

# Article

*by* SusetyoDidik

---

**Submission date:** 18-Apr-2023 10:54PM (UTC+0700)

**Submission ID:** 2068422433

**File name:** 2\_08\_Alrahman,\_Dikko\_et\_al\_Seybold\_Report\_-\_Dikko\_Alrahman.pdf (586.36K)

**Word count:** 6547

**Character count:** 34567

## ANALYSIS OF INEQUALITY ON THE SUMATRA ISLAND, INDONESIA

DIKKO ALRAKHMAN<sup>1</sup>, DIDIK SUSETYO<sup>2</sup>, TAUFIQ<sup>3</sup> and AZWARDI<sup>4</sup>

<sup>1,2,3,4</sup>Faculty of Economics, University <sup>22</sup>Sriwijaya, Indonesia.

Corresponding Author :scholar2457@gmail.com

### Abstract:

This study aims to analyze and empirically prove the effect of economic growth, fiscal decentralization, trade, and the basic sector on inequality in Sumatra Island, Indonesia. The data used is panel data with 154 regencies/cities on the Sumatra Island for ten years (2011-2020), and the data processing technique used is the econometric model of multiple linear equations (multiple regression) for panel data. The results of the study found that the variables of economic growth and fiscal decentralization were negatively and significantly correlated with inequality on the Sumatra Island. Meanwhile, the trade variable is positively and significantly correlated with inequality. There are the base sector dummy variable shows a significant effect on inequality. This study has limitations, that is using only four independent variables (economic growth, fiscal decentralization, trade, and the basic sector) so that there are other factors or variables outside the model that can also affect the dependent variable (inequality). The contribution given from this research is as input as well as evaluation for interested parties in making policies so that they can produce more targeted policies in an effort to reduce inequality, especially for regional governments on the Sumatra Island.

**Keywords:** inequality, economic growth, fiscal decentralization, trade, basic sector

### Introduction

Inequality in real cannot be eliminated in the development of a district. This inequality occurs because the main district sectors are only concentrated in certain district (Soenandar, 2005). Fleisher, et. al. (2010) said that the determinants factor of regional disparities include investment in physical capital, human capital, and infrastructure capital. While, Cherodian & Thirlwall (2015) mentioned that inequality between districts would result in the migration of working people and the transfer of capital from underdeveloped areas to developed areas.

Generally, the results of studies on inequality in Indonesia that have been carried out by several experts show that development inequality between districts in Indonesia is higher than the developed countries. In fact, development inequality between districts in Indonesia are higher among developing countries (Akita, 1988). Williams, et. al. (2003) stated that one of the triggers for inequality in income distribution is regional disparity. Indonesia consists of 34 provinces with different economic structures related to the various endowment factors they have. This has led to the problem of disparity in regional economic performance caused by differences in the speed of economic growth between provinces, where the output of provinces that are richer with endowment factors is certain to be higher than provinces with rarer endowment factors.

In 2020 Indonesia's Gross Domestic Product (GDP) reached 10,722 trillion rupiah, while the value of GDP per capita was 39,557 million rupiah. The GDP value is formed from the output

29

figures of all provinces in Indonesia. On the other hand, if viewed from the Gross Regional Domestic Product (GRDP) per capita, it turns out that the GRDP per capita value between islands in Indonesia shows differences. During the period between 2016-2020, there are only 2 islands that have GRDP per capita above GDP per capita, that are Kalimantan and Java Islands. Meanwhile, other islands have GRDP per capita value below GDP per capita. Kalimantan Island has the highest GRDP per capita, which is 53,560 million rupiah in 2020, while the smallest GRDP per capita in 2020 is Bali and Nusa Tenggara with a value of 20.576 million rupiah.

Inequality not only happens between islands in Indonesia but also between provinces in Sumatera Island. Economic growth and unemployment rates between provinces in Sumatera Island tend to vary from 2016 to 2020—there were regions with prolonged growth (on average 1%), while some regions showed growth by 6%. The same situation applied to unemployment—some regions showed an unemployment rate under 3%, while others showed a figure of more than 10% from 2016 to 2020. The data are presented in Table 1.

**Table 1: Economic Growth and Unemployment per Province in Sumatera Island from 2016 to 2020**

No.	Province	Economic Growth (%)					Unemployment Rate (%)				
		2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
1	Aceh	3.29	4.18	4.61	4.14	-0.37	7.57	6.57	6.34	6.17	6.59
2	Sumatera Utara	5.18	5.12	5.18	5.22	-1.07	5.84	5.6	5.55	5.39	6.91
3	Sumatera Barat	5.27	5.3	5.14	5.01	-1.6	5.09	5.58	5.66	5.38	6.88
4	Riau	2.18	2.66	2.35	2.81	-1.12	7.43	6.22	5.98	5.76	6.32
5	Jambi	4.37	4.6	4.69	4.37	-0.46	4	3.87	3.73	4.06	5.13
6	Sumatera Selatan	5.04	5.51	6.01	5.69	-0.11	4.31	4.39	4.27	4.53	5.51
7	Bengkulu	5.28	4.98	4.97	4.94	-0.02	3.3	3.74	3.35	3.26	4.07
8	Lampung	5.14	5.16	5.23	5.26	-1.67	4.62	4.33	4.04	4.03	4.67
9	Bangka Belitung	4.1	4.47	4.45	3.32	-2.3	2.6	3.78	3.61	3.58	5.25
10	Kepulauan Riau	4.98	1.98	4.47	4.84	-3.8	7.69	7.16	8.04	7.5	10.34
11	Sumatera	4.28	4.28	4.52	4.55	-1.19	5.43	5.2	5.11	5.04	6.14
12	Indonesia	5.03	5.07	5.17	5.02	-2.07	5.61	5.5	5.3	5.23	7.07

Source: <sup>2</sup> Gross Regional Domestic Product of Provinces in Indonesia according to Business Fields 2016-2020, 2021, and the Workforce of Indonesia August 2020, 2020 (data analyzed)

On the other hand, indications of inequality not only occur between islands in Indonesia but also between provinces in the Sumatra Island. The economic growth rate between provinces in the Sumatra Island tends to various in the 2016-2020 periods. In that period, the economic growth between provinces on Sumatra Island was relatively unequal because there were districts that had very low growth (around 1%) and there were districts that had growth more than 6%. Even in 2020 none of the provinces experienced economic growth.

