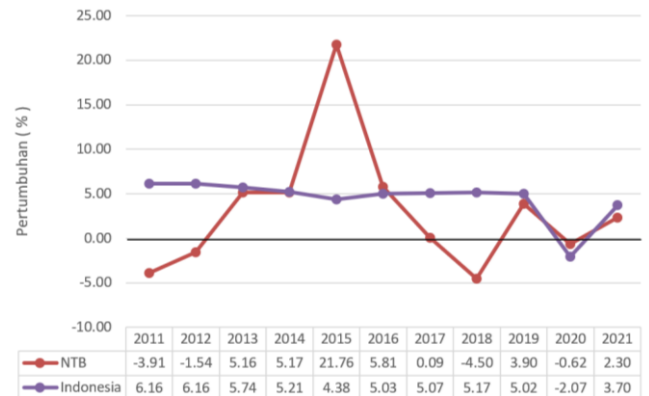


Figure 6: Economic Growth of NTB Province 2010 - 2021

The high economic growth achieved by NTB Province was supported by the development of the mining and quarrying sector which grew by 107.7% and foreign exports which grew by 289 percent in 2015. Then in the following years, the growth rate decreased, and the lowest growth was experienced in 2018, namely minus 4.50%. This is not only caused by the reduction in metal ore production from PT. Amman Mineral Nusa Tenggara (PT.AMNT),

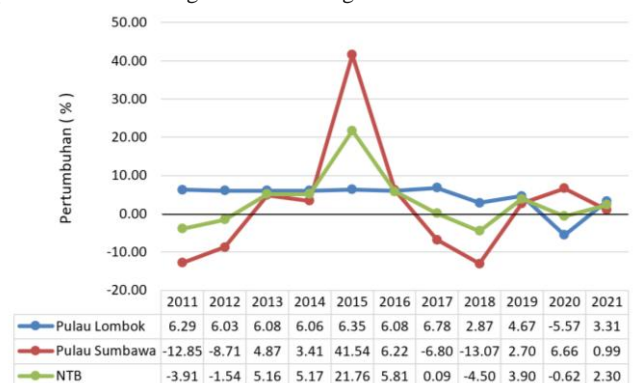
was also caused by the weakening of several economic sectors as a result of the natural disaster of an earthquake that hit several districts and cities in NTB Province, especially districts/cities on the island of Lombok.

When compared with national economic growth in the period 2010 to 2021, the national economic growth pattern is more stable compared to NTB Province. National economic growth experienced quite large fluctuations only in 2020, as a result of the economic shock due to the COVID-19 pandemic which hit all provinces in Indonesia.



There have been large fluctuations in the economic growth of NTB Province in the last decade, one of the reasons being large fluctuations in the contribution of the Mining and Quarrying sector. This indicates that the economic growth of NTB Province in the last decade has been largely influenced by the development of the Mining and Quarrying sector.

If we look at it by island, the economic growth of the island of Lombok is much more stable than the island of Sumbawa. There are similarities in the economic growth pattern of Sumbawa Island with the economic growth pattern of NTB Province. Thus, there are indications that the economic growth of NTB Province is more influenced by the economic growth of Sumbawa Island. This is because the economic growth of the island of Lombok is relatively stable, while the economic growth of the island of Sumbawa experienced quite large fluctuations in the period 2010 - 2021. In 2011 and 2012, the economic growth of the island of Sumbawa was minus 12.85% and minus 8.71%, so that even though the economy of the island of Lombok grew positively, the economic growth of NTB Province experienced negative growth. Likewise what happened in 2015, the economy of Sumbawa Island experienced very high growth (41.54%), so that the economic growth of NTB Province also experienced quite high growth, namely 21.76%. NTB Province experienced a fairly high level of economic growth in 2015, so that NTB Province became the province with the highest economic growth rate in Indonesia.





After 2015, Sumbawa district's economic growth continued to decline and reached its lowest point in 2018. In that year, Sumbawa district's economy grew by minus 13.07%, so the economy of NTB Province also experienced minus growth, namely minus 4.50%.

