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# The Effect of Economic Growth on The Human Development Index in Indonesia

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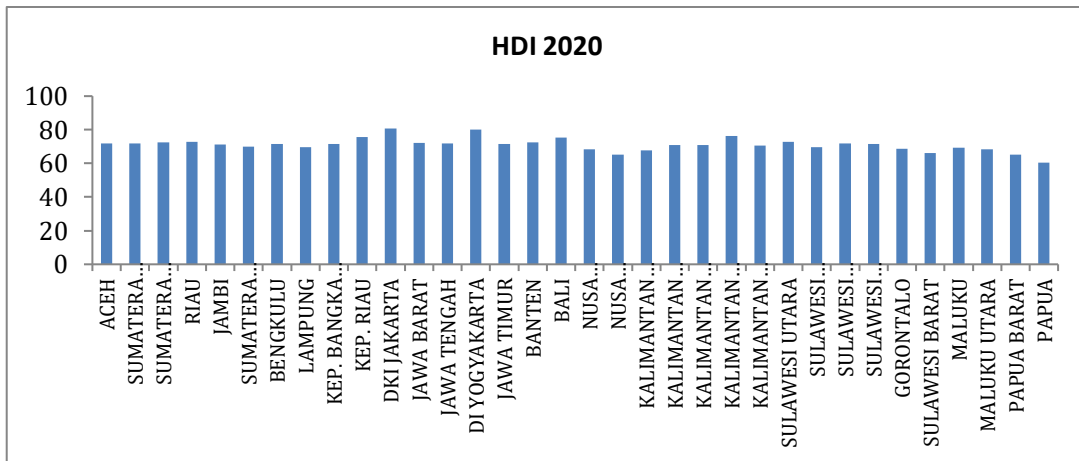
**Abstract:** This study aims to test and analyze the effect of economic growth on the Human Development Index in 34 provinces in Indonesia. This research uses quantitative data methods. The independent variable used in this study is economic growth with control variables, namely poverty and population. The dependent variable used is the Human Development Index. The data type used is panel data, a combination of time series and cross-section. Time series data was obtained from 2015-2020, and cross-section data was obtained from 34 provinces in Indonesia. The data used is secondary data sourced from the Central Statistics Agency (BPS) report, especially from 2015 to 2020. Hypothesis testing in this study uses multiple linear regression with the Chow test, Hausman test, t-test, f-test, and coefficient of determination test. The results show that economic growth had no significant effect on the Human Development Index in Indonesia in 2015-2020, Ceteris Paribus. The control variables of poverty and population influence the Human Development Index. The poverty control variable has a significant negative effect, and the population control variable has a significant positive impact. This study contributes new empirical evidence to fill gaps and address inconsistencies in the existing literature on the relationship between economic growth and human development.

**Keywords:** Economic growth; Human Development Index**JEL Classification:** I32; O15; O49

## Introduction

Development is a tool used to achieve the nation's goals. Economic development is a societal change for the better (Sukarniati, 2005). Meanwhile, economic growth is one of the indicators used to assess the successful development of a country. The higher economic growth reflects better development and a better economy in the country's region (Nasir et al., 2021). In implementing development, high economic growth is the main target for developing countries. This is because economic growth is closely related to the increase in goods and services produced in society, so that with more goods and services produced, the welfare of the community will increase. The current development paradigm is economic growth measured by human development as seen by the level of human quality of life in each country. The ability of a human being to perform productivity is very influential on human development because the individual is the most effective agent of growth for achieving development (Septiana, 2015). One of the benchmarks used in looking at the quality of human life is the Human Development Index (HDI) which is measured through the quality of education, health and economy (purchasing power).

Through the improvement of these three indicators, there is expected to be an increase in the quality of human life.



**Figure 1** Human Development Index 2020  
Source: Central Bureau of Statistics (2020)

Based on Figure 1, it can be seen that the value of HDI achievements throughout Indonesia is evidenced by the value of HDI achievements that vary greatly. Generally, Western Indonesia (KBI) provinces have higher HDI values than Eastern Indonesia (KTI) provinces. It is evident that in KBI, there are eight provinces with HDI values above the national average, while in KTI there are only three provinces with HDI values above the national average. The province with the first rank HDI with the highest value is DKI Jakarta Province at 80.77 and the province with the lowest HDI is Papua at 60.44. This shows that human development is prioritized in DKI Jakarta, while Papua Province is left behind. The quality of human resources in a region is influenced by various factors, such as economic growth related to the ability to produce goods and services, the number of people between areas, and the poverty rate measured by the number of poor people in a region (Chaironi & Aji Prakoso, 2022; Wibowo, 2019).