Furthermore, the level of inequality in a district can be shown by the Williamson Index. If the value of the Williamson Index is getting higher close to 1, it means that the level of inequality

in an area is getting higher. Otherwise, if the value of the Williamson Index is getting lower and closer to 0, it means that the level of inequality in an area is getting lower. The Williamson Index value between provinces in the Sumatra Island the period between 2016-2020 can be said to be quite unequal. It is said, because there are provinces with high Williamson Index such as Riau Province and Riau Islands (more than 0.2). Meanwhile, on the other side, there are provinces with low Williamson index such as Jambi Province (around 0.001) and Bangka Belitung Islands (range 0.02). This can be seen in Figure 1.

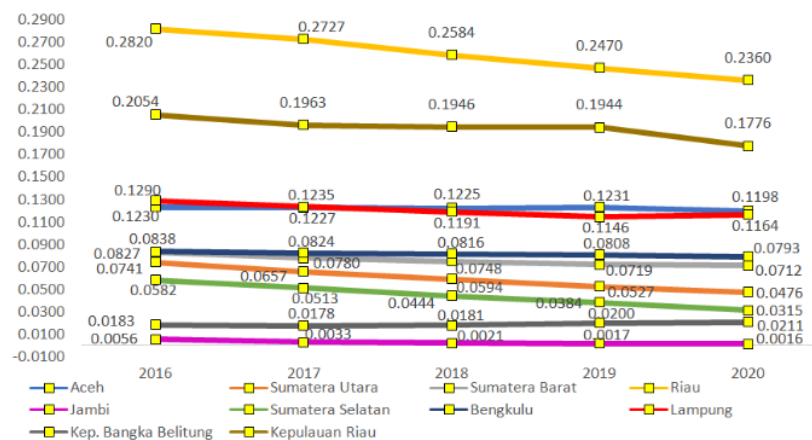


Figure 1: Williamson Index of Provinces in Sumatra Island 2016-2020

Source: Processed from Statistics Indonesia 2017-2021, 2017-2021

Shornton (2007) stated that the decrease of income disparities between districts was caused by the implementation of regional autonomy and fiscal decentralization. Regional autonomy and fiscal decentralization provide significant changes to equity and welfare because policies are determined according to the potential of each districts and better able to calculate regional conditions in the provision of goods, such as infrastructure, education, and health. Meanwhile, according to Brodjonegoro (2003) Fiscal decentralization is a manifestation of the 'money follow function' from the implementation of regional autonomy policies in Indonesia. The underlying spirit of regional autonomy and fiscal decentralization is to more optimize the implementation of development and its outcomes. The development policy that was centered in the previous era has caused various problems in development, including one of the development inequality between districts. Therefore, another orientation of fiscal decentralization is to reduce the development inequality between regions.

Another factor that causes inequality in a district is the lack of expeditious mobility of goods and services. The mobility of goods and services shows the performance of trade that occurs in district. Thomas (2009) said that trade liberalization has been shown to increase growth and decrease inequality. If see at the inter-provincial trade condition in Sumatra Island, which is seen from the value of exports and imports produced by each province, it is known that the

value of exports and imports between provinces is very varied. Moreover there are provinces that experience a trade surplus or deficit.

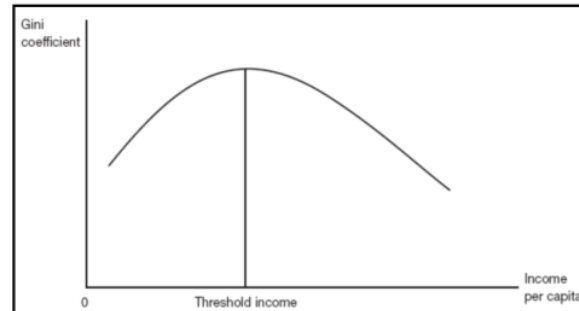
The various trade performances between provinces in the of Sumatra Island occur due to differences in the relative comparative advantage owned by each districts, thus encouraging the specialization of production in certain commodities. The occurrence of production specialization indicates that there are differences in the basis of the economic sector owned by each district, which at the same time also shows the economic potential of each district. Therefore, the economic base/potential is also an important factor to accelerate the development of a district and decrease inequality. This is as stated by Kuncoro (2004) that inequality between districts can be decrease if the government in the area concerned implements development policies based on the potential of each region.

Several empirical studies that aim to analyze the effect of economic growth variables on inequality have produced strong findings of a relationship between economic growth and inequality. Lundberg & Squire (2003), Huang, et. al. (2009), Kefi & Zouhaier (2012) prove that simultaneously both inequality and growth have a negative impact on each other. Chemli & Smida (2013) find that economic growth and inequality go in opposite directions. In line with that, Easterly (2007) also proves that there is a significant negative relationship between inequality and long-term economic growth.

Thus, the main aims of this research is to examine the effect of economic growth, fiscal decentralization, trade, and the basic sector on the inequality of districts/cities in the Sumatra Island.