### Per Capita Income of West Nusa Tenggara Province

To see the level of welfare of the population of an area, the macro indicator that is usually used is GDP per capita. If the GDP per capita of an area is high, then this indicates that the level of welfare of the population in that area is high; and vice versa. Likewise, if the GDP per capita of an area increases, this shows that at a macro level the welfare of the population in that area has increased.

During the period from 2010 to 2021, GDP per capita at current prices (ADHB) of NTB Province experienced an increase, although in the first two years it experienced a decline. In 2010, the GDP per capita of NTB Province was IDR. 15.53 million or US\$ 1,728.37. Then in the following two years, the GRDP per capita of NTB Province experienced a slight decrease to Rp. 14.85 million in 2012. Since 2013, the amount of GRDP per capita of NTB Province has continued to increase, to Rp. 26.00 million or US\$ 1,818.12 in 2021.

When compared with Indonesia's GDP per capita in 2010, which was IDR 27.0 million (US\$3,004.9); So the GDP per capita of NTB Province is still far below, or only 57.52% of Indonesia's GDP per capita. For 2021, although the GDP per capita of NTB Province has increased, it remains far below Indonesia's GDP, which is IDR 62.2 million or US\$4,349.5. This means that the GDP per capita of NTB Province in 2021 will be less than half or only 41.80% of Indonesia's GDP per capita. If World Bank criteria are used, NTB Province is included in the category of regions with lower middle income, namely countries/regions with GDP per capita of US\$ 1,046 to US\$ 4,095 per year.

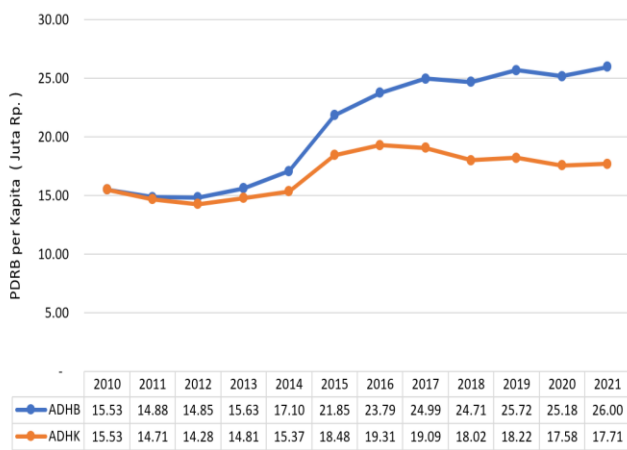


Figure 9: GRDP per Capita NTB Province 2010 – 2021

Viewed in general, NTB Province is included in the category of regions with lower middle income, but if you look at each district, there are districts that are included in the category of high income regions, namely West Sumbawa Regency. In 2010, the GDP per capita of West Sumbawa district was Rp. 177.147 million or US\$ 19,715.15 per year, so it is included in the high-income regional category. In the following years, the GDP per capita of West Sumbawa district decreased, and then increased again so that in 2021 it will be Rp. 160.076 million or US\$ 11,193.74. Therefore, in 2021 West Sumbawa district will drop in ranking from the high-income area category to upper-middle income area.

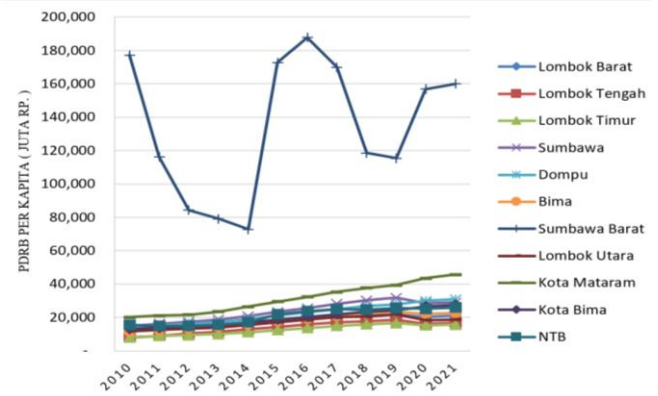


Figure 10: GRDP per Capita of Regency/City in NTB Province 2010 – 2021

There are ten districts/cities in NTB Province, but in 2010 only West Sumbawa district was included in the high-income regional category. Then there are seven districts/cities that fall into the category of lower middle income regions, namely regions with GDP per capita of US\$ 1,046 – 4,095 per year. The seven regions are West Lombok, Sumbawa, Dompu, Bima, North Lombok, Mataram City and Bima City. Meanwhile, Central Lombok Regency and East Lombok Regency in 2010 were included in the category of low-income areas, namely areas with GDP per capita of less than US\$ 1,046 per year.

