**THE INFLUENCE OF HUMAN DEVELOPMENT INDEX ON THE INEQUALITY OF INCOME DISTRIBUTION IN YOGYAKARTA**

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**ABSTRACT**

The purpose of this study is to analyze whether the Human Development Index is a key factor in encouraging the inequality of income distribution in Yogyakarta Province. The method used in this research is to use Fixed Effect and Random Effect Methods, using: Chow Test, Hausman Test, and Classical Assumption Test. The type of data used in the form of secondary data which is research data, which is a combination of time series data from 2010-2020 and cross section data from 5 districts in D.I Yogyakarta. The data in this study are qualitative in nature, namely data obtained from the Central Statistics Agency in the form of numbers, including: Gini Index for 5 districts in DIY for the 2010-2020 period, Human Development Index for 5 districts in DIY for the period 2010-2020, GRDP for 5 districts in DIY 2010-2020 period, and PAD of 5 districts in DIY 2010-2020. The results showed that based on the results of the R-Square of 0.542404 which means the inequality of income distribution in 5 districts/cities in Yogyakarta Province has a change of 54.24% which is influenced by one of them, namely the HDI variable. While the value of 45.76% is influenced by variables outside the study. Based on the statistical test, it was found that the human development index had a positive and significant effect on the inequality of income distribution in 5 districts/cities in the province of Yogyakarta. With a coefficient value of 0.028348 with a probability value of 0.014.

**Keywords:** Income distribution, Human Development Index (HDI), Inequality.

**INTRODUCTION**

The development paradigm that prioritizes high economic growth is manifested in the Development Trilogy, namely by building regional growth centers, which has caused investment and resources to be absorbed and concentrated in urban areas as growth centers, while hinterland areas experience excessive resource depletion. (massive backwash effect). This gap in the end causes problems in the macro context, which is very detrimental to the development process to be achieved as a nation. On the one hand, development imbalances between regions occur in the form of poor distribution and allocation of resource utilization which creates inefficiency and suboptimal economic systems. The imbalance in development results in the structure of relations between regions that form an interaction that weakens each other (Rachmawatie, Dessy; Hadi, Setia; Oktapribadi, 2010).

The definition of economic inequality is the difference in economic development horizontally and vertically between one region and another, causing uneven development (Aprilianti & Harkeni, 2021). Inequality occurs because of the concentration of basic sector economic activities in certain areas. The occurrence of inequality in the development of the industrial sector between regions is one of the factors causing regional economic inequality (Djadjuli, 2015). Income inequality is a picture of the distribution of income in a country (Febriyani & Anis, 2021). Inequality of income distribution between high and low income groups is a major problem in developing countries (Arif & Wicaksani, 2017).

The new paradigm of regional economic development was marked by the issuance of the Regional Autonomy Law number 22 of 1999 concerning regional government and replaced by Law number 32 of 2004, and replaced again with Law number 23 of 2014 which was previously centralized to decentralized. The problems of regional economic development are inequality in the development of the industrial sector, unequal distribution of investment, low level of mobility of production factors, differences in natural resources, demographic differences and lack of smooth trade between regions. (Djadjuli, 2015).

The Gross Regional Domestic Product (GRDP) of The Yogyakarta Special Region (DIY) based on business fields according to constant prices during the period 2010-2020 shows an increasing number of around 0.9 percent per year. This indicates that the economic performance of the DIY Province on a macro basis is very good, as shown in Table 1 below.

**Table 1.** Gross Regional Domestic Product (GRDP) of DIY Province 2010 – 2020

|  |  |
| --- | --- |
| **Year** | **GRDP (Rupiah)** |
| 2010 | 64. 678. 968,20 |
| 2011 | 68. 049. 874,44 |
| 2012 | 71.702.449,18 |
| 2013 | 75.627.449,59 |
| 2014 | 79.536.081,75 |
| 2015 | 83.474.440,55 |
| 2016 | 87.687.926,63 |
| 2017 | 69.565.413,5 |
| 2018 | 72.391.519 |
| 2019 | 104.487.543.80 |
| 2020 | 101.679.600.20 |

On the other hand, the condition of income distribution inequality in DIY Province during 2010-2020 shows moderate inequality. However, if you look more closely, the Gini Index value of DIY Province during 2010-2020 has increased, with an average Gini Index value of 0.35 per year (Table 2). This shows that the high GRDI owned by DIY is not evenly shared by all people of Yogyakarta. Or in other words, the high GRDI of DIY has not been able to represent the level of economic growth in Yogyakarta Province. This situation is also similar with the results of research on inequality in the province of East Java 2008 - 2012 that, there is no tradeoff between economic growth and inequality in the province of East Java. Because economic growth that continues to increase is also accompanied by inequality that continues to increase (Iswanto, 2015)