### Literature Review and Hypothesis Development

The theoretical basis for the analysis of regional inequality uses the neoclassical hypothesis (Kuznets). According to the neoclassical hypothesis, at the beginning of a country development process, development inequality between district tends to increase or uneven. This process will occur until the inequality reaches a peak/divergence (Todaro & Smith 2006). This theory was born in 1955 by observing the phenomenon of regional disparity as the relationship between economic growth and per capita income which is depicted in an inverted "U" shaped curve relation. The relationship between per capita income and even distribution of income is that at the beginning development stage, the distribution income between households will tend to be uneven, but after reaching a certain level of development the distribution of income will be more even (Kuncoro, 2006).



**Figure 2: Kuznets curve**

Source: Hossain, 2013

Based on Figure 2, the Kuznets curve shows that at low income levels, further economic growth tends to create more inequality, which occurs before reaching the threshold level of income. However, once the threshold level of income (the top of the curve) has been reached, income inequality will decrease through increased economic growth. In other words, poor countries in the early stages of economic development can expect a decrease in income inequality after the threshold level of income is reached (Hossain, 2013).

Williamson (1965) findings with a pattern that is in accordance with the hypothesis of Simon Kuznets, which analyzes the income inequality in the spatial dimension, that is the income inequality between districts at the per capita income level. With the measure of inequality in the weight efficient of variance or the Williamson index, the results of his study found a systematic relationship between the level of economic growth and regional disparities. Meanwhile, the same result was also found by Adelman & Morris (1973) using cross section data. This study concludes that there is a negative relationship between economic growth and differences in social welfare. Further, it was found that when the initial stage of new development begins, the level of prosperity among the people tends to be unbalanced, but if development has been going on for a long time then the inequality in prosperity will decrease.

The explanation why in the early stages of development the income distribution tends to deteriorate then getting better mostly related to the basic conditions of structural change. According to the Lewis model, the early stages of growth will be concentrated in the modern industrial sector, which has limited jobs but high levels of wages and productivity. The Kuznets curve can be generated by a continuous growth process stemming from the expansion of the modern sector, along with the development of a country from a traditional economy to a modern economy. The underdeveloped economy consists of two sectors, there are:

1. The traditional sector is the subsistence rural sector which is overpopulated and characterized by a marginal productivity of labor equal to zero. This is a condition of surplus labor as a fact that if some of the workforce is withdrawn from the agricultural sector, the sector will not lose its output.

2. The modern urban industrial sector which has a high level of productivity and becomes a shelter for workers who are transferred little by little from the subsistence sector.

The main concern of this model is directed at the process of shifting labor, as well as output growth and increasing employment in the modern sector. The transfer of labor and the growth of employment opportunities were made possible by the expansion of output in the modern sector (Todaro & Smith, 2006).

Myrdal (1957) explains that inequality between districts by building his theory of underdevelopment and economic development around the regional inequality idea at the national and international levels. To explain that, the ideas of the spread effect and backwash effect are used as a form of propagation influence from the growth center to the surrounding area. The spread effect is defined as a favorable effect which includes the flow of investment activities from growth centers to surrounding areas. The backwash effect is defined as an unfavorable effect which includes the flow of people from the surrounding area including the flow of capital to the main area, resulting in reduced development capital for the suburbs which is actually needed to balance the development of the main area. Furthermore, it is argued that regional inequality occurs due to the large backwash effect compared to the spread effect in underdeveloped countries.

There are three popular measures that are generally used to measure regional inequality, that are the coefficient of variation (CV), the Gini coefficient, and the Theil index (Fan & Sun 2008; Li & Wei 2010). Statistically, the Williamson Index is actually a coefficient of variation which was originally used in Jeffrey G. Williamson's study as a measure of development inequality between regions. The Williamson Index uses the value of Gross Regional Domestic Product (GRDP) per capita as the basic data because what is being compared is the level of development between regions and not the level of income distribution between groups of people.

According to Sjafrizal (2018) Inequality in a district is caused by many factors that are:

**First**, differences in the content of natural resources in each district. There are districts that have oil and natural gas, but other district does not. This difference in the content of natural resources will clearly affect production activities in the area concerned. District with a fairly high content of natural resources will find it easier to increase production at a relatively low cost compared to district with a lower content of natural resources.

**Second**, large differences in demographic conditions between districts. The demographic conditions means are differences in growth rates and population structure, differences in education and health levels, differences in employment conditions, and differences in behavior and habits, and the work ethic of the people in that district. Demographic conditions affect economic inequality between regions because this will affect the work productivity of the people in the area concerned. Regions with good demographic conditions will tend to have higher levels of work productivity. This condition will further encourage increased investment to the region concerned so that it will also tend to increase the provision of employment and economic growth of the region concerned.

**Third**, lack of fine mobility of goods and services. The mobility of goods and services includes inter-regional trade activities and migration, whether sponsored by the Government (transmigration) or spontaneous migration. If the mobility is not fine then the excess production of one district cannot be sold to other district in need. As a result, economic inequality between districts will tend to be higher because the advantages of a district cannot be utilized by other district in need, so that it is difficult for underdeveloped district to encourage their economic activities. Furthermore, the effect of the mobility of goods (trade) between regions on regional development inequality is shown by the Heckscher-Ohlin theory that if international and interregional trade activities are not smooth, the process of factor price equalization will be disrupted. As a result, the distribution of regional development processes will be hampered and the disparity in development between regions will tend to be high. Meanwhile, the allocation of investment between regions will clearly affect the development gap between districts because investment is one of the main factors that determine the district development process.