If we look at it by island, of the five regencies/cities on the island of Lombok, most or four regencies/cities have GRDP per capita lower than the GRDP per capita of NTB Province in the last decade. The four districts/cities are West Lombok, Central Lombok, East Lombok and North Lombok districts. Meanwhile, Mataram City's GDP per capita is above the GDP per capita of NTB Province.

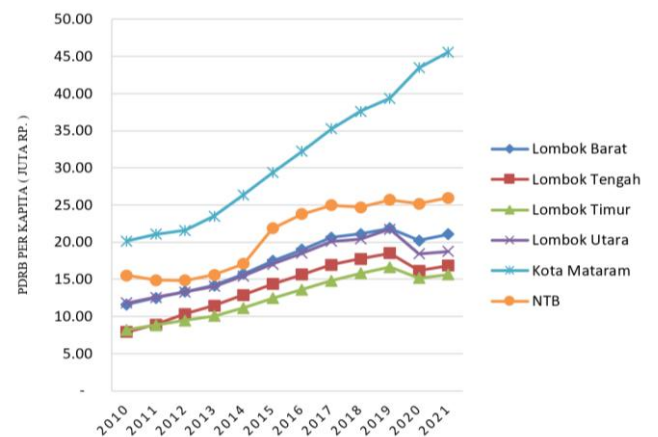


Figure 11: GRDP per Capita of Regency/City on Lombok Island, NTB Province, 2010 – 2021

The district/city with the lowest GDP per capita in the last decade on the island of Lombok is East Lombok Regency, followed by Central Lombok Regency. Meanwhile, the district/city with the highest GDP per capita on the island of Lombok is Mataram City, followed by West Lombok Regency and North Lombok Regency.

The order of magnitude of GRDP per capita over the last decade of each district/city on Lombok Island has barely changed. In 2010, the highest position in GDP per capita was Mataram City, and until 2021 this position has not changed. Meanwhile, East Lombok Regency only ranked second at the bottom in 2010, and after that its position dropped to the bottom until 2021.

For districts/cities on the island of Sumbawa, apart from West Sumbawa district, all districts/cities had a GRDP per capita that was lower than the GRDP per capita of NTB Province in 2010. This position continues to change so that in 2021 there are three districts/cities whose GDP per capita level is above the GDP per capita of NTB Province, namely Dompu, Sumbawa and Bima City. Meanwhile, Bima Regency remains the district with the lowest GRDP per capita on the island of Sumbawa for the last decade.

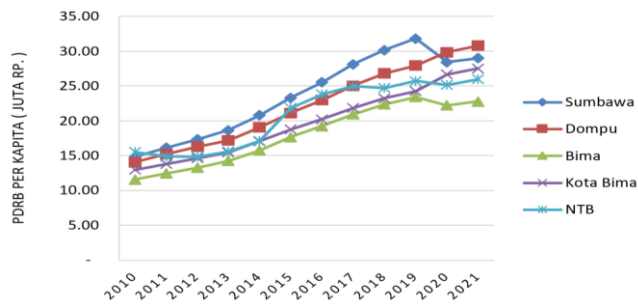


Figure 12: GRDP per Capita of Regency/City on Sumbawa Island, NTB Province, 2010 – 2021

**Income Inequality Within Regions (within-region-inequality).**

This research calculates the Theil Entropy Index for 10 (ten) districts/cities in NTB Province and 2 (two) main islands, namely Lombok and Sumbawa islands. Based on the results of the Theil entropy index calculation, in the period 2010 to 2021, it shows that income inequality within regions/islands (within-region-inequality) in NTB Province is included in the low category. This means that district income inequality on the island of Lombok and on the island of Sumbawa is in the low category, ranging from 0.0912 in 2019 to 0.2176 in 2010. The Theil index figure is also lower than the results of Wijaya's research in Yogyakarta Province in 2020, namely 0.686 (Wijaya et al., 2021). This means that income inequality within regions/islands in NTB Province is much lower than income inequality within regions in Yogyakarta Province.

