THE INFLUENCE OF GROSS REGIONAL DOMESTIC PRODUCT, THE AMOUNT OF POPULATION, AND THE NUMBER OF PEOPLE WORKING TO INCOME INEQUALITY IN EAST JAVA PROVINCE

Nurmandana Ramadhan
nurmandana_ramadhan@yahoo.co.id
Veronika Nugraheni Sri Lestari
JFX Susanto Sukman
Sri Handini
Dr. Soetomo University

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Abstrak

Provinsi Jawa Timur memiliki potensi yang berbeda di setiap daerah karena perbedaan kondisi geografis. Dengan perbedaan potensi ini, mengakibatkan distribusi pendapatan yang tidak merata dan ketimpangan pendapatan. Penelitian ini bertujuan untuk mengetahui Produk Domestik Regional Bruto (PDRB), Jumlah Penduduk, Jumlah penduduk yang bekerja terhadap ketimpangan pendapatan kabupaten/kota di provinsi Jawa Timur pada tahun 2015-2019. Penelitian ini merupakan penelitian kuantitatif. Data yang digunakan berupa data sekunder cross-section dari 38 kabupaten/kota di provinsi Jawa Timur dalam periode tahun 2015-2019 yang diperoleh dari Badan Pusat Statistik Jawa Timur. Data panel diolah menggunakan EViews 9 yang menghasilkan model regresi Fixed Effect. Hasil penelitian menunjukkan semua variabel penelitian secara simultan yang berpengaruh terhadap ketimpangan pendapatan. Sebagian dari semua variabel bebas, yaitu Produk Domestik Regional Bruto (PDRB), Jumlah Penduduk, Jumlah penduduk yang bekerja memiliki dampak yang signifikan terhadap ketimpangan pendapatan.

Abstrak

East Java Province has different potential in each regional due to the geographical conditions. By reason of potential differences, it effects unequal distribution of income and income inequality. This study aims to determine the effect of Gross Regional Domestic Product (GDP), total population, and number of working population on regency/City income inequality in Eat Java Province in 2015-2019. This study applies quantitative method. The data used in this study is form of secondary data from the cross-section of 38 regencies/cities in East Java Province at the time series started from 2015-2019, the data obtained from Central Statistics Agency of East Java. Panel data is processed using E-views 9 which produces a fixed effect regression model. The result of this study shows that all research variables have a simultaneous effect on income inequality. Partially all independent variables, such as Gross Regional Domestic Product, population, and working population have a significant effect on income inequality.

INTRODUCTION

Economic development has the meaning of improving the quality of life so that people become more prosperous so that economic development must be seen as a multidimensional process that includes various fundamental changes in social structure, societal attitudes, and national institutions, while continuing to pursue accelerated economic growth, addressing income inequality and poverty alleviation. The development must reflect a total change in a society or an adjustment to the social system as a whole, without neglecting the diversity of basic needs and desires of individuals and social groups that included, to move forward towards a better living condition, both materially and spiritually (Todaro and Smith, 2006: 21).

Economic development implicates structural transformation of an economy through industrialization and an increase of gross national product as well as gross domestic product and per capita income. Gross National Product (GNP) is the added value of all economic activities owned by residents of a country, both from the assets they own domestically and the assets they own abroad without being deducted by the depreciation of the domestic model stock. Meanwhile, the Gross Domestic Product (GDP) is the total value of all the final output produced by an economy, whether it is

done by citizens or people from other countries who live in the country. In Indonesian context, Indonesia's Gross National Product (GNP) is added value generated by Indonesian citizens who are both domestic and abroad. Meanwhile, Indonesia's Gross Domestic Product (GDP) is added value generated by Indonesian Citizens and Foreign Citizens who are in the territory of the Republic of Indonesia.

Per capita income is a measure to determine the ability of a country to increase the output of its economic structure which is greater than the number of its population. If the rate of Gross Domestic Product or Gross National Product of a country increases more than the rate of growth of its population, then the country's per capita income will increase.

In addition to national economic development, regional economic development also needs to be considered considering that each region has different potential. Regional economic development is a process in which the regional government and its people manage every available resource and form a pattern of partnership between the regional government and the private sector to create new jobs and stimulate the development of economic activity (economic growth) in the region. Regional economic development is a process. That is a process that includes the formation of new institutions, development of alternative industries, improvement of existing workforce capacity to produce better products and services, identification of new markets, transfer of knowledge, and development of new companies. Every regional economic development effort has the main objective, namely to increase the number and types of employment opportunities for local communities (Arshad, 2010).

East Java province has an area of 47,922 km2 with the capital city of Surabaya. East Java Province is one of the largest provinces in Indonesia. East Java Province has 38 cities/regencies and is inhabited by around 40 million people. Each city in East Java Province has different potentials in each region due to differences in geographical conditions. With this different potential, it results in unequal distribution of income and income inequality. Income inequality is a major problem in economic development. The problem of income inequality, which is often referred to as inequality, whether between individuals, households, groups, sectors or regions, is a problem that always exists in every country, including in Indonesia. Although income inequality is unavoidable, does not mean that it should be allowed to continue to be high. High inequality can have a negative impact on economic stability and political stability. For this reason, efforts must be made to ensure that the inequality that occurs is not too conspicuous, or that the development of inequality should not get bigger as much as possible (Daryanto dan Hafizrianda, 2012: 196).

One of the causes of income inequality is the number of poor people. With an increase in the number of poor people, income inequality will increase over time. The wider the gap in income received by the poor and the rich will also increase the income inequality between these social classes.

East Java Province is a province with the largest number of poor people in Indonesia. The number of poor people in East Java Province from 2013 to 2018 tends to decrease. Even though it tends to decrease, East Java Province is still the province with the largest number of poor people in 2018, namely 4,292,150 people.

East Java Province is the province with the second highest Gross Regional Domestic Product in Indonesia after DKI Jakarta Province which is expected to be enjoyed by all residents of East Java Province. However, East Java Province itself is also the province with the largest number of poor people in Indonesia. The Gross Regional Domestic Product (GRDP) per capita of East Java Province is the second highest in Java Island after DKI Jakarta Province. In 2013, the East Java Province's Gross Regional Domestic Product (GRDP) was 31,092 thousand rupiah, then in 2018 it increased to 39,588 thousand rupiah. The reason is that although East Java's GRDP is the second largest in Indonesia, the number of poor people in East Java Province is the largest in Indonesia. In addition, the population also affects the GRDP per capita. If the increase in population is not matched by an increase in GRDP, there will be a decrease in GRDP per capita.

