FACTORS AFFECTING THE HUMAN DEVELOPMENT INDEX (HDI) IN CENTRAL JAVA PROVINCE
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Abstract

This study examines the effects of poverty, gross regional domestic product (GRDP) and minimum wages on the human development index in Central Java Province. The data analysis method used in this research is panel data regression. From the results of selecting the best model, the regression model chosen is the fixed effect model. Based on the partial effect analysis results, it can be concluded that poverty has a negative and significant effect on the human development index, while the GRDP and minimum wages have a positive and significant effect on the human development index. Then, poverty, GRDP and minimum wage simultaneously significantly affect the human development index in Central Java.

Keywords: Human Development Index, Poverty, GRDP, Minimum Wages
INTRODUCTION

Development carried out by a country is one of the tools that can be used to achieve a country’s goals. In this case, economic growth is one of the indicators that determines the success of a development. (Zakaria, 2018). But a country in a development approach, besides prioritizing short-term economic growth, must also pay attention to human development (Meydiasari & Soejoto, 2017). It must take human welfare into account because, in a country, human resources are the important factor for the progress of the country (Yanthi & Budiantara, 2016).

United Nations Development Programme (UNDP) in 1996 defines human development as part of the stages in increasing the standard of human life. In the state development process through human resources, it must be supported by superior and quality human beings. The human development index (HDI) is established as a standard measure of human development by the United Nations (UN) in 1990 (Sari & Supadmi, 2016).

HDI in measuring human development performance uses a scale of 0 (as the lowest level) to 1 (as the highest level) (Ali, 2009). HDI measures achievement in the social and economic fields based on three indicators: health and life expectancy, educational attainment, and living standards. So that human development is an important and necessary thing for individuals and the economy.

Human development can expand an available opportunity for individuals and provide freedom to increase personal welfare and human resources to improve the economy. Having a superior, quality workforce in terms of education and health can support the economy. The human development index calculates inequalities in health, education, and income (Abdu, 2017).

On the other hand, poverty in a region or country hurts the human development process. A person who lives in an incapacitated condition tends to have less than optimal productivity. They are rarely involved in development activities and are only often used as objects rather than development subjects.

In 2019, in Central Java Province, there are 3.68 million poor people with a percentage of 10.58 per cent. This amount is still quite high, whereas according to the amount of Gross Regional Domestic Product (GRDP) in 2019, the economy in Central Java, which based on current prices has reached IDR 339,791.18 billion and based on constant prices in 2010 it reached IDR 248,808.27 billion (BPS Jateng, 2019). Supposedly high economic growth can reflect the socio-economic conditions of a region. However, based on these data, the poverty rate in Central Java is still quite high.

Furthermore, a factor that is no less important in increasing human development is the minimum wage. If a worker has a high income, the need to improve his quality of life will also be high. Conversely, if someone has a low income, they will find it difficult to meet basic needs such as education and health levels (Tarumingkeng et al., 2018). So, their life is full of limitations and backwardness.

**Figure 1. HDI Central Java 2010-2019**
Source: BPS Central java (be processed).
Based on Figure 1, it can be seen that Central Java’s HDI from 2010 to 2019 experienced significant growth. In 2010, Central Java’s HDI was 66.08. In 2011, it was 66.64, an increase of 0.56 from the previous year, and in 2019, the increase in HDI in Central Java reached 71.73. Since 2017, Central Java's HDI has reached the high category (HDI > 70), from the previous year, namely between 2010-2016, Central Java’s HDI was still in the medium category (HDI above 60 and below 70) (BPS Jateng, 2020).

Various research on HDI has been carried out by several researchers, such as Mirza (2012), which discusses the factors that influence HDI based on poverty, economic growth, and capital spending. Then Meydiasari & Soejoto (2017) discusses Indonesia’s HDI. The research focus is based on income distribution, unemployment rates and government spending in the education sector. Next, Sari & Supadmi (2016) identifies HDI growth using the factor of own-source revenue and capital expenditure. Kiha et al. (2021) also discuss HDI using variables of population, unemployment and poverty. And Rosyadah (2021) also discusses HDI using economic growth rate variables, population density, net enrollment rate, gross enrollment rate, and minimum wages.