Table 1. Theil Entropy Index in One Island (within-region-inequality) in NTB Province

| Tahun | Dalam Satu Pulau | Total     | % Kontribusi Terhadap Total |
|-------|------------------|-----------|-----------------------------|
| 2010  | 0.2176           | 0.2186    | 99.5136                     |
| 2011  | 0.1420           | 0.1434    | 99.0186                     |
| 2012  | 0.1004           | 0.1086    | 92.5204                     |
| 2013  | 0.0999           | 0.1087    | 91.8530                     |
| 2014  | 0.0952           | 0.1058    | 89.9835                     |
| 2015  | 0.1809           | 0.1809    | 99.9967                     |
| 2016  | 0.1838           | 0.1838    | 99.9979                     |
| 2017  | 0.1374           | 0.1399    | 98.2138                     |
| 2018  | 0.0948           | 0.1067    | 88.8738                     |
| 2019  | 0.0912           | 0.1046    | 87.2356                     |
| 2020  | 0.1149           | 0.1203    | 95.5622                     |
| 2021  | 0.1134           | 0.1199    | 94.5302                     |
|       |                  | Rata-Rata | 94.7749                     |

Source: BPS NTB Province, processed.

If we look at the pattern of the Theil entropy index in the period 2010 to 2021, it tends to decrease, although there are fluctuations (Figure 13). In 2010 the Theil entropy index for the region/island was 0.217, and then in the following years until 2014 it decreased. Starting in 2015, the size of the Theil entropy index increased until 2016. Then in 2017, the size of the Theil entropy index decreased again until 2021. This shows that apart from being in the low inequality category, income inequality within the islands of Lombok and Sumbawa islands is getting lower.

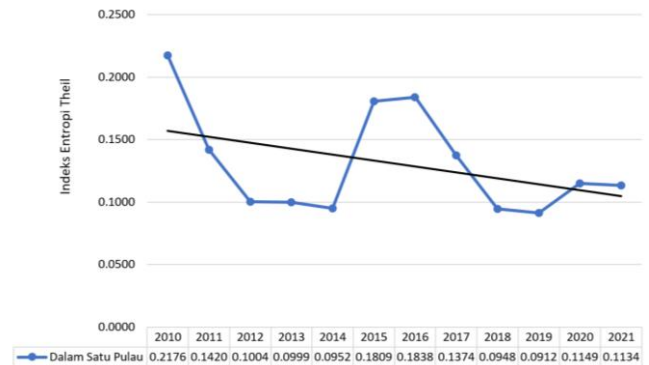


Figure 13: Theil Entropy Index in One Island and Its Trend: NTB Province 2010 - 2021

The tendency for the Theil entropy index on islands in NTB Province to be lower in the period 2010 to 2021 has the same pattern as the Theil entropy index on islands in Indonesia for the period 2001 to 2010 (Kuncoro, 2013). The results of calculations carried out by Kuncoro, the Theil entropy index for islands in Indonesia in 2001 was 0.3265. Then in 2010, the Theil entropy index for islands in Indonesia fell to 0.2961.

The contribution of income inequality within regions/islands (within-region-inequality) to total inequality in NTB Province is very high, ranging from 87.24% in 2019 to 99.99% in 2016, or an average of 94.7749%. This condition is not much different from the results of Wijaya's research in Yogyakarta Province in 2020. The results of calculating the Theil entropy index within regions/islands (within-region-inequality) in Yogyakarta Province were 0.686 or a contribution of 80.52% to total inequality in Yogyakarta Province (Wijaya et al., 2021). This very high contribution is also not much different from the results of Akita's research in Indonesia from 1993 to 1997. In 1993, the contribution of income inequality within regions/islands (within-region-inequality) to total inequality in Indonesia was 87.3, and in 1997 it was 87.8. This condition is in sharp contrast to China, in 1997 the contribution of within-region inequality to total inequality in China was only 27.1% (Akita, 2003).