Income inequality is a very serious problem. Some regions were able to achieve very fast and significant economic growth, while other areas experienced slow economic growth. Some regions that do not experience the same progress as other developed regions are due to a lack of resources. There is a tendency for owners of capital to invest in urban areas that are more advanced, increasing income inequality. Infrastructure funding facilities such as transportation networks, electricity networks, communication networks, financial access, as well as a more skilled workforce. An uneven

redistribution of revenue sharing from the central government to regions such as provinces or districts/cities will increase inequality. In urban areas that have better facilities and infrastructure, government redistribution will be more. Whereas in more underdeveloped regions, the redistribution of income sharing is lower.

Measurement of income inequality between regions uses the Williamson Index analysis. With this background, the authors raised the topic in this study with the title The influence of the Gross Regional Domestic Product (GRDP), population, and working population on income inequality between districts/cities in East Java Province in 2015-2019.The research questions to be raised in this research are : (a) What is the income inequality between districts/cities in East Java Province in 2015-2019 using the Williamson Index analysis?, (b) What is the influence of the Gross Regional Domestic Product (GRDP) on income inequality between regencies/cities in East Java Province in 2015-2019?, (c) What is the effect of population on income inequality between districts/cities in East Java Province in 2015-2019?, (d) What is the effect of the number of working population on income inequality between regencies/cities in East Java Province in 2015-2019?

LITERATURE REVIEW

Regional Economic Growth Theory

Economic growth is one of the indicators of the success of a process of economic development that occurs in a country or region. Nevertheless, economic growth is not synonymous with economic development. Economic growth only records an increase in supply or production capacity of goods and services based on technological improvements, ideological improvements and institutional adjustments needed. Meanwhile, economic development includes changes in the composition of production, changes in the pattern of use and allocation of production resources among sectors of economic activity, changes in the pattern of wealth and income distribution among various groups of economic agents, in changes in the institutional framework in society as a whole (Todaro and Smith, 2006: 133).

Regional economic growth is an indicator to see the increase in income in provinces and districts/cities, both calculated based on current prices and constant prices. Economic growth in each region, both provincial and district/city, is strongly influenced by the economic structure and potential of the region. Tarigan (2004: 13) defines regional economic growth as an increase in the income of the community as a whole that occurs in the region, namely an increase in all added values that occur. Regional revenue calculations are initially made in current prices. However, in order to see an increase from one time period to the next, it must be expressed in real value, meaning that it is expressed in constant prices.

Regional economic growth theory analyzes a region as an open economic system that is related to other regions through the flow of factors of production and exchange of commodities. Development in a region will affect the growth of other regions in the form of sector demand for other regions which will encourage the development of the region or an economic development from other regions will reduce the level of economic activity in a region as well as interrelationships. Regional economic growth is the increase in people's income that occurs in the region, namely the increase in all added value that occurs in the region.

The Amount of Population

Residents are all people who have been domiciled in the geographical area of the Republic of Indonesia for six months or more and or those who have been domiciled for less than six months but intend to settle down. Simon in Todaro (2000) suggests that residents are people who live permanently in an area. Meanwhile, according to Law number 12 of 2006 residents or citizens are citizens of a country determined based on statutory regulations. Those who become Indonesian citizens are native Indonesian people and people of other nations who are legalized by law as citizens.

Todaro and Smith (2006: 366) explain that there are seven negative consequences of population, which have an impact on economic growth, poverty and income inequality, education, health, food availability, environment, and international migration, income distribution, can usually be defined in relation to the mean level of the distribution in question. Too many populations or too high a population density will become an obstacle to economic development in developing countries. Low per capita

incomes and low rates of capital formation are making it increasingly difficult for developing countries to sustain a population explosion. Even if output increases as a result of better technology and capital formation, this increase will be swallowed up by too much population. As a result, there is no improvement in the rate of economic growth. Population is a driver of development because a larger population is actually a potential market that is a source of demand for various kinds of goods and services which will then drive various kinds of economic activity so as to create economies of scale in production that will benefit all parties, reduce production costs and create sources of supply or supply of cheap labor in sufficient quantities, which in turn will stimulate even higher output or aggregate production. And in the end it is hoped that it can improve people's welfare, which means that the poverty rate will decrease. Furthermore, in the long run the population is an advantage.

David Ricardo (in Todaro and Smith, 2006: 367) argues that population growth that is too large to double can cause an abundance of workers. Abundant labor causes the wages received to decrease, where the wages are only able to finance the minimum level of living (subsistence level). At this stage, the economy experiences stagnation (stagnancy) which is called the Stationary State. Under these conditions, economic growth in a region will weaken.

The Number of Working Population

The high rate of population growth in some parts of the world causes the population to increase rapidly. In some parts of the world there has been poverty and food shortages. This phenomenon worries some experts, and each of them tries to find the factors that cause this poverty. If the causal factors have been found, the problem of poverty will be overcome. In RI Law no. 10 of 1992, what is meant by the population is in its dimension as individuals, family members, community members, citizens, and a set of quantities residing in a place within the boundaries of the state at a certain time (Mantra, 2004: 25).

Musfidar (2012) in his research in South Sulawesi Province said that the number of productive age population, both those who are working and those who have not worked, will increase the rate of inequality in income distribution. This is because the proportion of the working population is still uneven in a number of areas, they are still mostly working in rural areas compared to urban areas, so there is a difference in income between those who work in cities and those who work in villages. Those who work in urban areas have higher levels of income when compared to those who work in rural areas.

Regional Income Inequality

Income inequality always occurs both nationally and regionally. Income inequality will always exist and it is difficult to eliminate it, so what can be done is to reduce this income inequality. If in an area the difference in the amount of income received by the poor and the rich is very striking, it means that there is income inequality in that community.