**Fourth**, allocation of development funds between districts and government systems. If the government system adopted is autonomy or decentralization, more government investment funds will be allocated to districts so that economic inequality between districts will tend to be lower. According to Oates (1972) fiscal decentralization can create efficiency and effectiveness to encourage growth and changes in economic structure, as well as reduce inequality between districts. This is in line with Akai & Sakata (2005) who revealed that fiscal decentralization is a tool used to increase the efficiency of the public sector and to reduce disparities between districts. Meanwhile, Rodríguez-Pose, et. al. (2009) stated that fiscal decentralization provides significant changes to equity and welfare. This is because Regional Governments (assuming closer to the people) are more capable in making policies that determine the public goods needed in their regions. Thus, local governments produce a more efficient allocation function.

**Fifth**, a fairly high concentration of economic activity in certain district. The high concentration of inter-regional economic activity tends to encourage an increase in inter-district development inequality because the district development process will be faster in areas with a higher concentration of economic activity. Vice versa, occurs in areas with a lower concentration of economic activity. The concentration of district economic activities can be measured using the Location Quotient (LQ) index or the Industrial Concentration Index (ICI).

### Research Methodology

The data used for this research is secondary data sourced mainly from the Central Statistics Agency which includes data on Gross Regional Domestic Product (GRDP) per capita, population, economic growth, realization of regional income, GRDP by business field, as well as the value of exports and imports from all over the districts/cities on the Sumatra Island from 2011 to 2020. The data processing technique used in this study uses the econometric model of multiple linear equations (multiple regression) for panel data which is a combination of cross sections that are 154 districts/cities on the Sumatra Island with time series is ten years (2011-

2020). To obtain an estimate of each variable and parameter, statistical data and models were processed using Stata 15 software.

According to Baltagi, Jung, & Song (2010) some of the advantages of using panel data are as follows:

- a. Able to control the heterogeneity of variables that are <sup>21</sup>not included in the model (unobserved heterogeneity),
- b. Can provide intensive data, reduce collinearity between variables, increase degrees of freedom and be more efficient,
- c. Better for study dynamics of adjustment, <sup>18</sup>
- d. Able to identify and measure effects that simply cannot be resolve in only cross section data or only time series data,
- e. Can minimize the bias generated by individual aggregation due to more data units.

The form of the multiple linear regression model that will be used in this study is multiple linear regression with the dependent variable, that are the inequality variable and the independent variable, namely the variable economic growth, fiscal decentralization (proxied by the realization of regional income), trade (proxied by the value of net exports), and base sector dummy variable (grouped into two, namely the non-agricultural sector base area with code 1 and the agricultural sector base area with code 0). The equation function that is formulated is as follows.

$$\text{INEQ} = f(\text{PDRB}, \text{FD}, \text{TRD}, \text{BS}) \quad (1)$$

Where:

- INEQ : Inequality  
PDRB : Economic Growth  
FD : Fiscal Decentralization  
TRD : Trade  
BS : Basic Sector (dummy variable)

To estimate the panel data regression model, there are three commonly used approaches, namely the common effect model (CEM) or also known as Pooled Least Square (PLS), fixed effect model (FEM), and random effect model (REM) (Widarjono, 2009). Statistical results obtained from data processing are used to test hypotheses. This hypothesis test is useful for checking or testing if the regression coefficient obtained is significant (significantly different). The meaning of this significance is a regression coefficient value which is not statistically equal to zero. <sup>17</sup> If the slope coefficient is equal to zero, it means that there is not enough evidence to state that the independent variable has an influence on the dependent variable (Nachrowi, 2006). Thus, in detail the test of the criteria is carried out with the following stages:

- a. Economic criteria (signs and quantities) of economic theory;
- b. Statistical criteria consisting of the following:
  - t test (test for individual parameter significance/partial test), to test each explanatory variable that significantly affects endogenous variables.
  - Fisher's test/F (simultaneous significance test), to test the explanatory variables together/as a whole is able to explain the variation of endogenous variables.
  - The coefficient of determination (R<sup>2</sup>), to see the model's ability to explain the behavior of endogenous variables.

## Results

Based on the results of data processing that has been done, this study produces an equation model that is considered the best by using the variables of inequality, economic growth, fiscal decentralization (proxied by the realization of regional income), trade (proxied by the value of net exports), and the base sector dummy variable. Thus, the equation formulated is as follows:

$$\ln\_INEQ_{it} = \beta_0 + \beta_1 \ln\_PDRB_{it} + \beta_2 FD_{it} + \beta_3 TRD_{it} + \beta_4 BS_{it} + \varepsilon_{it} \quad (2)$$

Where:

- ln\_INEQ : Williamson Index
- ln\_PDRB : Gross Regional Domestic Product growth (%)
- FD : Realization of Total Regional Income (Billion Rupiah)
- TRD : Net Exports (Billion Rupiah)
- BS : Base Sector (1: base area for non-agricultural sector; 0: base area for agriculture sector)

After obtaining the equation of the model, the right approach for panel data must be determined, that are using pooled least squares, fixed effect models (FEM) or random effects models (REM). Therefore, the first step is to choose between pooled least square or fixed effect models (FEM). Based on the results the F-test conducted, the probability F-statistical equation of the model is 0.0000, which is smaller than the 5% real level so Reject H<sub>0</sub>, which means that the FEM approach is more appropriate to be chosen for the model equation.

Then, the next step is to choose between FEM and REM which is carried out with the Hausman test. Based on the Hausman test which was done on the equation was obtained p-value by 0.0000. This indicates that the test results significant (p-value < 5%) so that H<sub>0</sub> is rejected, which means that the correct approach is Fixed Effect Model (FEM) for the model equation. The estimation results carried out on the model equations can be briefly shown in Table 1.

