



The Impact of Economic Growth on the Human Development Index in Jambi Province in 2004-2019

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

The Human Development Index (HDI) is an index used to measure the achievement of human development in the aspects of health, education and income expenditure. The research is based on the trend of fluctuations in the HDI of Jambi Province in 2004-2019. This study aims to determine the impact of economic growth on the human development index in Jambi Province in 2004-2019 using the Error Correction Model (ECM) method. This type of research is quantitative research using the error correction model (ECM) method to correct imbalances. The results showed that economic growth (GRDP) had a positive and significant effect on the human development index both in the long and short term. The coefficient of ECTt variable in the ECM model is 0.380157 or 0.4 which indicates that short-term equilibrium fluctuations will be corrected towards long-term equilibrium, where about 40% of the adjustment process occurs in the first year and 60% occurs in the following year. Based on the results of this study, local governments are expected to pay more attention to improving areas that experience inequality in human development through increasing public awareness in order to increase productivity and to reduce inequality between districts in Jambi Province and achieve the expected community welfare.

Keywords: Economic growth; against human development index; error correction method.

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1. INTRODUCTION

In economic development, human existence is seen as both the subject and the object of development. As objects, humans are the target of development itself, namely the realization of quality community life. The results of development encourage capacity building of human resources as development actors. Thus the success of the development of a country/region is largely determined by the level of human development Brata [1] in his research strengthens the dependence relationship between these two dimensions, where the quality of human development will realize quality economic development and vice versa the quality of government performance will realize quality human development. Increased economic growth is an opportunity for a high increase in human development and conversely, an increase in human development allows an increase in economic growth [2]. Thus, an analysis of human development will provide an overview of government performance and community participation in development.

Human development is an effort to improve the quality of life of people in a country or region. Through human development, people get the opportunity to get a decent life so as to optimally increase their capacity to participate in development [3]. Maqin and Sidharta [4] in their literature review explain that people's choices can be increased through population empowerment, namely improving basic human skills that will increase the level of knowledge, health and participation in economic, political, social and cultural activities. According to Dina [5], community capacity is not only determined by the level of knowledge and skills but is also determined by the level of wealth, attributes, and characteristics so that they can participate in economic activities. This concept was first used by UNDP (United Nations Development Program) in 1990 as a measure of the success of human development in an index number or known as the Human Development Index (HDI). Apart from being a measure of people's quality of life, HDI is also used to understand the existence and functioning of human development in a country/region [6]. Human capital is one of the important factors in the process of economic growth [7]. With the existence of quality human resources, economic conditions can improve. The level of economic growth of a country is not only determined by economic factors (SDA,

capital, science and technology, organization, priority scale and division of labour), it is also influenced by non-economic factors (social conditions, human resources, politics and administration) [8].

Todaro and Smith [9] state that HDI is an index that measures the achievement of a country's socio-economic development, which combines achievement in the fields of education, health, and adjusted real income per capita. According to BPS [3], the HDI measures human development achievements based on a number of basic components of quality of life. As a measure of the quality of life, HDI is built through a basic three-dimensional approach. These dimensions include 1) a long and healthy life, 2) knowledge; and 3) a decent standard of living. It can be stated that HDI is an index used to measure the achievement of human development in the aspects of health, education and income expenditure. Arsyad [10] measures HDI based on life expectancy at birth, the average length of schooling and expected length of schooling, and real income per capita.

Sukirno [11] defines economic growth as the development of activities in the economy that causes goods and services produced in society to increase. While Putong [12] defines economic growth as a significant increase in national income (with an increase in per capita income) in a certain calculation period. The development of Gross Regional Domestic Product (GRDP) describes the growth of output per capita and the improvement of the quality of life of the people of an area [13]. According to Kurniawan & Sri [14], the occurrence of economic growth is driven by the level of production and allocative efficiency as well as increased inputs and productivity.