Development requires high national and regional income and rapid growth. However, the problem at hand is not only how to grow national and regional income, but also who will grow, the large number of people in a country or only a few people in it. If only a few rich people grow it, then the benefits of income growth will only be enjoyed by them, so that poverty and income inequality will get worse. However, if the growth is produced by many people, it is they who will get the greatest benefits, and the fruits of economic growth will be distributed evenly (Todaro and Smith, 2006: 118).

Income inequality between income classes and between regions is influenced by several reasons. Among them are due to differences in education levels, access to credit, and the potential of different regions. This different level of education is caused by development that is still lacking compared to other regions. It is very difficult for the poor to get access to credit because banks often ask for high interest rates and collateral which is difficult for the poor to fulfill. Regional potential varies because each region has a different economic structure.

In addition, poverty causes inequality in income distribution. Kuncoro (2010: 107) states that there are three causes of poverty. First, poverty occurs due to differences in the pattern of resource ownership which causes unequal distribution of income. The poor have resources in limited quantities and of low quality. Second, poverty occurs due to differences in the quality of human resources. The low quality of human resources results in low productivity and results in low wages. The low quality of resources is

caused by low levels of education, disadvantaged fate, discrimination, or heredity. Third, poverty occurs because of differences in access to capital.

The causes of poverty can be explained in the vicious circle of poverty theory. The vicious cycle of poverty theory explains that the cause of poverty is another cause of poverty. The vicious cycle of poverty theory was introduced by Nurske (in Kuncoro, 2004: 32) which states that "a poor country is poor because it is poor". Underdevelopment, market imperfections, and lack of capital lead to low productivity. Low productivity results in low income they receive. Low income will have implications for low savings and investment. Low investment results in underdevelopment, and so on.

The Influence Gross Regional Domestic Product (GRDP) to Income Inequality

Kuznetz (Agusalim, 2016) proposed a hypothesis regarding the relationship between a country's economic growth and the inequality of income distribution among its population in the form of an inverted U. This suggests that at the start of growth (as measured by Gross National Product per capita), the income distribution gap (measured by the Gini index) is getting higher. According to him, at the beginning of the development process, inequality in income distribution increased due to the process of urbanization and industrialization, at the end of the development process, income inequality decreased, that is, when the economic sectors in urban areas were able to absorb most of the workforce from rural areas.

There are several empirical studies that try to test the Kusnetz hypothesis, using macro data from a number of countries. Most of these studies support Kuznets' hypothesis, while others reject it. The results of Deininger and Squire's research (Agusalim, 2016) do not show a clear relationship between economic growth and income inequality. Although the hypothesis is accepted, most of it proves that the negative relationship between growth and inequality in the long term only occurs in the group of industrialized countries.

The results of Agusalim's research (2016) found that economic growth had a negative effect on the Gini index before fiscal decentralization was implemented. For every one percent increase in GDP, the Gini index will decrease by 0.0265 percent. Economic growth has a positive effect on the Gini index after the implementation of decentralization. Every one percent increase in GDP increases the Gini index by 0.1199 percent. This means that the higher the economic growth, the higher the income inequality since decentralization was implemented. And income inequality is caused by many factors, such as the allocation of central and regional government spending that is still unfair, spending on capital expenditures is still very low, many regional heads are caught up in legal problems.

Economic growth, both directly and indirectly, will affect the problem of regional inequality. Inequality in the distribution of income is an imbalance in economic development between various regions in a region which will also cause inequality in the level of per capita income between regions (Kuncoro, 2004: 231).

According to Sjafrizal (Fitriyah and Rachmawati, 2013) inequality in developing countries is relatively higher because when the development process is just starting, the existing development opportunities and opportunities are generally utilized by regions whose development conditions are already better while areas that are still underdeveloped are not able to take advantage of this opportunity due to limited infrastructure and facilities as well as the low quality of human resources. For this reason, economic growth tends to be faster in areas with better conditions, while underdeveloped areas do not progress much. Neoclassical economists argue that economic growth tends to reduce poverty and income inequality even though it is still in its early stages of growth.

In the research that has been conducted by Kuznets (Agusalim, 2016) concluded that the correlation of growth and inequality is very strong, at first economic growth will cause an increase in inequality due to uneven distribution of income, but after further stages of equity will be increasingly achieved then the level of inequality will decrease. Kuznets describes the pattern of increase and decrease with the inverted U method that he created after examining inequality in various countries.

GRDP per capita can be used as an indicator to see the success of economic development in a region. GRDP is the net value of final goods and services produced by various economic activities in an area in a period (Sasana, 2009: 32). GRDP can describe the ability of a region to manage its natural resources. Therefore the amount of GRDP generated by each region is very dependent on the potential

of natural resources and production factors of the region. There are limitations in the provision of these factors that cause the amount of GRDP to vary between regions. Meanwhile, per capita GRDP can be calculated from constant price GRDP divided by the number of residents in an area.

The Influence Total Population to Income Inequality

Total population is the number that occupies an area/region and is bound by the rules that apply and interact with each other continuously. The number of population in the economic development of a region is a fundamental problem, therefore uncontrolled population growth can result in not achieving economic development goals. A high population in an area is not a problem as long as the productivity of the population in the area concerned is also high so that it does not cause unequal distribution of income. Problems will arise when a high population is followed by unemployment and poverty which will result in unequal distribution of income. In addition, the number of young and old population will also affect the productivity of the population.

The increasing number of population each year will make the competition for jobs very tight. According to research conducted by Fulgsang (Kusumo, 2017) population growth will increase income inequality. This is caused by the supply of labor that is greater than the demand for labor. The large supply of labor means that lower-class workers will be paid a wage that is little or below the minimum wage standard. The large number of unemployment will create income inequality in community groups.

The Influence the Number of Working Population to Income Inequality

The problem of income distribution is a measure of the income received by each community. According to Todaro (2000: 89) that in measuring the distribution of income is measured from two main measures, namely the distribution of personal income or the distribution of personal income and distributionfunctional that considers the individual as a separate totality. Meanwhile, the World Bank uses the population grouping method which is grouped into 3 according to the amount of income, namely 40 percent of the population receiveslowest income, 40 percent of the population receives middle income and 20 percent receives the highest income.