**Income Inequality Between Regions (between-region-inequality)**

The results of the calculation of the Theil entropy index, in the period 2010 to 2021, show that income inequality between regions/islands (between-region-inequality) in NTB Province is included in the low category. This means that income inequality between the islands of Lombok and Sumbawa is in the low category, ranging from 0.000004 in 2016 to 0.013349 in 2019. Therefore, income inequality between the islands of Lombok and Sumbawa is more evenly distributed compared to the income inequality of districts within the island of Lombok and within the island of Sumbawa. Likewise, when compared with the inequality between regions in Yogyakarta Province. Wijaya's research results show that the Theil entropy index between regions in Yogyakarta



Province in 2020 was 0.166 (Wijaya et al., 2021). Meanwhile for Indonesia, Kuncoro's calculation results show that the Theil entropy index between regions/islands (between-region-inequality) was 0.4463 in 2010 (Kuncoro, 2013). This means that income inequality between the islands of Lombok and Sumbawa is more evenly distributed compared to income inequality between regions in Yogyakarta Province and Indonesia.

Table 2. Inter-Island Theil Entropy Index (between-region-inequality) in NTB Province

| Tahun | Antar Pulau | Total     | % Kontribusi Terhadap Total |
|-------|-------------|-----------|-----------------------------|
| 2010  | 0.001063    | 0.218626  | 0.4864                      |
| 2011  | 0.001407    | 0.143383  | 0.9814                      |
| 2012  | 0.008120    | 0.108560  | 7.4796                      |
| 2013  | 0.008857    | 0.108710  | 8.1470                      |
| 2014  | 0.010595    | 0.105780  | 10.0165                     |
| 2015  | 0.000006    | 0.180864  | 0.0033                      |
| 2016  | 0.000004    | 0.183782  | 0.0021                      |
| 2017  | 0.002499    | 0.139933  | 1.7862                      |
| 2018  | 0.011866    | 0.106654  | 11.1262                     |
| 2019  | 0.013349    | 0.104583  | 12.7644                     |
| 2020  | 0.005337    | 0.120252  | 4.4378                      |
| 2021  | 0.006560    | 0.119930  | 5.4698                      |
|       |             | Rata-Rata | 5.2251                      |

Source: BPS NTB Province, processed.

The Theil entropy index pattern in the period 2010 to 2021 tends to increase, although there are fluctuations. In 2010 the Theil entropy index between regions/islands was 0.001063, and then in the following years until 2013 it increased. Starting in 2014, the size of the Theil entropy index decreased until 2016. Then in 2017, the size of the Theil entropy index increased again until 2019, and decreased in 2020 and in 2021 increased again. This shows that income inequality between regions/islands (Lombok Island and Sumbawa Island) although it is in the low inequality category, tends to increase during the period from 2010 to 2021. This pattern is not the same as the results of Akita's research in Indonesia from 1993 to 1997, where income inequality between regions/islands in Indonesia tends to decrease. In 1993 the Theil entropy index between regions/islands in Indonesia was 0.023, then in 1997 it fell to 0.021 (Akita, 2003).