So, based on these previous studies, there are several differences in focus. This study will then identify an increase in the Human Development Index (HDI) based on three main factors: poverty, GRDP and minimum wages in Central Java. The purpose of this study is to answer the above problems. The expected goal is to determine the effects of poverty, GRDP, and Minimum Wages on HDI in Central Java.

THEORETICAL BASIS

Human Development Index (HDI)

The concept of human development was first introduced by United Nations Development Programme (UNDP) in 1990 using the term Human Development Index (HDI). UNDP uses the term HDI to calculate human development in various countries. In 1996, the HDI was translated into the Human Development Index (HDI) in Indonesia (Yogi et al., 2018).

According to UNDP, HDI is an achievement of human development based on several basic elements of quality of life. HDI is built using three basic measures, namely health, insight and a decent life. The three measures have a broad definition because various factors influence them. Several indicators can be employed to measure the dimensions in HDI, namely life expectancy, length of schooling, and purchasing power (Yunus & Radjab, 2018).

Poverty

Niemietz (2011) in Siagian et al. (2020) defines poverty, namely the condition of a person who is at a lower level of life than the population's minimum standard. Poverty is also defined as a person’s inability to buy basic human needs such as food, clothing, medicine, and shelter.

According to Bappenas, poverty is defined as a condition, in which individuals and communities cannot fulfil their basic rights to maintain and improve their lives to be more dignified. (Siagian et al., 2020). The dimensions of poverty are complex, so that experts classify poverty into three types: (Hartanti, 2010 on Bhinadi, 2017).

a. Natural poverty, the cause of this poverty is the low quality of natural resources and human resources.

b. Cultural poverty, the cause of this poverty, is someone who does not try to change their living conditions.

C. Structural poverty, the cause of this poverty is the social structure of a society.
Studies from Mirza (2012) state that poverty hurts the human development index (HDI). Poverty has a role in determining the development process that prioritizes community participation. The increase in the number of poor people will further reduce human development, which is due to the low level of purchasing power of the poor.

**Gross Regional Domestic Product (GRDP)**

Gross Regional Domestic Product (GRDP) is used in calculating the potential in an area. According to Sudaryo et al. (2017), GRDP can be divided into three definitions: production methods, income methods, and expenditure methods.

Based on the production method, GRDP is obtained from calculating the total value of the final products of goods and services from various production units in a certain area during one year. Next, through the income method, GRDP is obtained based on all remuneration for the production factors that participate in a production process in an area during one year. Meanwhile, the expenditure method means that GRDP is obtained by calculating the total expenditure made for household consumption and non-profit private institutions, government, gross domestic capital formation and net exports in a certain area. Out of three GRDP methods, the production method is most frequently used (Tjandra, 2006).

**Minimum Wages**

The minimum wage is a minimum standard used by entrepreneurs in providing wages to workers in their business.

Based on Permen No. 1 of 1999 Article 1 Paragraph 1, the minimum wage is the lowest monthly wage consisting of the basic wage including fixed allowances. The minimum wage that applies to all districts/cities in one province is called as the provincial minimum wages (UMP). In addition to the UMP, there is also a UMK (Regency/City Minimum Wages), the minimum wage applicable in a Regency/City, which must be higher than the UMP determined by the Governor (Santoso & Masman, 2016).

A study by Chalid & Yusuf (2014) explains that the minimum wages could positively affect the human development index (HDI). This means that every time the minimum wage has increased, the HDI will also increase. This happens because people who have high incomes need to improve their quality of life that are also getting higher and more fulfilled.

**Conceptual Framework**

Conceptual framework of this research is describes in Figure 2 below:

![Conceptual Framework](https://source-img.com/processed-by-author.png)

**Figure 2. Conceptual Framework**

Source: Processed by the author, 2021.