Jambi Province is one of the regions with very low economic growth rates in Indonesia. Of the 34 provinces, Jambi Province's economic growth is at number 27. Although it increased from 2007 to 2014, in the last five years from 2015 to 2019 it decreased to the level of 4.4 percent [15]. Economic growth describes the movement of the economy of a country/region from various community activities in meeting their needs. The results of research conducted by Shome and Tondon [16], explain that increasing income will encourage increased spending on education, health and poverty reduction, thereby increasing community productivity which in turn increases economic growth. However, the results of

research conducted by Ezkirianto and Findi [17] reveal that not always a high level of economic growth is followed by a high HDI. In various regions in Indonesia, the level of economic growth and HDI have different significances. For example, the provinces of Papua and West Papua have high GRDP but very low HDI levels. This is different from the case in Jambi Province which showed a negative trend of economic growth but experienced a significant increase in HDI from 2015 to 2019 [15]. This condition demands more comprehensive research with different models in order to reveal more specific facts.

The results of research by Lugastoro and Ananda [18] reveal that economic growth and human development (HDI) have a reciprocal relationship that can be strengthened by government intervention. When the relationship between economic growth and HDI is strong, they will support each other. However, when the relationship is weak, it will interfere and harm each other. Therefore, efforts to increase economic growth need to be balanced with an increase in HDI, this is intended to achieve national development goals.

The Human Development Index was introduced by UNDP in 1990 and the calculation method was revised in 2010. The Central Bureau of Statistics adopted a new change in the HDI calculation methodology in 2014 and carried out back casting since 2010. The change in a method caused gaps in HDI data in the transition year. To avoid errors in the analysis, changes in the HDI measurement method are taken into account dummy variables.

This study uses the Error Correction Model (ECM) analysis method to determine the effect of economic growth on the human development index in Jambi Province. The ECM model can be used if a long-term relationship or balance is found between the dependent variable and the independent variable. In the short term, there is a possibility of an imbalance. Economic behavior is often found in conditions of imbalance. This indicates that what is expected by economic actors is not the same as what actually happened. Under these conditions, an adjustment is required. The ECM method is a model that includes adjustments to correct an imbalance. The ECM method serves to overcome the problem of non-stationary time series data and pseudo-regression [19]. Analysis

of the impact of economic growth on the human development index in Jambi Province in the 2004-2019 period by taking into account the difference in calculation methods as a dummy variable using the ECM model is a novelty in this study. The purpose of this study was to determine the effect of economic growth on the human development index in Jambi Province in 2004-2019 by using the error correction model (ECM) method.

2. MATERIALS AND METHODS

This research was conducted in Jambi Province, by observing economic growth and human development index. The objects studied are GRDP data as a benchmark for economic growth and human development index data in Jambi Province from 2004 to 2019. The selection of 2004 as the beginning of the year observed in this study was due to the availability of complete data at BPS. This study uses secondary data in the form of time series data on Gross Regional Domestic Product (GRDP) as a benchmark for economic growth and Jambi Province Human Development Index (HDI) data from 2004 to 2019 obtained from the Central Statistics Agency using documentation techniques to collect the data.

This study uses the Error Correction Model (ECM) method. The use of ECM is carried out to overcome the non-stationary research data and to overcome spurious regression [19]. In processing the data in this study, the Eviews 9 application was used [20]. The ECM equations in this study are.

$$\Delta HDI = \alpha_0 + \alpha_1 \Delta GRDP_t + \alpha_2 ECT + \beta_1 D_t + e_t$$

Where:

HDI = Human Development Index difference

0 = constant

1, 2 = coefficient

GRDP = GRDP difference

ECT = error correction term

D = dummy variable (1=new HDI calculation method, 0=old model)

e = error term

To find out the stationary of the data, a unit root test was carried out using the Phillip-Peron test (PP Test) as developed by Juanda & Junaidi [19], as follows:

$$\Delta HDI_t = \alpha_0 HDI_t + \alpha_1 T + \delta_1 HDI_{t-1} + \sum \Delta HDI_{t-1} + e_t$$

$$\Delta GRDP_t = \alpha_0 GRDP_t + \alpha_1 T + \delta_1 GRDP_{t-1} + \sum \Delta GRDP_{t-1} + e_t$$

The hypotheses used are:

$H_0 : = 0$ (which means Y_t is not stationary)

$H_1 : < 0$ (which means Y_t is stationary)

The cointegration model in this study is.

$$HDI_t = \alpha_0 + \alpha_1 GRDP_t + \beta_1 D_t + e_t$$

$$e_t = HDI_t - \alpha_0 + \alpha_1 GRDP_t + \beta_1 D$$

e_t is an error term variable, which is a combination of HDI_t and $GRDP_t$ variables. If the value does not have a unit root, then the data is stationary at the level, so that the two variables are cointegrated or there is a long-term relationship. Error term (e_t) is a form of disequilibrium error in ECM [21].