34

Table 2: Estimation Results of Equation

Variable	Coef.	Std. Err.	t	P> t
ln_pdrb	-.1601994	.0588148	-2.72	0.007 (**)
fd	-.000099	.0000496	-2.00	0.046 (*)
trd	.0000355	8.83e-06	4.02	0.000 (***)
bs	-.4594204	.1110416	-4.14	0.000 (***)
C	-2.157217	.4951432	-4.36	0.000 (***)
R-squared	0.0446			
Prob> F	0.0000			
Total observation	1.540			

Source: Data processed using Stata version 15

Based on the tests above on the estimation of the model equation, the F-statistical probability results are less than 1%, which means that the regression model used is good/significant or in other words, the independent variable together have a significant effect on the dependent variable. Meanwhile, based on the test, the R-squared (R<sup>2</sup>) value is 0.0446 which indicates that the model obtained is able to explain the variation of economic growth of 4.46 percent.

## Discussion

10

### Analysis the Effect of Economic Growth on Inequality

In this study, the variable of economic growth uses the GRDP growth indicator. Based on the regression results, it is known that economic growth has a negative and significant effect on inequality with a coefficient of -0.16. This means that the variable economic growth has an effect on reducing inequality. Thus, the meaning is if there is an increase/growth of GRDP by 1 percent, inequality will decrease by 0.16 percent. The coefficient value obtained can be said to have a significant impact on reducing inequality in the Sumatra Island.

The trend of economic growth in districts/cities on the Sumatra Island in recent years is quite stable in the range of an average of 4 to 5 percent, although it is relatively fluctuating in its development. Therefore, if there is a higher acceleration of economic growth in the coming year, it can certainly produce better changes in reducing inequality on the Sumatra Island. For example, if there is an increase/growth in GRDP by 5 percent, the range for decreasing inequality is around 0.80 percent. The average value of the Williamson index as an indicator of inequality in regencies/cities in the Sumatra Island is around 0.0356 points, so with a decrease of 0.80 percent it can be 0.0353 points. For this reason, in order to achieve the goal of reducing inequality more significantly, great attention is needed from all Regional Governments in the Sumatra Island to encourage quality economic growth that can be felt by all levels of society.

GRDP growth must be maintained, so that it continues to increase and the number is higher than population growth. Because if population growth is higher than GRDP growth, then GRDP growth does not have a positive impact on people's welfare. Through the progress of

the economy in an area, it certainly indicates an improvement in infrastructure, public services, and an increase in people's income. This ultimately creates a decrease in inequality in a region due to the fulfillment of service standards and equitable development.

### Analysis the Effect of Fiscal Decentralization on Inequality

Local government fiscal policies are considered important in the current era of decentralization and regional autonomy. Regional governments have the authority to manage regional finances. One of the important instruments in the regional fiscal framework is local government revenue which is contained in the Regional Revenue and Expenditure Budget (APBD) every year. In this study, the variable of fiscal decentralization uses the Realization of Total Regional Revenue as a proxy. Based on the regression results, it is known that fiscal decentralization has a negative and significant effect on inequality with a coefficient of -0.000099. This means that the variable fiscal decentralization has an effect on reducing inequality. Thus, the meaning is that if there is an increase in the Realization of Total Regional Income by 1 billion rupiah, the inequality (Williamson index) will decrease by 0.000099 percent.

Basically, the realization of the total regional income of regencies/cities on the Sumatra Island is relatively diverse, but on average the value is around 1.117 trillion rupiah in the last few years. Therefore, if there is a significant increase in regional income in the coming year, it will certainly have an effect on reducing inequality in the Sumatra Island. For example, if there is an increase in the realization of regional income by 100 billion rupiah, the range for decreasing inequality is around 0.0099 percent. The average value of the Williamson index as an indicator of inequality in regencies/cities in the Sumatra Island is around 0.0135 points, so with a decrease of 0.0099 percent it can be 0.035596 points. For this reason, in order to reduce the level of inequality, synergistic and targeted efforts are needed in managing regional fiscal, one of which is in the aspect of regional income. It is undeniable that the fiscal independence of a region can be seen from the ability of regional income to increase. Through an increase in income, the Regional Government can also increase regional spending so that it functions to carry out equitable and fair development in order to reduce inequality between regions.

### Analysis the Effect of Trade on Inequality

In essence, the wheels of the economy of a district cannot be separated from the existence of interregional trade activities. This is because in the production process inputs are needed and output marketing is done. Therefore, these two things become an important part in the trade process and become an interaction between districts. In this study, the trade variable uses the net export proxy, that is the number of exports and imports. Based on the regression results, it is known that trade has a positive and significant effect on inequality with the coefficient obtained is 0.0000355. This means that the trade variable has an effect on increasing inequality. Thus, the meaning is that if there is an increase in net exports of 1 billion rupiah, inequality (Williamson index) will increase by 0.0000355 percent.

Generally, most of the net export value of regencies/cities in the Sumatra Island is positive which indicates that the value of trade is dominated by exports which are greater than imports. The trend of the net export value of districts/cities in the Sumatra Island in recent years has

relatively increased with an average figure of 1.315 trillion rupiah. Therefore, if there is a significant increase in the coming years, it will certainly have an effect on increasing inequality in the Sumatra Island. For example, if there is an increase in net exports by 50 billion rupiah, the range for the increase in inequality is around 0.001775 percent. The average value of the Williamson index as an indicator of inequality in regencies/cities the Sumatra Island is around 0.0356 points, so with an increase of 0.001775 percent it can be 0.035601 points.

The phenomenon of increasing inequality is caused by the lack of fine trade mobility in the midst of increasing net export conditions. For this reason, in order to reduce the level of inequality, an increase in net exports must be able to achieve a balanced quality of trade. This means that each district is able to show trade mobility in accordance with its economic concentration. Thus, export and import activities can be distributed and move evenly despite an increase in net exports.