**RESEARCH METHOD**

**Types of Research**

This research is a quantitative study investigating the effects of poverty, GRDP and minimum wages on the human development index. Quantitative research is a systematic study of parts and phenomena and their relationships. (Hardani et al., 2020).

**The Scope of Research**

This study covers 35 districts/cities in the Central Java province. As for the period of observation in this study, namely from 2010 to
From the data collection results based on the number of areas (cross-section) and observation time (time series), 350 data were obtained, which were types of panel data.

**Data Collection Technique**

As mentioned in the scope of the research, the data used are panel data. According to Ghozali & Ratmono (2017), panel data is an amalgamation of cross-section data and time-series data. The data collection technique is done by using a documentation study. According to Rukajat (2018), a Documentation study collects data by collecting various documents, archives, and important notes as material to be tested and then interpreted, even for forecasting. The data for this study are compiled from the Central Java Provincial Statistics Agency (BPS) official website and relevant literatures.

**Data Analysis Technique**

The data analysis technique used is panel data regression. In addition to being used to see the influence of different entities from a specified period, panel data analysis also has more model selection (more than one). According to Widarjono (2018), there are three approaches in estimating the panel data regression model: the common effect model, the fixed-effect model, and the random effect model. Furthermore, Widarjono (2018) also reveals to get the best model for estimating the panel data regression model by using the Chow test, the Hausman test and the Lagrange multiplier test, with the following equation:

\[ Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 \ln X_{2it} + \beta_3 \ln X_{3it} + e_{it} \]

*Note:*
- \( Y \) = HDI
- \( \beta_0 \) = Constant
- \( \beta_1, \beta_2, \beta_3 \) = Coefficient
- \( X_1 \) = Poverty
- \( X_2 \) = GRDP
- \( X_3 \) = Minimum Wages
- \( e \) = Error Term

**RESULT AND DISCUSSION**

**Model Selection**

In estimating the panel data regression model, it uses three approaches: the common effect model, the fixed-effect model, and the random effect model. Next, the question arises of which estimation model should be used. As stated by Widarjono (2018), determining the best model is done by going through several testing stages as follows:

1. **Chow Test**

   **Table 1. The Result of The Chow Test**

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>598,63120</td>
<td>34</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>1467,626649</td>
<td>34</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

   Source: Secondary data processed, 2021.

   The technique of selecting a model between the common effect model and the fixed effect model is by using the chow test (Ghozali & Ratmono, 2017). Based on the chow test results (Table 1), it is obtained a Prob of 0.0000 <0.05. Because the probability value is less than 0.05, which means it is significant, the selected model is a fixed-effects model. Since the fixed effects model has been chosen, the next test is the Hausman test, and there is no need to test the multiplier language.

2. **Hausman Test**

   **Table 2. The Result of the Hausman Test**

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>14,61743</td>
<td>3</td>
<td>0.0022</td>
</tr>
</tbody>
</table>

   Source: Secondary data processed, 2021.

   The model chosen based on the chow test is a fixed-effect model. Thus, it is necessary to do the Hausman test to determine the best estimation model, which is then used to interpret the panel data regression model. The Hausman test selects the best model between the fixed effect model...
and the random effect model (Bawono & Shina, 2018).

The test results (Table 2) found that the Prob value was 0.0022 < 0.05. Because the value is less than 0.05, which means it is significant, the model chosen is the fixed effect model. Therefore, the panel data regression model estimation used in this study is the fixed effect model. The use of fixed-effect models is appropriate to determine changes in each variable's data behaviour so that the data is more dynamic in interpreting data (Yuliani & Saragih, 2014).