A high population in an area will not cause problems if the productivity of the population is also high so that it does not cause unequal distribution of income. Problems will arise if a high population is followed by unemployment and poverty which results in unequal distribution of income. According to (Arshad, 2010: 338), that population growth usually triggers other problems such as the youth age structure, the higher the number of unemployed, urbanization and so on. The population problem that affects the implementation and achievement of development goals in Indonesia is the unbalanced pattern of population distribution and labor mobility, both in terms of between islands, between regions, as well as between rural areas and urban areas as well as between sectors.

One way to increase income distribution is by implementing economic development, Suryono (2000: 5) states that economic development is a process that causes the per capita income of a population or a society to increase in the long term. Therefore it is necessary to carry out economic development in a sustainable and well-done manner, because the implementation of economic development will encourage economic growth and increase the distribution of income for the community. Job opportunities in sectors such as large industry, construction, trade and finance do provide high income and added value, but their availability is greater in urban areas than in rural areas which are dominated by the primary sector. Thus causing income inequality, especially between urban and rural areas. Further research was conducted by Pangemanan (2001) who conducted a study of the factors that influence income distribution. Where from the results of research that found an increase in the proportion of the population would significantly decrease the distribution of income, then the proportion of household members working in the industrial sector would increase the distribution of household income. Meanwhile, economic growth will reduce the distribution of household income, even though economic growth continues to increase. Where from the results of research that found an increase in the proportion of the population would significantly decrease the distribution of income, then the proportion of household members working in the industrial sector would increase the distribution of household income. Meanwhile, economic growth will reduce the distribution of household income, even though economic growth continues to increase. Where from the results of research that found an increase in the

proportion of the population would significantly decrease the distribution of income, then the proportion of household members working in the industrial sector would increase the distribution of household income. Meanwhile, economic growth will reduce the distribution of household income, even though economic growth continues to increase.

Previous Study

Previous study is research that has been done by other researchers before. Previous study can be used as a basic reference in this study because it makes it easier for researchers to apply their research. There is a model similarity between this study and previous study, but what distinguishes it is the object studied, then the year of research data, and the problems in the area to be studied.

Research conducted by Barika (2012) with the title Analysis of District/City Development Inequalities in Bengkulu Province in 2005-2009. The analytical method used is regression analysis, Klassen Typology analysis, and Williamson Index Inequality. The aim of the research is to find out the pattern of economic growth and its classification and to find out the level of regional inequality between districts/cities in Bengkulu province and the factors that influence it. The research results show that the coefficient of determination (R^2) is 0.570. The results also show that population growth and private investment have a significant positive effect on regional inequality in Bengkulu Province.

Research conducted by Kurniawan and Sugiyanto (2013) entitled Effects of Economic Growth, Industrial and Agricultural Sector Shares and Levels of Number of Employed People on Regional Inequality between Districts/Cities in Central Java in 2002-2010. The analytical method used is descriptive analysis and regression analysis with panel data using the fixed effect model. The research objective was to calculate the level of inequality in the area of Central Java Province, prove the Kuznets hypothesis and analyze the effect of economic growth, the share of the industrial and agricultural sectors and the level of the number of people working on inequality between districts/cities in Central Java Province in the period 2002-2010. The results of this research are regional disparities between districts/cities in Central Java Province are still high and the Kuznets hypothesis is proven. Based on the regression results, the variable share of the industrial and agricultural sectors has a positive and significant relationship to inequality between districts/cities in Central Java Province. The economic growth variable has a positive relationship, but does not have a significant effect on inequality between districts/cities in Central Java Province. Hence, variable of the level of the number of people working has a negative relationship but does not have a significant effect on inequality between districts/cities in Central Java Province.

Research conducted by Krinantiya (2014) entitled Factors Affecting Inequality between Regions in the Provinces of East Java and DI Yogyakarta. The analysis method and data used are secondary data with descriptive analysis and Pearson Correlation and Williamson Index to calculate inequality between regions. The aim of the study is to compare the Provinces of East Java and DI Yogyakarta, and to analyze the effect of investment, agglomeration, and unemployment rates on inter-regional disparities in these two provinces. The results of the research are that East Java Province has a higher Williamson index score than DI Yogyakarta Province. This shows greater disparities between regions that occur in East Java. In East Java Province, investment and agglomeration variables have a weak relationship, while the unemployment rate has a strong relationship to inequality. In Yogyakarta Province, investment, agglomeration and unemployment rates have a weak relationship to inter-regional inequality.

Framework

According to literature review, previous studies, and studies between GRDP, population, and the number of people working with income inequality between districts/cities in East Java Province, the theoretical framework in this research can be explained as follows (Figure 1).

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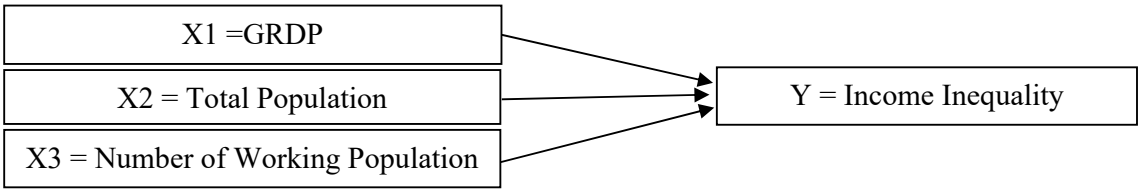

Figure 1
Theoretical Thinking Framework

Source: The authors

Hypothesis

Based on the research questions and research objectives, the hypothesis in this study is put forward as follows:

H_1 : The Gross Regional Domestic Product (GRDP) has a significant influence on the income inequality of districts/cities in East Java Province in 2015-2019.

H_2 : The population has a significant influence on the income inequality of districts/cities in East Java Province in 2015-2019.

H_3 : The number of working population has a significant effect on income inequality in districts/cities of East Java Province in 2015-2019.

RESEARCH METHODS

This study uses a quantitative method, research that focuses on testing hypotheses based on an analytical model that is used both individually (t test) and jointly (F test) to see whether the results of the analysis model used are statistically (significant). The next step is to see whether there are classical assumptions from the analytical model used, if no violations of the classical assumptions are found, conclusions can be drawn from the analysis used. Thus the analysis model is feasible for further research and use. In this study the authors used a statistical method approach with multiple regression models (Multiple Regression) with the least squares method (Ordinary Least Square). Regression method consisting of more than one independent variable.