### Analysis the Effect of the Base Sector on Inequality

Based on the regression results, it is known that the base sector dummy variable has a significant effect on inequality with the coefficient obtained is -0.459. The negative sign on the coefficient indicates that in regions with a non-agricultural basis the inequality rate (Williamson index) is smaller/lower by 0.459 percent than in district with an agricultural sector. The base sector dummy variables in this study are grouped into two that are the non-agricultural sector base area and the agricultural sector base area. This shows that there are two categories of regional division in the Sumatra Island that are regions with leading sectors and having high competitiveness on the basis of the agricultural sector, while other district are the district with leading sectors and having high competitiveness on the basis of the non-agricultural sector.

The research findings which show that district with a non-agricultural basis sector have less inequality than district with an agricultural base sector can be said to be quite relevant based on observations of the pattern of distribution of the characteristics of the level of inequality between regencies/cities based on the agricultural and non-agricultural sectors in the Sumatra Island. If viewed from the classification, most of the regencies/cities belonging to the non-agricultural sector base group are urban areas. This is because urban areas predominantly have economic condition that rely on the service sector, trade, or industry. On the other hand, the majority of districts on the island of Sumatra belong to the basic group of the agricultural sector. Nevertheless, there are still a number of regencies on the island of Sumatra which is included in the non-agricultural sector base group.

### Conclusion

The conclusions that can be given in this study that economic growth variable and fiscal decentralization variable (proxied by the realization of the amount of regional income) has been shown to have a negative (reducing) and significant effect on inequality in the Sumatra Island. Meanwhile, the trade variable (proxied by net exports) has a positive (increasing) and significant effect on inequality in the Sumatra Island. Furthermore, researches results have

shown that district with a non-agricultural basis sector have a lower level of inequality than district with an agricultural base sector. Thus, this variable is relevant to be a concern and focus for Regional Governments as a determinant in reducing the level of inequality in the midst of district economic conditions that are experiencing a recession due to the COVID-19 pandemic that has hit all countries including Indonesia.

### Limitation and Study Forward

This study has limitations that are using only four independent variables (economic growth, fiscal decentralization, trade, and the base sector dummy variable) so that there are other factors or variables outside the model that can also affect the dependent variable (inequality). This assumption is supported by the R-squared results obtained in the model equation, which is 4.46%. Therefore, for further research, it is better to be able to conduct research by using or adding variables other than those in this research model in order to see other variables that also have an influence on inequality. In addition, the object of research analyzed can be developed at another regional level or wider in scope.

### References

- Adelman, Irma & Cynthia Taft Morris. (1973). *Economic Growth and Social Equity in Developing Countries*. Stanford, Calif.: Stanford University Press.
- Akai, Nobuo & Masayo Sakata. (2005). *Fiscal Decentralization, Commitment and Regional Inequality: Evience from State-level Cross-sectional Data for the United States*. CIRJE Discussion Paper.
- Akita, Takahiro. (1988). *Regional Development and Income Disparities in Indonesia*. Asian Economic Journal, Vol. 2 No. 2, pp. 165-191.
- Baltagi, Badi H., Byoung Cheol Jung & Seuck Heun Song. (2010). *Testing for Heteroskedasticity and Serial Correlation in A Random Effects Panel Data Model*. Journal of Econometrics, Vol. 154, No. 2, pp. 122–124.
- Brodjonegoro, Bambang. (2003). *Three Years of Fiscal Decentralization in Indonesia: Its Impact on Regional Economic Development and Fiscal Sustainability*. Jakarta: Department of Economics, University of Indonesia.
- Chemli, Leila & Mounir Smida. (2013). *Interaction between Poverty, Growth, and Inequality During The Crisis: A Panel Data Study*. International Journal of Economics and Finance, Vol. 5, No. 5, pp. 120–130.
- Cherodian, Rowan & A. P. Thirlwall. (2015). *Regional Disparities in Per Capita Income in India: Convergence or Divergence?* Journal of Post Keynesian Economics, Vol. 37, No. 3, pp.384–407.
- Easterly, William. (2007). *Inequality Does Cause Underdevelopment: Insights from A New Instrument*. Journal of Development Economics, Vol. 84, No. 2, 755-776.
- Fan C. Cindy & Mingjie Sun. (2008). *Regional Inequality in China, 1978–2006*. Eurasian Geography and Economics, Vol. 49, No. 1, pp. 1–20.
- Fleisher, Belton, Haizheng Li, & Min Qiang Zhao. (2010). *Human Capital, Economic Growth, and Regional Inequality in China*. Journal of Development Economics, Vol. 92, pp. 215–231.
- Hossain, Sharif M. (2013). *Does Economic Development Require More Income Inequality? Is the Kuznets Curve Still Valid?* Developing Country Studies, Vol. 3, No. 8, pp. 196-205.
- Huang, Ho-Chuan (R.), Yi-Chen Lin, & Chih-Chuan Yeh. (2009). *Joint Determinations of Inequality and Growth*. Economics Letters, Vol. 103, pp. 163–166.