Estimation Results

The best model selection has been done before concluding that the fixed effect model is the right panel data regression model for this study. The following are the estimation results:

Table 3. The Estimation Results of The Selected Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-2.636243</td>
<td>3.482507</td>
<td>-0.756996</td>
<td>0.4496</td>
</tr>
<tr>
<td>Poverty</td>
<td>-0.132651</td>
<td>0.030653</td>
<td>-4.327459</td>
<td>0.0000</td>
</tr>
<tr>
<td>LnGRDP</td>
<td>0.376868</td>
<td>0.170552</td>
<td>2.209699</td>
<td>0.0279</td>
</tr>
<tr>
<td>LnMW</td>
<td>4.854635</td>
<td>0.171370</td>
<td>28.32841</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.992766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>1157,300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob F-Statistic</td>
<td>0.00000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Based on the model estimation in Table 3, the regression equation can be written as follows:

$$\text{HDI}_{it} = -2.636243 - 0.132651\text{Poverty}_{it} + 0.376868\text{LnGRDP}_{it} + 4.854635\text{LnMW}_{it} + e_{it}$$

The interpretation of this equation is a constant value of -2.636243, which means that if the poverty, GRDP and minimum wages variables are considered constant (do not change), then the human development index is -2.636243 with the other fixed assumptions.

Next, the regression coefficient value for the poverty variable is -0.132651. The negative sign of the coefficient indicates an inverse relationship between poverty and the human development index. This means that if poverty has increased by 1 per cent, the human development index will experience a decline of 0.132651.

Furthermore, the value of the regression coefficient for the GRDP variable is 0.376868. The positive sign of the coefficient indicates a unidirectional relationship between GRDP and the human development index. This means that if the GRDP increases by 1 per cent, the human development index will also increase by 0.376868.

Then, for the minimum wages' variable, regression coefficient value is 4.854635. The coefficient's positive sign indicates a direct relationship between the minimum wage and the human development index. If the minimum wages increase by 1 per cent, the human development index will increase by 4.854635.

The Coefficient of Determination

Referring to Table 3, the R-Squared is 0.992766 or 99.28 per cent. It demonstrates that the regression model is very well-formed, or the three independent variables' variation can influence the dependent variable by 99.28 per cent. In contrast, the rest of 0.0072 or 0.72 per cent is influenced by variables outside the model.

Poverty, GRDP, and Minimum Wages on The Human Development Index

The simultaneous effect is intended to identify the three independent variables' combined effect (poverty, GRDP and minimum wages) on the dependent variable (human development index). As the estimation results have been made in Table 3, the F test's probability value is 0.000000 < 0.05. Since the F test Prob value is smaller than 0.05, together, the three independent variables
significantly affect the human development index in Central Java Province.

The Effect of Poverty on Human Development Index

From Table 3, it is written that the poverty coefficient is \(-0.132651\) with a probability of \(0.0000 < 0.05\). This means that individual poverty has a negative and significant effect on the human development index in Central Java Province. The negative relationship that occurs means an increase in the number of poverties by one per cent, and then there is a significant decrease in the human development index by \(0.132651\) per cent.

In the vicious circle of poverty theory, it explains that someone who lives in poverty tends to have low productivity, which then results in minimal income earned, so they have no savings or investment and they will always live in a socio-economic condition that is backward (Rohima et al., 2013). Furthermore, poverty also has a crucial impact on human development because poverty is a complex problem that starts from people’s low purchasing power to meet their basic needs. Other needs such as education and health are not a priority. (Umiyati et al., 2017).

Poverty in a country or region cannot be eliminated, but the government can reduce it through various policy and regulatory programs pro-poor. So that poverty alleviation programs must be implemented quickly, precisely and optimally. Because the poverty level can be handled properly, the people’s lives will be more prosperous so that their human resources will also increase.

As in this study, poverty affects the human development index in line with the new growth theory, which emphasizes the importance of government involvement in efforts to increase HDI through accelerating human productivity. (Dewi, 2017). One way to accelerate productivity can be done by investing in education to increase one's knowledge and skills. Companies that have workers with a high level of productivity will get bigger profits, which in turn impact to the increasing of the salaries for their workers.