The population in this study is the overall data for each variable, namely GRDP, total population, 38 working residents from 2015 to 2019. Sampling in this study was the total sampling technique or saturated sample. Saturated Sampling is a sampling technique when all members of the population are used as samples. This is often done when the population is relatively small (less than 30 samples) or research that wants to make generalizations with very small errors. The sample used in this study is GRDP, population, number of people working in 38 regencies/cities in East Java during the 2015-2019 period.

The data used to analyze the effect of gross regional domestic product (GDP), population, and working population on income inequality between districts/cities in East Java Province in 2015-2019 is a type of secondary data. The secondary data used is panel data from cross sections of 38 regencies/cities in East Java Province and time series data from 2015-2019. This data was obtained from the author's literature study, especially at the East Java and Surabaya Statistical Offices which are contained in various edition sources. Methods or techniques of data collection are carried out as follows: Literature study, namely obtaining and collecting data through literature, journals,

The variables used in this study are divided into two groups, namely the independent variable and the independent variable as follows: The independent variables consist of Gross Regional Domestic Product (GDP), population, and working population and the dependent variable is income inequality between districts/cities in East Java Province in 2015-2019.

The definition of operational variable is as follows:

The GRDP (Gross Regional Domestic Income) in this study is the per capita Gross Regional Domestic Product (PDRB per capita). In this study, per capita GRDP was used at constant 2010 prices by district/city in East Java Province in 2015-2019.

GRDP per capita $= \frac{GRDPi}{\sum Populationi}$

Information:

GRDP per capita = GRDP per Capita Regency/City$_i$
GRDP = PDRB ADHK/ADHB Regency/City
Population = Total Population of Regency/City$_i$

The population in this study is all individuals who live in a geographical area of East Java Province for six months or more and those who live for less than six months but with the aim of settling in 2015-2019. The number of population working in this study is someone who has been classified in the labor force who is actively working to produce goods and services at a certain wage level in the form of a percentage. The definition of people who are working (employed persons) are those who have worked and produce goods and services at a certain wage level, while the notion of the workforce is that part of the workforce that is actually involved or trying to be involved in productive activities, namely producing goods and services, 2015-2019 year.

Income inequality between regencies/cities in this study is by using the Williamson Index formula, where income is measured using per capita GRDP at current prices in 2010 for each district/city in East Java Province. The regional development inequality index is indicated by the number 0 to 1 or 0<Iw<1. This formula is basically the same as the usual coefficient of variation (CV) where the standard deviation is divided by the mean. The formula used is:

$$IW = \frac{\sqrt{\sum_i (Y - \bar{Y})^2 \frac{n_i}{n}}}{\bar{Y}}$$

Where:

Iw = Williamson index (Weighted coefficient of variation)
ni = residents in area i
n = local residents
Yi = per capita income in area i
$\bar{Y}$ = average of per capita income for all regions.

ANALYSIS AND DISCUSSION

Analysis

Completion of the problem formulation in this study is to use multiple linear regression. This is because the dependent variable (income inequality between districts/cities in East Java Province) is influenced by more than one independent variable as many as three variables, namely GRDP, population, and number of people working. The multiple regression equation is:

IW = a + b1PBRB + b2PDDK + b3BKJ + e

where:

IW = Income inequality between districts/cities
GRDP = GRDP (Gross Regional Domestic Income)
PDDK = Number of Population
BKJ = Number of Working Population.
a = constant
e = error factor
b = parameter to be estimated.

Geographical Conditions of East Java Province

East Java Province is geographically located between 111º0 East Longitude - 114º4' East Longitude and 7º12' South Latitude - 8º48" South Latitude. Its territory includes two main parts, namely East Java and the Madura Islands. East Java's land area is 88.70 percent or 42,541 km2, while the Madura Islands have an area of 11.30 percent or 5,422 km2. The total area of East Java Province is approximately 47,963 km2 and is administratively divided into 29 regencies and 9 cities with the city of Surabaya as the provincial capital. This makes East Java Province the province that has the largest number of

regencies/cities in Indonesia. Based on climatological data for East Java Province obtained from the Juanda Meteorological Station, East Java in 2017, the average minimum air humidity is 46.

The Population Characteristics of East Java

The results of the 2010 Population Census showed that the population of East Java Province was 37,476,757, consisting of 18,503,516 males and 18,973,241 females. This number has increased compared to the results of the 2000 population census, where the population of East Java Province was 34,783,640 people consisting of 17,206,778 males and 17,576,862 females.

The composition of the population by sex, also known as the sex ratio, describes the number of males for every 100 females. Usually the resulting ratio is different for each age group. At birth, the ratio is generally above 100 and then gradually decreases with increasing age so that the older age group is farther away from 100. These natural symptoms are usually interpreted as the advantage of women compared to men in terms of survival.

Results of the 2000 Population Census, the population of East Java Province was 34,783,640 people consisting of 17,206,778 males and 17,576,862 females. The sex ratio is 97.89 which means that out of 100 female residents there are only 97.89 male residents. While in 2010 the sex ratio of East Java Province was 97.52, meaning that for 100 female residents there were only 97.52 male residents. And in 2020 the sex ratio of East Java Province is 99.59 which means that out of 100 female residents there are 99.59 male residents. This is thought to be related to the higher survival rate for the male population at a greater rate of increase than the female population. The female population is greater than the male population in all districts/cities in East Java.

Income Inequality between Regencies/Cities in East Java Province

Income inequality between regencies/cities is indeed one of the important things that must be considered by the government and community components. The method used to see incom inequality between regencies/cities is the Williamson Index. The results of the Williamson Index test will show a value between 0 to 1. The closer to 1 (one) Williamson Index value, the greater the inequality between districts/cities and conversely the closer to 0 (zero) the Williamson Index value, the level of inequality between districts/cities is also will get smaller.

An overview of the Williamson Index is presented including the size of the population and per capita income of districts/cities in East Java in 2015-2019. Calculated based on the average and percentage of the population in East Java from 2015 to 2019, it is not evenly distributed between districts/cities in East Java Province. While the results of the calculation of the highest Williamson Index is Surabaya City and the lowest is Mojokerto City.