- Kefi, Mohamed Karim & Hadhek Zouhaier. (2012). Inequality and Economic Growth. *Asian Economic and Financial Review*, Vol. 2, No. 8, pp. 1013-1025.
- Kuncoro, Mudrajad. (2004). *Otonomi dan Pembangunan Daerah: Reformasi, Perencanaan, Strategi dan Peluang*. Jakarta: Erlangga.
- Kuncoro, Mudrajad. (2006). *Ekonomi Pembangunan: Teori, Masalah dan Kebijakan*. Edisi Keempat. Yogyakarta: Unit Penerbit dan Percetakan – Akademi Manajemen Perusahaan UPP STIM YKPN.
- Li, Yingru & Y.H. Dennis Wei. (2010). The Spatial-Temporal Hierarchy of Regional Inequality of China. *Applied Geography*, Vol. 30, pp. 303–316.
- Lundberg, Mattias & Lyn Squire. (2003). The Simultaneous Evolution of Growth and Inequality. *The Economic Journal*, Vol. 113, pp. 326–344.
- Myrdal, Gunnar. (1957). *Economic Theory and Underdeveloped Regions*. London: Gerald Duckworth.
- Nachrowi, D.N, dan Hardius Usman. (2006). *Pendekatan Populer dan Praktis Ekonometrika untuk Analisis Ekonomi dan Keuangan*. Jakarta: Fakultas Ekonomi Universitas Indonesia.
- Oates, W. E. (1972). *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.
- Rodríguez-Pose, Andrés, Sylvia A. R. Tjijmstra, & Adala Bwire. (2009). Fiscal Decentralisation, Efficiency, and Growth. *Environment and Planning A*, Vol. 41, No. 9, pp. 2041–2062.
- Sjafrizal. (2018). *Analisis Ekonomi Regional dan Penerapannya di Indonesia*. Depok: Rajawali Pers.
- Soenandar, Ersi S. (2005). Government Policy in Solving Uneven Regional Development between West and East Indonesia: Case Study on KAPET. *Economic Journal*, Vol. 34, pp. 171-192.
- Thomas, Vinod. (2009). Income Disparity and Growth. *Global Journal of Emerging Market Economies*, Vol. 1, No. 1, pp. 63–86.
- Thornton, John. (2007). Fiscal Decentralization and Economic Growth Reconsidered. *Journal of Urban Economics*, Vol. 61, pp. 64–70.
- Todaro, Michael P. & Stephen C. Smith. (2006). *Pembangunan Ekonomi – Edisi Kesembilan*. Jakarta: Erlangga.
- Widarjono, Agus (2009). *Ekonometrika: Pengantar dan Aplikasinya (Dilengkapi Aplikasi Eviews)*. Yogyakarta: Ekonisia.
- Williams, Christine, Mirko Draca & Christine Smith. (2003). *Productivity and Regional Economic Performance in Australia*. Brisbane: Office of Economic and Statistical Research.
- Williamson, Jeffrey G. (1965). Regional Inequality and The Process of National Development: A Description of The Patterns. *Economic Development and Cultural Change*, Vol. 13, No. 4, pp. 1-84.

# Article

## ORIGINALITY REPORT

12%

SIMILARITY INDEX

%

INTERNET SOURCES

12%

PUBLICATIONS

%

STUDENT PAPERS

## PRIMARY SOURCES

1

Krisna Gita Suryani, Nenik Woyanti. "The Effect of Economic Growth, HDI, District/City Minimum Wage and Unemployment on Inequity of Income Distribution in Province of D.I Yogyakarta (2010-2018)", Media Ekonomi dan Manajemen, 2021

Publication

1%

2

I Qa A'yun, S Tiyaningsih. "The impact of economic development and density population on environmental quality in Indonesia", IOP Conference Series: Earth and Environmental Science, 2023

Publication

1%

3

M. Zahari, Syamsurijal Tan, Haryadi Haryadi, Syaparuddin Syaparuddin. "Analysis of fiscal decentralization impact on community welfare in Jambi Province", Jurnal Perspektif Pembiayaan dan Pembangunan Daerah, 2018

Publication

1%

4

Guangdong Li, Chuanglin Fang. "Analyzing the multi-mechanism of regional inequality in

<1%

5

Nursini Nursini. "IMPLEMENTATION OF FISCAL DECENTRALIZATION IN INDONESIA: 2001-2009", Jurnal Ekonomi Pembangunan: Kajian Masalah Ekonomi dan Pembangunan, 2012

Publication

<1 %

6

Employment Income Distribution and Development Strategy Problems of the Developing Countries, 1976.

Publication

<1 %

7

Growth Distribution and Political Change, 1999.

Publication

<1 %

8

Indupurnahayu Indupurnahayu, Dedi Walujadi, Shanti Lysandra, Hurriyaturrohman Hurriyaturrohman, Endri Endri. "Determinant of firm value: Evidence of oil palm plantation companies", Corporate and Business Strategy Review, 2023

Publication

<1 %

9

Kristin J Forbes. "A Reassessment of the Relationship Between Inequality and Growth", American Economic Review, 2000

Publication

<1 %

10

LEONEL MUINELO-GALLO. "ECONOMIC GROWTH AND INEQUALITY: THE ROLE OF

<1 %

FISCAL POLICIES\* : ECONOMIC GROWTH AND  
INEQUALITY: THE ROLE OF FISCAL POLICIES",  
Australian Economic Papers, 09/2011

Publication

---

11

Daud, Nahu. "The Influence of Economic Growth on the Degree of Autonomy of the Regions and the Absorption of Labor and Social Welfare: Regencies and Cities of Maluku Province", International Journal of Economics and Finance, 2016.

Publication

---

12

Dihin Septyanto, Ikhwan Maulid Nugraha. "The Influence of Enterprise Risk Management, Leverage, Firm Size and Profitability on Firm Value in Property and Real Estate Companies Listed on the Indonesian Stock Exchange in 2016-2018", KnE Social Sciences, 2021

Publication

---

13

Tay, Stephen. "Who Supports Redistribution? Subjective Income Inequality in Japan and China", Economic and Political Studies, 2015.

Publication

---

14

"Inequality and Growth: Patterns and Policy", Springer Science and Business Media LLC, 2016

Publication

---

<1 %

<1 %

<1 %

<1 %

15

Annim, Samuel Kobina, Simon Mariwah, and Joshua Sebu. "Spatial inequality and household poverty in Ghana", *Economic Systems*, 2012.

Publication

<1 %

16

Kyriakopoulou, Efthymia, and Anastasios Xepapadeas. "Environmental policy, first nature advantage and the emergence of economic clusters", *Regional Science and Urban Economics*, 2013.