The results of this study are in line with Chalid & Yusuf (2014), Adelfina & Jember (2016) and Tarumingkeng et al. (2018), which in his research proves that poverty has a negative and significant effect on the human development index. However, these results against the findings of Makbul & Noor (2019) and Larasati et al. (2020), which reveals that poverty does not significantly affect the human development index.

The Effect of GRDP on Human Development Index

Based on Table 3, it is obtained that the GRDP coefficient is \(0.376868\) with a probability of \(0.0279 < 0.05\). This means that there is a positive and significant relationship between GRDP and the human development index. The positive relationship that occurs indicates that every time there is an increase in GRDP, the human development index will also increase by \(0.376868\) per cent.

Increasing the GRDP of an area can affect the community’s welfare by increasing the income it earns. When there is an increase in income or GRDP per capita, then the public expenditure on improving the quality of human resources is also greater so that it impacts human development. (Putranto, 2020). Therefore, we can say that if the economic growth of a region continues to increase, the human development index in that area will also increase.

GRDP as an indicator of economic growth can affect people’s welfare through increased productivity and increased income from the creation of job opportunities (Si’lang et al., 2019). When viewed from this study’s results, GRDP is the second dominant variable that influences the human development
index. The results can illustrate that to increase the human development index, and the government must continue to encourage regional economic growth.

These results are in line with Muliza et al. (2017) and Diba et al. (2018), which in his research argues that GRDP has a positive and significant effect on the human development index. However, this study’s results in contrast to Purnomo (2018), concluding that GRDP does not affect the human development index.

The Effect of Minimum Wages on Human Development Index

Based on Table 3, the minimum wage coefficient is 4.854635 with a probability of 0.0000 <0.05. It means that the minimum wage with the human development index has a positive and significant effect. The positive relationship between the minimum wage and the human development index means that every time there is an increase in wages, it will significantly impact the increase in the human development index by 4.854635 per cent.

As in the theory of wage funds, it is hoped that wage payments can meet workers and their families needs. When wages increase, society’s purchasing power also increases so that their daily needs can be fulfilled both for daily life and other basic needs (Cahyanti & Fevriera, 2020). However, should be remembered that a wage increase that is too high can hurt the investment climate even to termination of employment (PHK), so that the government is always expected to be an actor who can set a reasonable minimum wage, the most important thing is that the welfare of the community can be guaranteed from the provision of this wage.

In Central Java province itself, the development of minimum wages from 2010 to 2019 has a positive trend. This condition must continue to be stable to increase workers' consumption to increase the aggregate economy. A positive trend in the development of minimum wages can then impact the increase in the human development index.

These results are in line with Zainuddin (2015) and Sari & Yusniar (2019). They obtain the result that the minimum wage has a positive and significant effect on the human development index. However, according to Isnawati (2018), the minimum wage does not increase the human development index.

CONCLUSIONS AND SUGGESTIONS

Conclusion

After testing, several conclusions can be drawn, namely the results of the model selection test. The fixed-effect model is the best estimation model that can be used in this study. Then, poverty, GRDP, and minimum wages are collectively identified as having a very significant influence on the human development index in Central Java Province.

As for effect individually, poverty was identified as negatively and significantly affecting the human development index. Meanwhile, GDP and minimum wages have a positive and significant effect on the human development index.

Besides, this research also provides practical implications. It is recommended for local governments to maximize investment in education to build human resources that have a broad level of knowledge and have qualified skills.

Suggestions

This study provides some suggestions for the government to continue to strive in formulating poverty alleviation strategies to provide a prosperous life for its people. Because if poverty is not resolved quickly, then the impact will affect human development, which continues to decline. To increase people's purchasing power, the government must also continue to focus on increasing
regional economic growth. Apart from that, it must also pay the determination of the minimum wages attention so that people could easily fulfil their basic needs such as education and health as indicators of human development. For academics who wish to conduct further study on the human development index in Central Java, it is suggested to apply a longer period and other analytical techniques to obtain more comprehensive information.

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