In addition, the data shows that the results of calculating the Williamson Index have increased from 2015 to 2019. The average Williamson Index in 2015 was 0.59529. In 2016 the Williamson Index was 0.60119.In 2017 the Williamson Index was 0.60446.Meanwhile, in 2018 the Williamson Index was 0.60587. And in 2019, The Williamson Index increased to 0.60905.Williamson Index in East Javathe average from 2015 to 2019 was 0.60317.

During 2015 to 2019, the Williamson Index was not evenly distributed between districts/cities in East Java Province. The highest Williamson index is Surabaya City, namely 3.83881 in 2015, 3.85070 in 2016, 3.88727 in 2017, 3.93004 in 2018, 3.97164in 2019, and the average during 2015-2019 was 3.89569.While the lowest Williamson Index in Mojokerto City was 0.02787 in 2015, 0.02795 in 2016, 0.02799 in 2017, 0.02792 in 2018, and 0.02708 in 2019. The average Williamson Index during from 2015 to 2019 of 0.02776.

Gross Regional Domestic (GDP) of East Java Province

Regional economic growth is measured using the calculation of the Gross Regional Domestic Product (GRDP) which is calculated based on that year and the previous year. East Java Province is one of the provinces with the highest Gross Regional Domestic Product (GRDP) in Java and in Indonesia. East Java's GRDP has increased from 2015 to 2019. In 2015 East Java's Gross Regional Domestic Product was IDR1,340,564.07 billion rupiahs. In 2016 the Gross Regional Domestic Product of East Java was IDR1,421,041.35 billion rupiahs.In 2017 East Java's Gross Regional Domestic Product

amounted to IDR1,502,414.42 billion rupiahs.While in 2018 the Gross Regional Domestic Product of East Java was IDR1,586,478.50 billion rupiahs. Whereas in 2019, the Gross Regional Domestic Product increased to IDR 1,673,979.40 billion rupiah.

During 2015 to 2019, the Gross Regional Domestic Product (GDP) was not evenly distributed between districts/cities in East Java Province. The highest Gross Regional Domestic Product (GRDP) is the City of Surabaya, namely IDR 324,215.17 billionin 2015, IDR343,652.6 billion in 2016, IDR364,714.82 billion in 2017, IDR387,340.04 billion in 2018, IDR410,969.89 billion in 2019, and the average during 2015-2019 was IDR 366,153.16 billion.While the lowest was Blitar City, IDR 3,856.91 billion in 2015, IDR 4,079.26 billion in 2016, IDR 4,315.02 billion in 2017, IDR 4,566.47 billion in 2018, and IDR 4,833.36 billion in 2019.

The average Gross Regional Domestic Product (GRDP) of districts/cities in East Java Province in 2015 was IDR35,278.00 billion, in 2016 amounted to IDR 37,395.83billion, in 2017 amounted to IDR 39,537.22billion, in 2018 amounting to IDR 41,749.43 billion, and year IDR44,052.09 billion. As for average District/city Gross Regional Domestic Product (GRDP) in East Java Province during the observation year from 2015 to 2019 in the amount of IDR 39,602.51 billion.

Furthermore, East Java's per capita GRDP has increased from 2015 to 2019, which is not evenly distributed between districts/cities in East Java Province. The highest Gross Regional Domestic Product (GRDP) is the City of Kediri namely IDR 260,516,030,-in 2015, IDR273.029.700,- in 2016, IDR285.019.680,- in 2017, IDR298,820,300,- in 2018, and IDR313,147,810 in 2019, and the average for 2015-2019 was IDR 286,106,710.While the lowest is Pamekasan City, namely IDR 11,021,770,- in 2015, IDR11.491.270,-in 2016, IDR11,946,920,-in 2017, IDR12,476,120,-in 2018, and IDR12,963.70, - in 2019, and the average during 2015-2019 was IDR 11,979,830.The average Gross Regional Domestic Product (GRDP) per capita for districts/cities in East Java Province, namely IDR 34,622,830,-in 2015, IDR36,293,220,-in 2016, IDR38,083,430,-in 2017, IDR39,955,040,-in 2018, and IDR41,891,090 in 2019, and the average for 2015-2019 was IDR 38,169,120.

The Population of East Java

The population in this study are all individuals who live in a geographic area of East Java Province for six months or more and those who live for less than six months but with the intention of settling. the population in East Java has increased from 2015 to 2019. In 2015 the number resident in East Java is as big as 38,758,561 people. Meanwhile in 2015 amount resident in East Java is 39,698,000 people. During 2015 to 2019, the population is not evenly distributed between districts/cities in East Java Province. The highest population is Surabaya City, namely 2,848,583 people in 2015, 2,862,406 people in 2016, 2,874,699 people in 2017, 2,885,555 people in 2018, 2,896,000 people in 2019. While the lowest population is Mojokerto City with the number125,706 people of 2015,126,404 people Of The Year 2016,127,279 people Of The Year 2017,128,282 people of 2018, and129,000 peoples in 2019 with an average of 127,337 people.

The Number of Working Population in East Java

The number of working population is someone who has been classified in the labor force who is actively working to produce goods and services at a certain wage level. the number of population working in East Java has increased from 2015 to 2016. In 2015 the number residents working inEast Java is as big as19,367,777 people, in 2016 there were 19,367,777 people, in 2017 there were 20,099,220 people, in 2018 there were 20,832,201 people, and in 2019 there were 20,655,632 people.

Number of working populationin the Regencies/Cities of East Java Province from 2015 to 2019 the highestis the City of Surabaya with 1,365,180 people in 2015, 1,365,180 people in 2016, 1,406,358 people in 2017, 1,454,049 people in 2018, and as many as 1,474,934 people in 2019. While the lowest number of working residents is the City of Mojokerto as many as 63,806 people in 2015, 63,806 people in 2016, 64,805 people in 2017, 68,218 people in 2018, and as many as 63,091 people in 2019.