The effect of the COVID-19 pandemic on human development in Indonesia. The Human Development Index (HDI) grew in 2020 compared to previous years. Indonesia's HDI in 2020 was 71.94 or grew 0.03 percent (an increase of 0.02 points) compared to the previous year's achievements. The slowdown in HDI growth in 2020 was strongly influenced by the decline in the average adjusted per capita contest. This indicator fell from 11.30 million rupiah in 2019 to 11.01 million in 2020.

As the executor of development, the government certainly needs quality human capital as the essential capital for development. To produce quality human capital, efforts are required to improve the quality of human resources. Economic activities can run well if the resources are good (Aziziah & Ekawaty, 2023). As explained above, human quality can be measured through the Human Development Index.

Several studies have been conducted, and according to Heriasman (2020), economic growth has no effect on HDI either partially or simultaneously. According to Fatimah (2018), economic growth has no significant impact on the Human Development Index. Another opinion, according to Zakaria (2018), is that economic growth has a positive and insignificant effect on HDI. However, research conducted by Putri et al. (2022) found different results, where economic growth has a significant positive impact on HDI.

The United Nations Development Programme (UNDP) defines human development as expanding people's choices. The most critical decisions are to live a long and healthy life, receive adequate education, and enjoy a decent standard of living (Hakim, 2002). UNDP developed an alternative measure of welfare using the Human Development Index (HDI), a compositional index based on three indicators: health, education, and living standards (Arsyad, 2010).

In addition to economic growth, this study uses other control variables obtained based on previous studies. Poverty is considered one of the main factors causing the low Human Development Index value. Therefore, poverty is the control variable in this study. Poverty is a complex problem Indonesia faces (Lubis & Wahyuni, 2023). Although economic growth is increasing, the poverty rate in Indonesia is still very high (Suripto & Istanti, 2009). Poverty occurs when each person's monthly expenditures cannot meet the minimum living needs (Wibowo & Khoirudin, 2019). According to Pudjiyanto & Syawie (2015), poverty is a formidable obstacle to human development. It leads to a decline in the quality of life, thereby lowering the overall dimensions of HDI, namely education, health, and purchasing power. This underscores the urgent need to address poverty to improve human development. Efforts to alleviate poverty can be made by improving human resources as investment capital to increase the income of the poor (Suripto et al., 2020). Countries with high poverty levels typically show low human development values, reducing the average scores of development indicators (Fosu, 2007). This is under research conducted by Rumahorbo (2014), who in his study stated that human development in Indonesia is synonymous with poverty reduction, and according to Mirza (2011) in his research stated that poverty has a negative and significant effect at the 5% level, which means that as poverty decreases, the Human Development Index increases. Meanwhile, Firdaus's (2023) research shows that poverty does not directly impact the Human Development Index (HDI). Living in poverty inhibits a person's ability to develop their resources.

Furthermore, another control variable is population. The problem of growth is not just a matter of numbers. Still, population issues also hold the potential for development and human welfare. Indonesia is the fourth most populous country in the world (Wibowo & Khoirudin, 2019). According to Todaro (2000), population can be a significant development driver. A larger population can be a potential market, a source of demand for various goods and services, stimulating multiple economic activities. This can create economies of scale in production, benefiting all parties, lowering production costs, and creating a supply or labor supply source in sufficient quantities to improve the community's welfare, thereby reducing poverty (Kumalasari, 2011). This highlights the positive role that the population can play in human development, instilling optimism in

our audience. Research conducted by Zakaria (2018) shows that population has a significant positive impact on HDI. However, research by Wibowo (2019) is not in line with this, where the results show that population has a negative effect on HDI.

Previous literature reveals inconsistent findings regarding the variables studied. This inconsistency underscores the urgency of this research, which aims to address the conclusions of prior studies by providing new empirical evidence to fill the gaps in the existing literature. Based on the problems described, this study aims to analyze this phenomenon, namely analyzing the effect of economic growth on the Human Development Index in 34 provinces in Indonesia. In addition, the gap in research from the results of previous studies underlies the interest of researchers in further examining the effect of economic growth on the Human Development Index in Indonesia in 2015-2020.

## Research Method

This research uses quantitative data methods. The data used in this study are secondary data sourced from the Central Statistics Agency (BPS) report, especially data from 2015 to 2020. The independent variable used in this study is economic growth, with the control variables being poverty and population. The dependent variable used is the Human Development Index. The data type used is panel data, a combination of time series and cross-section. Time series data was obtained from 2015-2020, and cross-section data was obtained from 34 provinces in Indonesia. Data was processed using Stata-14 software.