Inequality of income distribution is a condition where the distribution of income received by the community is not evenly distributed. Inequality in the distribution of income shows that only a part of the community can enjoy the total income. Thus, the problem that needs to be overcome is to reduce the inequality of regional income distribution. Because this condition of inequality can affect the economic conditions of the region and affect the social conditions of the people in the region (Rachmawatie, Dessy; Hadi, Setia; Oktapribadi, 2010)

The purpose of this study is to analyze whether the Human Development Index (HDI) influences the condition of inequality in income distribution in DIY Province.

**METHOD**

This research was conducted in Yogyakarta, 2020. The analytical method used in this study is using panel data regression analysis (2010-2020) using the Fixed Effect Model (FEM) method. The dependent variable used in this study is income distribution inequality, and the independent variable is: Gross Domestic Regional Income (GDRI), Locally-Generated Income (LGI) and Human Development Index (HDI) in 5 (five) regencies/cities in DIY.

**RESULTS AND DISCUSSION**

The Special Region of Yogyakarta is located in the south-central part of Java Island, geographically it is located at 8O 30' 7O 20' South Latitude, and 109O 40' - 111º 0' East Longitude. physiographic units of Mount Merapi, physiographic units of the Sewu Mountains or the Thousand Mountains, physiographic units of the Kulon Progo Mountains, and physiographic units of Lowlands.

District/City boundaries in Yogyakarta Province are as follows:

a. To the north: Yogyakarta City and Sleman Regency

b. To the east: Gunung Kidul Kabupaten Regency

c. South side: Indonesian Ocean

d. On the west: Kulon Progo Kabupaten Regency

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**Figure 1.** Map of the Special Region of Yogyakarta

Source: Agency of transportation, communication and information of Yogyakarta Special Region (DIY), 2021.

DIY Province consists of four districts and one municipality, which is divided into 78 sub-districts and 438 villages/kelurahan. The district with the largest area is Gunungkidul. Next are Kulonprogo and Sleman. Then Bantul and finally the city of Yogyakarta as the capital of the province as well as the district/city area with the smallest area.

Inequality in the distribution of income between regions in this study was obtained from the publication of each year's book. In DIY Regency/City, income distribution inequality in Regency/City in DIY Province has increased every year and only Sleman Regency has decreased. The highest income inequality is obtained in the city of Yoyakarta every year with an index value of more than 0.35 or in other words inequality in the city of Yogyakarta is in the moderate category.

**Table 2.** Yogyakarta Special Region Gini Index 2010-2020

| **Year** | **City of Yogyakarta** | **Bantul** | **Sleman** | **Kulon Progo** | **Gunung Kidul** |
| --- | --- | --- | --- | --- | --- |
| 2010 | 0,165 | 0,277 | 0,411 | 0,244 | 0,255 |
| 2011 | 0,194 | 0,337 | 0,271 | 0,337 | 0,301 |
| 2012 | 0,179 | 0,343 | 0,278 | 0,343 | 0,323 |
| 2013 | 0,146 | 0,318 | 0,253 | 0,324 | 0,303 |
| 2014 | 0,396 | 0,321 | 0,396 | 0,382 | 0,296 |
| 2015 | 0,446 | 0,376 | 0,446 | 0,367 | 0,319 |
| 2016 | 0,429 | 0,381 | 0,394 | 0,372 | 0,334 |
| 2017 | 0,457 | 0,392 | 0,453 | 0,375 | 0,325 |
| 2018 | 0,427 | 0,412 | 0,45 | 0,365 | 0,337 |
| 2019 | 0,423 | 0,394 | 0,47 | 0,361 | 0,337 |
| 2020 | 0,421 | 0,381 | 0,42 | 0,38 | 0,352 |

Source: Central Bureau of Statistics, Yogyakarta Special Region, 2021.

The quality of human development by regencies/cities in DIY during the 2010-2019 period shows an increasingly improving development. This can be seen from the achievement of the HDI values of all districts/cities which are gradually increasing. At the level, the highest achievement of human development in the last decade was recorded in Yogyakarta City and followed by Sleman Regency. The next highest achievements are Bantul Regency and Kulon Progo Regency, respectively. Meanwhile, the achievement of the level of human development in Gunungkidul Regency for the last few years has always been recorded at a low position among the five regencies/cities in DIY.