Furthermore, the population according to Main Employment in cities/districts in East Java. The main occupations are divided into three groups, namely: (a) Agriculture, Forestry, Fisheries (Agriculture, Forestry, and Fishing; (b) Mining and Quarrying; Processing Industry; Electricity and Gas Procurement; Water Supply; Waste, Waste, and Recycling Management Rework; Construction (Mining

and Quarrying; Manufacturing; Electricity and Gas; Water Supply; Sewerage, Waste Management, and Remediation Activities; Construction; (c) Wholesale and Retail Trade; Car and Motorcycle Repair; Transportation and Warehousing; Provision of Accommodation and Meals Drinking, Information and Communication, Financial and Insurance Services, Real Estate, CoIDRorate Services, Government Administration, Defense, and Compulsory Social Security, Educational Services, Health Services and Social Activities;

On average, residents of East Java work in the main occupations of group 3 (Wholesale and Retail; Repair of Cars and Motorcycles; Transportation and Warehousing; Provision of Accommodation and Meals; Information and Communication; Financial Services and Insurance; Real Estate; Services Companies; Government Administration, Defense, and Compulsory Social Security; Education Services; Health Services and Social Activities; Other Services) of 44.61%, group 1 (Agriculture, Forestry, Fisheries) of 31.20%, and group 2 (Mining and Quarrying; Processing Industry; Electricity and Gas Procurement; Water Supply; Garbage, Waste and Recycling Management; Construction) of 24.19%.

Model Estimation

Tests in this study are variablesGross Regional Domestic Product (GRDP), population, and working populationinfluenceincome inequality between districts/cities in East Java Provinceduring 2015 to 2019, the research model to be estimated is as follows:

$$IWit = \alpha 0 + \alpha 1PDRBit + \alpha 2PDDKit + \alpha 3BKJit + \varepsilon it$$

Where :

IW	: Income inequality (measured by the Williamson Index)
PDRB	:Gross Regional Domestic Product (GRDP)
PDK	: Total population
BKJ	: Number of Working Population
α	: intercept
α1, α2, α3	: Regression coefficient of independent variables
εit	: error component at time t for unit cross section i
i	: 1, 2, 3, ..., 38 (cross-section data for districts/cities in East Java)
t	: 1, 2, 3, ..., 5 (time-series data, 2015-2019)

This model estimation test was carried out to find the most appropriate model to be used in econometric analysis. Testing the estimation of the model is done in two ways, namely by testing the significance of the Chow test and the Hausman test.

The results of the significance test which is a comparison between the common effect and fixed effect models can be seen from the results of the Redundant Fixed Effect-LR analysis. The results of the analysis show the value of Prob. F is 0.0000. Because the Prob.F value is <0.05, the more appropriate estimation model to use is the fixed effect model.

The next method used is the Hausman test. This test was conducted to determine which model is more appropriate to use between the fixed effect and random effect models. Hausman test results show the value of Prob. Random cross section of 0.0044 or less than 0.05. Thus it can be concluded that the null hypothesis is rejected, which means that the more appropriate model to use is the fixed effect model.

From the test results above, it can be concluded that the more appropriate model used to analyze the effect of economic growth, investment, and the human development index on income inequality between regions is the fixed effect model.

The normality test is needed to determine the shape of the data distribution, whether it is normally distributed or not. In this study the normality test was carried out using the Jarque-Bera Test (JB test). The results of the analysis show that the prob. Jarque-Bera of 0.44474 or greater than 0.05. Thus it can be concluded that the data is normally distributed.

The multicollinearity test is used to determine whether there is a relationship between the independent variables in the study. The results of the analysis show that the correlation coefficient

between the independent variables is <0.9 which means that there is no multicollinearity in each of the independent variables.

In this study, the heteroscedasticity test was carried out using the Park test. The Park test is carried out by regressing the initial independent variables with the dependent variable replaced by the log of the squared residual. From the test results, it was found that the P-value of the three independent variables (GRDP, Total Population, and Total Working Population) was > 0.05. This means that the model regression is homoscedasticity.

As forthe estimation results of the research model are as follows:
the selected estimation model, namely the fixed effect model, shows that LOG(PDRB), LOG(PDDK), LOG(BKJ) positive and significant effect on income inequality.

Hypothesis testing

The coefficient of determination (adjusted R2) is 0.398452 or 39.84 percent, so that it can be said that 39.84 percent of the dependent variable, namely the income inequality variable between districts/cities in East Java Province in the model can be explained by the independent variable, namely the Gross Regional Domestic Product variable (GRDP), population, and working population while the remaining 60.16 percent is influenced by other variables outside the model.

The effect of the independent variables simultaneously on the dependent variable was analyzed using the F test, namely by taking into account the significance of the F level (alpha) value of five percent. Use of significance figures by considering:
1) If the significance number is > 0.05, then Ho is accepted and Ha is rejected.
2) If the significance number is <0.05, then Ho is rejected or Ha is accepted.

Analysis results shows an F test value of 8611,943 with a significance value of 0.000, where the significance value of F is required to be less than five percent, so that the hypothesis can be accepted. From the regression results above, the significance of F is 0.000 which is less than the level (alpha) = 0.05 (5%). Thus it can be concluded that all the independent variables in this study simultaneously (simultaneously) influence income inequality between districts/cities in East Java Province. This means that if the Gross Regional Domestic Product (GDP), population, and the number of people working together increase, it will have an impact on increasing income inequality between districts/cities in East Java Province, on the other hand, the Gross Regional Domestic Product (GDP), total population,

Whether or not the influence of each independent variable on the dependent variable individually is used t test. The hypothesis used in this study uses significance figures by considering:
a. If the significance number is > 0.05, then Ho is accepted and Ha is rejected.
b. If the significance number is <0.05, then Ho is rejected and Ha is accepted.

From the criteria above, it will be explained each effect of the independent variables on the dependent variable if the probability value is <0.05. Then the t test results are obtained which are shown in the table below:

The influence of variable of the Gross Regional Domestic Product (GRDP) on income inequality between districts/cities

t test results noted that variable probability Gross Regional Domestic Product (GRDP) smaller than the significance level of 5% (0.0019 <0.05) which means that Ho is rejected and Ha is accepted, so the hypothesis which states that The Gross Regional Domestic Product (GRDP) has an effect on income inequality between districts/cities in East Java Provinceacceptable.

The influence of population on income inequality between districts/cities in East Java Province.

t test results it is known that the probability value of the population variable is smaller compared to a significance level of 5% (0.0339 < 0.05) which means Ho is rejected and Ha is accepted, so the hypothesis which states that population has an effect on income inequality between districts/cities in East Java Province is accepted.