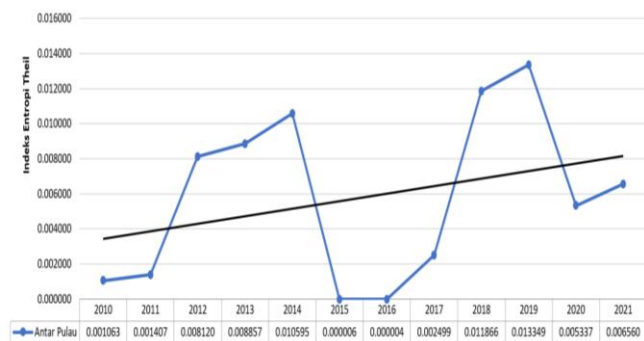


Figure 14: Inter-Island Theil Entropy Index and Trends: NTB Province 2010 - 2021

There is a large difference between the contribution of income inequality within regions/islands (within-region-inequality) and the contribution of income inequality between regions (between-region-inequality) to total inequality in NTB Province. The contribution of income inequality between regions (between-region-inequality) to total inequality in NTB Province is very low, ranging from 0.0021 to 12.7644 or an average of 5.2251%. Thus, the contribution of income inequality between regions (between-region-inequality) to total inequality in NTB Province is much lower than the contribution of income inequality between regions (between-region-inequality) in Yogyakarta Province in 2020, namely 19.48% (Wijaya et al., 2021). Meanwhile for Indonesia, the results of Akita's research in 1997, the amount was almost the same as NTB Province, namely 12.2% (Akita, 2003). Then in 2010, the contribution of income inequality between regions (between-region-inequality) to total inequality in Indonesia increased quite significantly to 60.12% (Kuncoro, 2013).

### Spatial inequality in West Nusa Tenggara Province

If we compare the magnitude of the Theil entropy index within a region/island with the magnitude of the Theil entropy index between regions/islands, the Theil entropy index between regions/islands is much lower. The Theil entropy index in regions/islands in NTB Province ranges from 0.091234 to 0.217562. Meanwhile, the Theil entropy index between regions/islands ranges from 0.000004 to 0.013349. This shows that even though they both fall into the low inequality category, the income inequality between the islands of Lombok and Sumbawa is more evenly distributed compared to the income inequality between districts within Lombok and districts within the island of Sumbawa.

Table 3. Theil Entropy Index for Districts and Islands in NTB Province

| Tahun | Antar Pulau | Dalam Satu Pulau | Total    |
|-------|-------------|------------------|----------|
| 2010  | 0.001063    | 0.217562         | 0.218626 |
| 2011  | 0.001407    | 0.141976         | 0.143383 |
| 2012  | 0.008120    | 0.100440         | 0.108560 |
| 2013  | 0.008857    | 0.099854         | 0.108710 |
| 2014  | 0.010595    | 0.095184         | 0.105780 |
| 2015  | 0.000006    | 0.180858         | 0.180864 |
| 2016  | 0.000004    | 0.183778         | 0.183782 |
| 2017  | 0.002499    | 0.137433         | 0.139933 |
| 2018  | 0.011866    | 0.094787         | 0.106654 |
| 2019  | 0.013349    | 0.091234         | 0.104583 |
| 2020  | 0.005337    | 0.114916         | 0.120252 |
| 2021  | 0.006560    | 0.113370         | 0.119930 |

Source: BPS NTB Province, processed.

In total, the Theil entropy index in NTB Province ranges from 0.104583 (2019) to 0.218626 (2010). When compared with the total Theil entropy index in Yogyakarta Province in 2020, which was 0.852 (Wijaya et al., 2021); So the total Theil entropy index in NTB Province is much lower. This shows that overall income

inequality in NTB Province is more evenly distributed compared to overall income inequality in Yoyakarta Province. The total Theil entropy index in NTB Province is not much different from the total Theil entropy index in Indonesia in 1997. The results of Akita's research in 1997 showed that the total Theil entropy index in Indonesia was 0.172 (Akita, 2003). Then in 2010, the total Theil entropy index in Indonesia increased quite significantly. Based on the results of calculations carried out by Kuncoro, the Theil entropy index between islands in 2010 was 0.4463, and the Theil entropy index within islands was 0.296, so the total Theil entropy index in Indonesia in 2010 was 0.7424 (Kuncoro, 2013).