**Table 3.** Human Development Index Yogyakarta Special Region 2010-2020

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | City of Yogyakarta | Bantul | Sleman | Kulon Progo | Gunung Kidul |
| 2010 | 82.72 | 75.31 | 79.69 | 68.83 | 64.20 |
| 2011 | 82.98 | 75.79 | 80.04 | 69.53 | 75.93 |
| 2012 | 83.29 | 76.13 | 80.10 | 69.74 | 65.69 |
| 2013 | 83.61 | 76.78 | 80.26 | 70.14 | 66.31 |
| 2014 | 83.78 | 77.11 | 80.73 | 70.68 | 67.03 |
| 2015 | 84.56 | 77.99 | 81.20 | 71.52 | 67.41 |
| 2016 | 85.32 | 78.42 | 82.15 | 72.38 | 67.82 |
| 2017 | 85.49 | 78.67 | 82.85 | 73.23 | 68.73 |
| 2018 | 86.11 | 79.45 | 83.42 | 73.76 | 69.24 |
| 2019 | 86.65 | 80.01 | 83,85 | 74.44 | 69.96 |
| 2020 | 86.61 | 80.01 | 83.84 | 74.46 | 69.98 |

Source: Central Bureau of Statistics, Yogyakarta Special Region, 2021.

1. **Chow Test**

This chow test is a test to determine the most appropriate Fixed Effect Model or Common Effect Model used in estimating panel data. The hypothesis in the Chow test is as follows:

H0=Common Effect Model or OLS

H1=Fixed Effect Model

The basis for rejecting the hypothesis above is to compare the calculation of the F-statistics with the F-table with of 5%. The comparison is used if the results of the F-statistics are smaller than the F-table, so that H0 is not rejected, which means that the model used is the Common Effect Model.

**Table 4**. Chow Test Results

|  |  |  |  |
| --- | --- | --- | --- |
| Effects Test | Statistic | d.f. | Probabilitas |
| Cross-section F | 6.339066 | (4,47) | 0.0004 |

Source: Panel Data Processing Results. 2021.

From the table above, the probability value is obtained. 0.004 is smaller than the value of = 0.05, it can be concluded that H0 is rejected, so that a good model and the chosen model is the *Fixed Effect Model* (FEM).

1. **Hausman Test**

The Hausman test is a statistical test to choose whether the Fixed Effect Model or the Random Effect Model is the most appropriate to use. The hypotheses used are::

H0 :*Fixed Effect Model*

H1 :*Random Effect Model*

If the value of the Hausman test is less than 0.05 then H0 is accepted, meaning that the correct model to use is the Fixed Effect Model. However, if the results of the Hausman test are 0.05, the right model to use is the *Random Effect Model.*

**Table 5.** Hausman Test Results

|  |  |  |  |
| --- | --- | --- | --- |
| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f | Probabilitas |
| Cross-section random | 44.934432 | 3 | 0.0000 |

Source: Panel Data Processing Results. 2021.

From the table above, the Chi Square statistical test value from the above calculation is 44.934432 and the probability value is obtained. 0.0000 < (smaller) than = 0.05, it can be concluded that H0 is rejected, so that the good model chosen is the *Fixed Effect* *Model* (FEM).

**Estimation of Regression Model with Fixed Effect**

This Fixed Effect model already assumes differences between individuals that are usually accommodated from differences in intercepts. This model uses the Dummy Variable Technique to capture the different interpretations.

**Tabel 6.** The Results of Fixed Effect Model

|  |  |
| --- | --- |
| **Dependent Variables:**  **Inequality of Income Distribution (Gini Index)** | **Model** |
| **Fixed Effect Model** |
| LOG(GRDP) | 0.162210 |
| HDI | 0.028348 |
| LOG(LGI) | 0.060539 |

Source: Panel Data Processing Results. 2021.

From the above estimation, a panel data analysis model can be made on the inequality of income distribution in DI. Yogyakarya which is concluded with the following equation:

**Yit = α + β1(GRDP) *it* + β2(HDI) *it* + β3(LGI) *it* + et**

**Notice:**

Y = Dependent variable (income distribution inequality)

α = Constanta

β123 = Variable Coefficient 1,2,3 is the number of variables

GRDP = Gross Regional Domestic Product

HDI = Human Development Index

LGI = Locally-Generated Income

I = Yogyakarta City; Bantul Regency; Sleman Regency, Kulonprogo Regency;

Gunung kidul Regency

t = Periode of year 2010-2020

Where obtained the following results:

**Yit = α + β1(GRDP) *it* + β2(HDI) *it* + β3(LGI) *it* + et**

**Yit = -7.163016+ 0.162210(GRDP) *it* + 0.028348 (HDI) *it* + 0.060539 (LGI) *it* + et**

**Notice:**

α = -7.163016 it can be interpreted that if all the independent variables (GRDP, HDI, and LGI) considered constant or unchanged, the inequality of income distribution is 7,1%. β1 = 0.162210 it can be interpreted that when the Gross Domestic Product (GRDP) increases by 1%, the inequality rate will decrease by 0.162%. β2 = 0.028348 can be interpreted that when the Human Development Index (HDI) increases by 1%, the inequality rate will decrease by 0.028%. β3 = 0.060539 it can be interpreted that when Localy Generated Income (LGI) increases by 1%, the inequality rate decreases by 0.060%.

In the estimation model above, there is an effect of different cross sections in each district/city on the inequality of income distribution in the Yogyakarta Province. Regencies that have a positive cross section effect are Bantul regencies of 0.056358, Kulon Progo regencies of 0.0.261009 and Gunung Kidul regencies/municipalities of 0.256372. of -0.083127 and Yogyakarta district of -0.490612.

**Results**

**Simultaneous Test (F-Statistics)**

Simultaneous test (F-statistics) aims to find out how much influence the coefficient of the regression results together on the dependent variable and the results of the F test as follows:

**Tabel 7.** Overall Results (F Test)

|  |  |
| --- | --- |
| Regresi Fixed Effect (FEM) |  |
| Prob>F | 0.000 |
| Error Corelated | 0.208 |
| R-Square | 0.542 |
| F-Statistik | 7.958 |
| Adj R-Square | 0.474 |

Source: Panel Data Processing Results. 2021.

If seen in the table above, the value of the F-Statistic is 7.958 and the probability value of the F-Statistic is 0.000002, it can be concluded that the value of Prob>F is smaller than = 0.05, so it can be said that the independent variables together have an influence on the variables. dependent.

**Determinant Coefficient (R2)**

The determinant coefficient (R2) is something that displays how much the dependent variable can be explained by the independent variable. As a measure of the ability of the model to know statistically.

**Tabel 8.** Determinant Test Results(R2)

|  |  |
| --- | --- |
| Regresi Fixed Effect (FEM) |  |
| Prob>F | 0.000 |
| Error Corelated | 0.208 |
| R-Square | 0.542 |
| F-Statistik | 7.958 |
| Adj R-Square | 0.474 |

Source: Panel Data Processing Results. 2021.

Based on the results of the R-Square of 0.542, which means that the inequality of income distribution in 5 districts/cities in Yogyakarta Province has a change of 54.24% which is influenced by one of them, namely the HDI variable. While the value of 45.76% is influenced by variables outside the study.

**Partial Test (T-Statistics)**

The statistical test aims to determine the relationship of each independent variable consisting of GRDP, HDI, LGI to the inequality of income distribution by using the Gini Index as the Dependent Variable. This t-statistic test can be known by looking at the regression coefficient and probability values for each independent variable with a standard probability of < 5%. The following are the results of the t-statistical test:

**Table 7.** T-Statistics Test Results

|  |  |  |  |
| --- | --- | --- | --- |
| **Dependent Variable:**  **Inequality of Income Distribution (Gini Index)** | **Coefficient** | **t-Statistic** | **Probability** |
| LOG(GRDP) | 0.162 | 1.468245 | 0.148 |
| HDI | 0.028 | 2.546877 | 0.014 |
| LOG(LGI) | 0.060 | 2.774210 | 0.007 |

Source: Panel Data Processing Results. 2021.

**Testing of Gross Regional Domestic Product (GRDP) Variables**

The effect of GRDP on income distribution inequality is based on the results of the analysis obtained with the GRDP variable coefficient of 0.162210 and t-count or t-statistic of 1.468245 with a probability value of 0.1487 (greater than 0.05). The GRDP regression coefficient which is positive and the probability is greater than the standard probability means that the GRDP variable partially has a negative and insignificant effect on the inequality of income distribution in the Regency/City of Yogyakarta Province. This is after being tested statistically, H0 is rejected and Ha is accepted.

The influence of HDI on income distribution inequality based on the analysis results obtained with the coefficient value of the HDI variable on income distribution inequality is 0.028348 and the t-count or t-statistic is 2.546877 with a probability value of 0.0142 (less than 0.05). The HDI regression coefficient which is positive and the probability is smaller than the standard probability means that the HDI variable partially has a positive and significant effect on the inequality of income distribution in the Regency/City of Yogyakarta. This is in accordance with statistical testing H0 is plotted and Ha is accepted.