The influence of the number of working population on income inequality between districts/cities in East Java Province).

t test results noted that the probability value of the variable number of working people is smaller compared to a significance level of 5% (0.0412 > 0.05) and has a positive sign, which means Ho is accepted and Ha is rejected, so the hypothesis which states that the effect of the number of working population on income inequality between districts/cities in East Java Province is accepted.

Discussion

The results of the panel data regression analysis that has been carried out are used to test the effect Gross Regional Domestic Product (GRDP), total population, and total working population on income inequality between districts/cities in East Java Province. From the results of the panel data regression with the fixed effect model, the regression equation is obtained as follows:

IW= -2.1577526+0.023572LOG(PDRB)+0.053547LOG(PDDK)+0.022212 BKJ+εit

From the regression equation above, it is known that the constant coefficient is -2.1577526. Negative values in the constants indicate that apart from the three independent variables selected in the study there are other systematic variables that also influence but are not included in the research model, as a result these variables affect the constants negatively.

Further discussion of the factors that influence inequality in income distribution is explained below.

The Effect of Gross Regional Domestic Product (GRDP) on Income Inequality between Regencies/Cities in East Java Province.

From the results of the regression equation, the regression coefficient for the Gross Regional Domestic Product (GRDP) variable is 0.023572, this means that if there is an increase in the Gross Regional Domestic Product (GRDP) by 1 unit, there will be income inequality between districts/cities in East Java Province of 0.023572 units, so it can be concluded that the more Gross Regional Domestic Product (GRDP) the income inequality between districts/cities in East Java Province will increase, conversely if the Gross Regional Domestic Product (GRDP) decreases, income inequality between districts /city in East Java Province will decrease.The results of the study show that the Gross Regional Domestic Product (GRDP) has a positive and significant effect on income inequality between districts/cities in East Java Province according to the hypothesis proposed, so the hypothesis in this study is accepted. While the City of Kediri has a group 3 business sector of 71.61%, a group 2 business sector of 25.06% and a group 1 business sector of 3.33%.

Effect of Population on Income Inequality between Districts/cities in East Java province.

From the results of the regression equation, the regression coefficient for the population variable is 0.053547, this means that if there is an increase in the population by 1 unit, there will be a decrease in income inequality between districts/cities in East Java Province by 0.053547 units, so it can be concluded that the more the population, the income inequality between districts/cities in East Java Province will increase, conversely if the population decreases, the income inequality between districts/cities in East Java Province will decrease. The results of the study show that the population has a positive and significant effect on income inequality between districts/cities in East Java Province according to the hypothesis proposed, so the hypothesis in this study is accepted.

The increasing population in East Java every year causes an increase in the Williamson index. Population growth in East Java has not been accompanied by an increase in available jobs, so competition for jobs has become tighter. This causes the supply of labor to be greater than the demand for labor, making labor willing to be paid a low wage. The income of residents in urban areas is certainly greater than that of residents in rural areas due to the fact that there are more economic activities in urban areas than in rural areas. Human resources in urban areas are of course better human resources in rural areas. The income of urban residents is greater due to the diversity of business fields in urban areas. Skilled residents in rural areas also move to urban areas, resulting in a shortage of skilled human resources in rural areas to build the village economy. The increasing number of residents in urban areas

will increase the inequality in income distribution. In addition, the uneven distribution of population in the East Java region also affects the level of income inequality.

The Effect of Number of Working Population on Income Inequality between Regencies/Cities in East Java Province.

From the results of the regression equation, the regression coefficient for the variable number of working people is 0.022212. This means that if there is an increase in the number of working population by 1 unit, it will reduce income inequality between districts/cities in East Java Province by 0.022212 units, so it can be concluded that the more the number of working people, the income inequality between districts/cities in East Java Province will increase, conversely if the number of working population decreases, income inequality between districts/cities in East Java Province will decrease.

Income inequality in the city of Surabaya is shown by the uneven distribution of income. The result of calculating the Williamson Index from 2015 to 2019 is the city of Surabaya, which is the highest at 3.89569. The average Gross Regional Domestic Product (GRDP) from 2015 to 2019 was the highest at IDR 366,153.16 billion. Furthermore, the highest per capita Gross Regional Domestic Product (GRDP) is IDR 2,613,968. The average population from 2015 to 2019 is the City of Surabaya, which is 2,873,488 people. The average number of working residents from 2015 to 2019 is the City of Surabaya, which is 1,413,140 people. This indicates the high inequality of income distribution or income inequality in the city of Surabaya.

Surabaya City as the capital of East Java province with a working population of 1,413,140 people of which 75.97% work in the group 3 business sector, namely wholesale and retail trade; car and motorcycle repair; transportation and warehousing; provision of accommodation and food and drink; information and communication; financial and insurance services; real estate; company services; government administration, defense, and compulsory social security; educational services; health services and social activities; other services cause an unequal distribution of income as seen from the Williamson Index figures. This indicates that high incomes are only dominated by a small portion of society.

CONCLUSION AND SUGGESTION

Conclusion

According to the results of the analysis of the Influence of GRDP, Total Population, and Total Working Population on Regency/City Income Inequality in East Java Province in 2015-2019, the following conclusions are obtained:

1. Vavariable GRDP has a positive and significant effect on income inequality between districts/cities in East Java Province in 2015-2019. This is because there are very high or very low Regency/City GRDP values in an area. In addition, differences in income from an economic sector can cause income inequality.
2. Vavariable The population has a positive and significant effect on income inequality between districts/cities in East Java Province in 2015-2019. This is due to the fact that the population in a district/city is very high or very low in an area.
3. VaThe variable number of working population has a positive and significant effect on income inequality between districts/cities in East Java Province in 2015-2019. This is due to the fact that the population in a district/city is very high or very low in an area.

Suggestion

Regional Government of East Java Province, the high GRDP in Surabaya City is also accompanied by high income inequality. It is advisable to increase government programs that are more focused on people of low economic class so that equal distribution of income will be achieved in 38 districts/cities of East Java. For Further Research: It is better to involve variables that are more varied both in terms of economic, social, political and cultural. We recommend that the time series data during the research be added to make it more valid.

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