### Definition of Operational Variables

Human Development Index using the Human Development Index indicator in the Central Statistics Agency (BPS) 2015-2020. Economic growth using the GRDP indicator at constant prices according to expenditure in the Central Statistics Agency (BPS) 2015-2020 with units of percent. Poverty uses the indicator of the Percentage of Poor People by District / City in the Central Statistics Agency (BPS) in 2015-2020 with units of percent. Population using the indicator of Total Population by Regency / City in the Central Statistics Agency (BPS) 2015-2020 with units of souls.

### Panel Data Regression Analysis

This study uses the panel data regression method, which combines two types of data, namely cross-section and time series data. In this study, the regression equation formed is as follows:

$$\text{LogHDI}_{it} = \beta_0 + \beta_1 \text{GRWT}_{it} + \beta_2 \text{LogPDD}_{it} + \beta_3 \text{KMS}_{it} + e_t$$

Description:

LogHDI = Human Development Index (percent)

LogPDD = Total population (percent)

KMS = Poverty rate (percent)

GRWT = Economic growth rate (percent)

i = Observation (34 Indonesian provinces)

- t = Amount of time (period 2015-2020)
- $\beta_2, \beta_3$  = Regression coefficient
- $e_t$  = Confounding error (Error term)

Three approaches are used in analyzing panel data: common effect, fixed effect, and random effect. Furthermore, one of the estimation models will be selected between the three approaches by comparing the Chow, Hausman, and LM tests.

## Result and Discussion

### Descriptive Statistic Analysis

Table 1 displays the descriptive statistical results for the following variables: human development index, total population, poverty rate, and economic growth.

**Table 1** Descriptive Statistic Results

	N	Max	Min	Mean	Std Dev
Log_HDI	204	4.391	4.047	4.246	0.058
Economic Growth (YoY)	204	21.76	-15.75	4.229	3.822
Poverty	204	28.54	3.47	11.061	4.847
Log_Population	204	10.811	6.468	8.361	1.026

Table 1 shows the minimum value of the Human Development Index (HDI) variable, which is 4.04% units, the maximum value is 4.39%, and the average value is 4.24%. The economic growth variable shows a minimum value of -15.7%, a maximum value of 21.7%, and an average of 4.2%. The data also shows the minimum value of the poverty variable is 3.47%, the maximum value is 28.54%, and the average value is 11.06%. The population variable's minimum value is 6.46%, the maximum is 10.11%, and the average is 8.36%.

### Chow Test

The Chow test selects the best model to be estimated: the common and fixed effect models. Here is the hypothesis:

H<sub>0</sub>: Choosing to use the Common effect is better

H<sub>1</sub>: Choosing to use Fixed effect is better

**Table 2** Result of the Chow test

Effect Test	Statistic
P(33, 167)	402,03
Prob > F	0,0000

The Chow test results show the prob value. F value of 0.00000 < (0.05), which means that H<sub>0</sub> is rejected, so it can be said that the fixed effect model is better.

### The Hausman Test

The Hausman test is a test used to determine the best method between a fixed effect and a random effect. Here is the hypothesis:

H<sub>0</sub>: Choose to use a Random effect

H<sub>1</sub>: Choose to use a Fixed effect

**Table 3** Result of the Hausman Test

Effect Test	Statistic
chi2(3)	315,56
Prob > F	0,0000

The Hausman test results show the Prob. Cross-section random is 0.00000 < (0.05), which means H<sub>0</sub> is rejected, so it can be said that the fixed effect model is a better one to use.

### Regression Analysis Results

**Table 4** Fixed Effect Model Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.02061	0.59528	1.71	0.096
YoY	-0.00006	0.00018	-0,34	0.733
Poverty	-0.00605	0.00176	-3.44	0.002
Log_Population	0.39388	0.06918	5.69	0.000
R <sup>2</sup>	0.88732	Prob > F	0.0000	

### Coefficient of Determination (R<sup>2</sup>)

**Table 5** Result of the R<sup>2</sup>

R-square	0.88732958
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Table 5 show the R<sup>2</sup> coefficient value of 0.8873, meaning that the independent economic growth variable and the population variable can explain the dependent variable, the Human Development Index, by 88.73 percent; other variables outside the model explain the remaining 11.27 percent.

### Statistical F Test

**Table 6** Result of the F-Test

Prob>F	0,0000
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Based on the value obtained from the Prob. F (0,00) < (0.05), which means that each independent variable together has a significant effect on the independent variable.

**Statistical T Test**

**Table 7** Result of the t-test

Variable	Coefficient	t-Statistic	Prob.	Desc.
C	1.02061	1.71	0.096	
YoY	-0.00006	-0,34	0.733	No Significant
Poverty	-0.00605	-3.44	0.002	Significant
log_Population	0.39388	5.69	0.000	Significant

Based on the results of the panel regression analysis that has been carried out, it is known that the probability t statistic for the economic growth variable is -0.34. The probability value of 0.733 is greater than the significant level = 5%, which means that the economic growth variable has no significant effect on the Human Development Index in Indonesia, *ceteris paribus*. Meanwhile, the coefficient value is -0.0000627, which is a negative direction, which means rejecting the hypothesis that economic growth positively affects the Human Development Index. On the other hand, the control variables and population have a probability value of less than 0.05, which means that poverty and population have a significant effect on the Human Development Index.