Based on the statistical test, it was found that the human development index had a positive and significant effect on the inequality of income distribution in 5 districts/cities in the province of Yogyakarta. With a coefficient value of 0.028 with a probability value of 0.014 where this value is smaller than = 5% so that the human development index has a significant effect on income distribution inequality, which means that if the human development index has an increase of 1%, the amount of inequality will increase by 0.028% in 5 districts/cities in Yogyakarta Province. This is in accordance with the initial hypothesis that the human development index has a positive and significant influence on the inequality of income distribution in 5 districts/cities in Yogyakarta.

Based on the partial test results, the HDI variable significantly affects economic inequality in Jambi (Aprilianti & Harkeni, 2021). This is also in accordance with the results of research in East Java province in 2011-2015 which showed that the human development index had a positive and significant influence on income inequality (Arif & Wicaksani, 2017). The results of research in the Special Region of Yogyakarta in 2007-2014 also show that the HDI variable has a positive and significant effect on income distribution inequality, which means that the higher the HDI causes the higher income distribution inequality (Avriandaru, 2018). These results are also in accordance with research in the Special Region of Yogyakara in 2005-2013 which explains that one of the instruments of the HDI is life expectancy, life expectancy in East Java province is quite high so that it can form and create a productive workforce and in the end will increase the income per capita of the community, but this is only found in the centers of economic activity so that growth is uneven and triggers economic inequality (Astuti, 2015). This widens the income distribution gap between the rich and the poor.

The human development index is specifically a measure or a measure in achieving human economic development by using several basic components of quality of life. HDI is calculated based on data that can describe four components, namely the achievement of a long and healthy life that represents the health sector, literacy rates, school participation and their average length of schooling, measuring development performance in the education sector, and the purchasing power of the community towards a number of basic needs that are needed. seen from the average amount of per capita expenditure as an income approach. With the increase in HDI, it is expected to reduce the widening development gap between regions.

Based on the partial test results, the HDI variable significantly affects economic inequality in Jambi (Aprilianti & Harkeni, 2021). This is also in accordance with the results of research in East Java province in 2011-2015 which showed that the human development index had a positive and significant influence on income inequality (Arif & Wicaksani, 2017). The results of research in the Special Region of Yogyakarta in 2007-2014 also show that the HDI variable has a positive and significant effect on income distribution inequality, which means that the higher the HDI causes the higher income distribution inequality (Kusuma et al., 2019). These results are also in accordance with research in the Special Region of Yogyakara in 2005-2013 which explains that one of the instruments of the HDI is life expectancy, life expectancy in East Java province is quite high so that it can form and create a productive workforce and in the end will increase the income per capita of the community, but this is only found in the centers of economic activity so that growth is uneven and triggers economic inequality (Astuti, 2015). This widens the income distribution gap between the rich and the poor.

This result is also in line with the results of research (Kusuma et al., 2019) explaining in his research where the HDI variable has a significant effect on income inequality in Indonesia. The significant influence between HDI on inequality in Indonesia indicates that the rise and fall of income inequality is influenced by HDI. And this research is also in line with (Jati, 2016), which states that the results of the Human Development Index variable have a positive and significant effect on income inequality in the province of East Java in 2011-2015.

The occurrence of inequality between regions will have an impact on the level of community welfare between regions (Fitriyah & Rachmawati, 2013). The relationship of income inequality has a significant effect on the welfare of the people of Bengkulu province (Febriani & Yusnida, 2020). Other literature also shows a positive and significant influence on people's welfare (Fitriyah & Rachmawati, 2013). The district/city government is said to be successful in the development process if the level of regional inequality is small or more evenly distributed by increasing the welfare of the community evenly and vice versa. This research is also in line with (Tyass et al., 2023) with research on factor analysis that affects income inequality in Indonesia, with the results that the HDI variable has a significant and positive effect on income inequality in Indonesia.

**CONCLUSION**

The results showed that supported the results of the R-Square of 0.542404 which suggests the difference of financial gain distribution in five districts/cities in Yogyakarta Province features a amendment of 54.24% that is influenced by one in every of them, specifically the Human Development Index (HDI) variable. Whereas the worth of 45.76% is influenced by variables outside the study. Supported the applied mathematics test, it absolutely was found that the human development index had a positive and important result on the inequality of income distribution in 5 districts/cities within the province of Yogyakarta. With a constant value of 0.028348 with a chance value of 0.014.

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