Publication

<1 %

17

Javindri Yoseph Renaldi, Dahlia Br. Pinem, Yul Tito Permadhy. "Analysis Of Factors Affecting the Value Of Manufacturing Industry Companies in the Indonesian Stock Exchange (IDX)", *European Journal of Business and Management Research*, 2020

Publication

<1 %

18

Chen, M.H.. "The response of hotel performance to international tourism development and crisis events", *International Journal of Hospitality Management*, 201103

Publication

<1 %

19

G Glomm. "Whatever happened to the Kuznets curve? Is it really upside down?", *Journal of Income Distribution*, 1997

Publication

<1 %

20

EDGAR C. CONKLING. "A CO-OPERATIVE APPROACH TO PROBLEMS OF TRADE AND DEVELOPMENT.", Tijdschrift voor Economische en Sociale Geografie, 12/1973

Publication

<1 %

21

Nunung Nuryartono, Muhamad Amin Rifai, Triana Anggraenie, Budi Indra Setiawan. "Determining factors of regional food resilience in Java-Indonesia", Journal of Social and Economic Development, 2021

Publication

<1 %

22

Wenny Tri Septiani, Zamzami Zamzami, Candra Mustika. "Analisis pengaruh pendapatan perkapita dan belanja modal terhadap tingkat kemiskinan di Pulau Sumatera", e-Jurnal Perspektif Ekonomi dan Pembangunan Daerah, 2019

Publication

<1 %

23

Yonas Muzani, Benardin Benardin. "KONVERGENSI PERTUMBUHAN EKONOMI DI PROVINSI BENGKULU", Convergence: The Journal of Economic Development, 2020

Publication

<1 %

24

Candra Mustika, Rahma Nurjanah. "Rural and urban poverty models on Sumatra Island", Jurnal Perspektif Pembiayaan dan Pembangunan Daerah, 2021

Publication

<1 %

25 Chan, Kenneth S., Xianbo Zhou, and Zhewen Pan. "The growth and inequality nexus: The case of China", International Review of Economics & Finance, 2014.

Publication

<1 %

26 Stephen Knowles. "Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data", Journal of Development Studies, 2005

Publication

<1 %

27 Eka Fitriyanti. "ZAKAT AND ECONOMIC DEVELOPMENT ANALYSIS OF BANGKA BELITUNG TOWARDS SUSTAINABLE DEVELOPMENT GOALS 2030", ASY SYAR'IYYAH: JURNAL ILMU SYARI'AH DAN PERBANKAN ISLAM, 2019

Publication

<1 %

28 "Abstracts of Journal Articles", Asian-Pacific Economic Literature, 2008

Publication

<1 %

29 Euijune Kim, Yasir Niti Samudro. "The impact of intergovernmental transfer funds on interregional income disparity in Indonesia", International Journal of Urban Sciences, 2016

Publication

<1 %

30 Hicks, N.. "Indicators of development: The search for a basic needs yardstick", World Development, 197906

<1 %

31

Illa Susilawati, Linda Nurlaela, Yenik Candra Kiranawati, Sulthan Yusuf Abdullah, Nabillah Adryantomo, Alfira Sofia. "Analysis of Financial Independence of Regency/City Governments in Java Island Based on Comparison and High Local Original Revenue (PAD)", Annual International Conference on Islamic Economics and Business (AICIEB), 2021

Publication

<1 %

32

Iwan Harsono, Muhammad Dzul Fadlli, Muhamad Bai'ul Hak, Ali Akbar Hidayat. "POTENTIAL LEADING SECTOR TO DRIVE ECONOMIC GROWTH IN WEST NUSA TENGGARA PROVINCE", Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis, 2023

Publication

<1 %

33

Maxim A. Shestakov, Vladimir M. Smirnov, Marina V. Danilina. "State and Current Trends in the Development of the Social Service System in Russia", Economies, 2022

Publication

<1 %

34

Nicolas Gravel, Alessandra Michelangeli, Alain Trannoy. "Measuring the social value of local public goods: an empirical analysis within Paris metropolitan area", Applied Economics, 2006

Publication

<1 %

---

35 Rodriguez-Llanes, J.M.. "Reproductive benefits of high social status in male macaques (Macaca)", Animal Behaviour, 200909 <1 %

Publication

---

36 Song, Yang. "Rising Chinese regional income inequality: The role of fiscal decentralization", China Economic Review, 2013. <1 %

Publication

---

37 Yang, Chengfeng, Huiran Han, and Jinping Song. "Spatial Distribution of Migration and Economic Development: A Case Study of Sichuan Province, China", Sustainability, 2014. <1 %

Publication

---

38 Agnese Sacchi, Simone Salotti. "The Effects of Fiscal Decentralization on Household Income Inequality: Some Empirical Evidence", Spatial Economic Analysis, 2013 <1 %

Publication

---

39 Ondy Asep Saputra, Abdul Hakim, Choirul Saleh, Ratih Nur Pratiwi. "The Implementation of E-Budgeting Policy in Regional Government (A Case Study in Jakarta Province Province)", HOLISTICA – Journal of Business and Public Administration, 2019 <1 %

Publication

---

40 Openness Economic Growth and Regional Disparities, 2014. <1 %

Publication

---

41

Vesna Bucevska. "Determinants of Income Inequality in EU Candidate Countries: A Panel Analysis", Economic Themes, 2019

Publication

<1 %

---

42

Maria Jennifer Grisorio, Francesco Prota. "The Impact of Fiscal Decentralization on the Composition of Public Expenditure: Panel Data Evidence from Italy", Regional Studies, 2013

Publication

<1 %

---

Exclude quotes      On

Exclude matches      Off

Exclude bibliography      On