**Classic Assumption Test**

**Multicollinearity Test**

**Table 8** Result of the Multicollinearity Test

Variable	VIF	1/VIF	Desc.
YoY	2.19	0,457173	There is no multicollinearity
Poverty	4.16	0.240346	There is no multicollinearity
Log_Population	4.89	0.204296	There is no multicollinearity
Total VIF	3.75		

Table 8 shows that the independent variables have VIF values < 10 and tolerance values > 0.10. This means that the regression model is free from high correlation between independent variables, so it can be concluded that the data in the model used in this study are free from multicollinearity.

**Heteroscedasticity Test**

**Table 9** Result of the Heteroscedasticity Test

Log_HDI	Standard error before robust	Standard error after robust
C	0.1925495	0,5952844
YoY	0,0001177	0,0001824
Poverty	0,0007201	0,0017632
Log_Population	0,0223706	0,0691827

This study uses Robust Standard Error to reduce bias (Utama & Rezki, 2021). If the standard error value before being robust and the standard error value after being robust changes, the data is BLUE and free from symptoms of heteroscedasticity. Based on the

Table 9, the results of robust testing show that the standard error after robustness has changed, so the independent variable does not experience heteroscedasticity.

Economic growth with a value of  $0.733 > 5\%$  indicates that economic growth has no significant effect with a negative regression coefficient value of  $(-0.0000627)$ , contrary to the hypothesis that economic growth positively influences the Human Development Index. This rejects the theory by Ramirez et al. in the BPS IPM catalog of Banten province (2010) that economic growth affects human development in households. Local governments must increase the level of GRDP through performance in supporting economic activities that imply it to the needs and carry out the function of prosperity for the community against economic growth in the region and based on the results of previous studies such as research according to Zakaria (2018), economic growth has a positive effect. This study has similar results to the research conducted by Mustafa et al. (2017) and Fatimah (2018), which state that economic growth has no significant effect on the Human Development Index. According to Fatimah (2018), economic growth does not affect HDI because it fluctuates, so the economic growth rate has not increased the Human Development Index. Remarkably, in 2020, the rate of economic growth that occurred due to the COVID-19 pandemic hit all Indonesians and impacted all of Indonesia. The decline in the rate of economic growth due to COVID-19 also impacts why economic growth is not significant to the Human Development Index, rejects the hypothesis, and shows the results of research conducted with several previous studies.

Poverty with a value of  $0.002 < 5\%$  indicates that poverty has a significant effect with a negative regression coefficient value of  $(-0.00605)$ . This follows research conducted by Fidella (2021), which shows that poverty and human development share a bidirectional relationship. One key aspect of this relationship is economic development, which aims to enhance community welfare. The level of community welfare is often measured by the number of people living in poverty. Therefore, successful economic development that improves community welfare will reduce the number of individuals living in poverty. People's low purchasing power makes them unable to fulfill basic needs such as clothing, food, and shelter. As a result, other essential needs, such as health and education, are neglected, negatively impacting the Human Development Index (HDI) value (Putri et al., 2022). Poverty causes disparities in human development, which causes the government to fail to effectively achieve the Human Development Index (HDI) goals. This is under the poverty circle theory, which states that without balanced development, the HDI will not develop properly (Yulfitasari & Bawono, 2021).

Population with a  $0.000 < 5\%$  value indicates that population has a significant effect with a positive regression coefficient value of  $(0.39388)$ . This is per research conducted by (2019), which shows that the population in an area will have a positive impact or potential in developing the economy. The population is an asset that encourages economic development and promotes technological and institutional innovation. Research by Zakaria (2018) shows that the company will need labor to produce an output in the production process. When the company wants to increase its production output, it will increase the labor required, which will require a lot of labor. Thus, population growth will improve the quality of human resources if the government can adequately realize it.



## Conclusion

This study aims to analyze the effect of economic growth on the Human Development Index (HDI) across 34 provinces in Indonesia, addressing the inconsistent findings in previous literature. The research employs quantitative methods, using economic growth as the independent variable, poverty and population as control variables, and HDI as the dependent variable. Panel data, combining time series and cross-section data from 2015-2020. The results indicate that economic growth did not significantly affect the Human Development Index in Indonesia during 2015-2020, *ceteris paribus*. However, poverty and population control variables significantly influenced HDI. Poverty had a significant negative effect, while population had a significant positive impact.

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