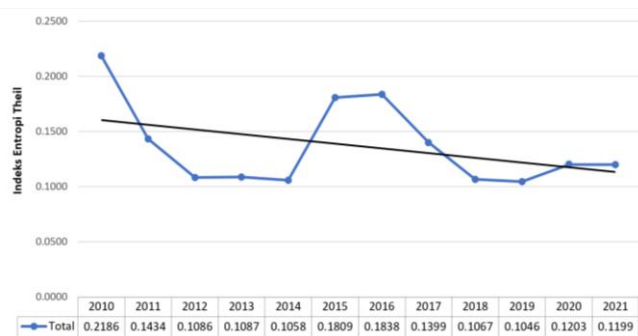


Figure 15: Total Theil Entropy Index and Trends: NTB Province 2010 - 2021

If we look at the pattern of the total Theil entropy index in NTB Province in the time period from 2010 to 2021, it is similar to the pattern of the total Theil entropy index in Indonesia in the time period from 1993 to 1997, namely both experienced a decline. The total Theil entropy index in Indonesia in 1993 was 0.181, then in the following years it decreased so that in 1997 it became 0.072 (Akita, 2003). In 2010, the total Theil entropy index in NTB Province was 0.2186, and in the following years it decreased until 2014. Then in 2015 and 2016 it increased, and after that in the following years it decreased again.

## CONCLUSION

Based on the results of the analysis carried out in the previous chapter, several conclusions can be drawn as follows:

1. During the period from 2010 to 2021, it shows that income inequality within regions/islands (within-region-inequality) in NTB Province has a downward trend. This means that the district income inequality within the island of Lombok and within the island of Sumbawa is becoming more evenly distributed.
2. Income inequality between regions/islands (between-region-inequality) in NTB Province is lower when compared to income inequality within regions/islands (within-region-inequality). Therefore, the income inequality between the islands of Lombok and the island of Sumbawa is more evenly distributed compared to the income inequality of the districts within the island of Lombok and within the island of Sumbawa. However, income inequality between regions/islands (between-region-inequality) in NTB Province tends to increase during the period 2010 to 2021.
3. Overall, income inequality in NTB Province has a tendency to decrease during the period 2010 to 2021. Overall income inequality in NTB Province is mostly or on average 94.77% of the contribution from income inequality within regions (within-region-inequality), and

only 5.23% is the contribution of income inequality between regions (between-region-inequality) during the period 2010 to 2021.

## BIBLIOGRAPHY

1. Akita, T., & Alisjahbana, A. S. (2002). Regional income inequality in Indonesia and the initial impact of the economic crisis. *Bulletin of Indonesian Economic Studies*, 38(2), 201–222. <https://doi.org/10.1080/000749102320145057>
2. Akita, T. (2003). Decomposing regional income inequality in China and Indonesia using two-stage nested Theil decomposition method. *Annals of Regional Science*, 37(1). <https://doi.org/10.1007/s001680200107>
3. Atkinson, A. B., & Sørensen, J. E. (2016). The Long-Run History of Income Inequality in Denmark. *Scandinavian Journal of Economics*, 118(2). <https://doi.org/10.1111/sjoe.12143>
4. Borjas, G. J. (2013). *Labor economics*. McGraw-Hill.
5. Bourguignon & Morrisson. (2002). Inequality Among World Citizens - 1820 -1992. *The American Economic Review*, 92, 724–744. <http://links.jstor.org/sici?sici=0002-8282%28200209%2992%3A4%3C727%3AIAWC1%3E2.0.CO%3B2-S>
6. Bourguignon, F. (1979). Decomposable Income Inequality Measures. 47(4), 901–920. <http://www.jstor.org/stable/1914138>
7. BPS. (2021). West Nusa Tenggara Population Expenditure Inequality Level March 2021. *BRSbrsInd-20210726084405.pdf*
8. Ceriani, L., & Verme, P. (2012). The origins of the Gini index: Extracts from *Variabilità e Mutabilità* (1912) by Corrado Gini. *Journal of Economic Inequality*, 10(3), 421–443. <https://doi.org/10.1007/s10888-011-9188-x>
9. Daryanto, A., & Hafizrianda, Y. (2010). *Quantitative Models for Planning Regional Development: Concepts and Applications* (S. S. Sandra, Ed.). IPB Press.
10. Duru-Bellat, M. (2017). Branko Milanovic, *Global Inequality. A New Approach for the Age of Globalization*. Lectures. <https://doi.org/10.4000/lectures.22236> Ha, E. (2012). *Globalization, government*