3. RESULTS AND DISCUSSION

To support the use of the ECM model, the first step is to test the stationarity of the data. Stationary test is carried out by unit root test, as shown in Table 1 below:

In Table 1, all variables in this study are not stationary at the level, because the probability value of PP for the GRDP and HDI variables is greater than alpha (5%). Thus, it is necessary to carry out further testing until the data becomes stationary, as shown in Table 2 below:

Table 1. Test for Stationarity Level

Metode	
PP - Fisher Chi-Square	
PP - Choi Z-stat	
Series	Prob.
GRDP	0.842
HDI	0.395

Source: data processed 2020

Table 2. First Difference. Level Stationarity Test

Metode	
PP - Fisher Chi-Square	
PP - Choi Z-stat	
Series	Prob.
D(GRDP)	0.0155
D(HDI)	0.0146

Source: data processed 2020

In table 2, it is known that the results of the unit root test at the first difference level show that the probability value of the GRDP and HDI variables is smaller than alpha (5%), so it can be concluded that the data are all stationary variables at the first difference level.

After knowing the level of data stationarity, the next step is to perform a cointegration test. Cointegration test is carried out to determine the short-term movement together in the long term, as shown in table 3 below:

Based on Table 3, the cointegration test results show the Phillips-Perron probability value of 0.0010, smaller than the alpha value (5%). So it can be said that the data shows a cointegration relationship between variables. Thus, there is a long-term relationship between the GRDP variable and the HDI variable.

Based on the classical assumption test that has been carried out, it can be seen that the data in this study are normally distributed and there is no autocorrelation deviation, and there are no symptoms of heteroscedasticity so that the ECM model can be used to analyze the data, as shown in table 4 below:

Based on the results of the long-term regression in Table, the following long-term equation is obtained:

$$HDI_t = 69.984 + 1.01E-07GRDP_t - 13.689Dummy_t + e_t$$

The value of the coefficient of determination (R^2) of 0.9668 indicates that the proportion of the influence of the economic growth variable on the human development index variable is 96.7% in the long term and 3.3% is influenced by other variables that are not in the model.

Based on table 4, it can be seen that economic growth (GRDP) has a significant effect on the human development index (HDI) in a long-term relationship. This is due to the absolute value of the t-count of economic growth (GDP) which is 14.061 which is greater than the value of the t-table (df = 14, = 5%) which is 1.761. The Dummy variable also shows a significant effect on the 5 percent alpha but has a negative value. This means that the new HDI calculation method produces a smaller HDI value compared to the previous method.

By using the ECM model, the balance, in the long run, will be corrected by changes in the short term, as shown in Table 5 below:

Based on table 5 above, the short-term equation can be written as follows:

$$D(\text{HDI})_t = 0.363 + 4.52\text{E-}08D(\text{GRDP})_t - 10.465D(\text{Dummy})_t - 0.380\text{EC}_t + e_t$$

The value of R^2 (R-squared) is 0.993, which means that the proportion of the influence of the economic growth variable on the human development index variable is 99.3% in the short term and 0.7% is influenced by other variables that are not in the model.

The results of the statistical t-test in Table 5 show a significant short-term relationship between economic growth variables and the human development index, where the probability value is 0.033 where the value is smaller than $\alpha = 5\%$.

Based on the results of data processing using the error correction method (ECM), the results show that in the long term the economic growth variable has a positive and significant effect on the HDI variable, with an economic growth coefficient (GRDP) of 0.000000101. This shows that if GRDP increases by Rp. 1,000,000, the Human Development Index in Jambi Province will increase by 10.1% in the long term. This is in accordance with the results of research conducted by Setiawan and Hakim [22] where the result is GDP affect the Human Development Index in the long term.

Meanwhile, in the short term, the variable of economic growth has a positive and significant effect on the Human Development Index, with a coefficient of economic growth of 0.000000452. This shows that if economic growth increases by Rp. 1,000,000, it will increase the Human Development Index in Jambi Province by 4.52% in the short term. The results of this study are in accordance with the results of research conducted by This is in line with the results of research conducted by Setiawan and Hakim [22] that GDP affects the Human Development Index in the short term.

The results of this study are similar to the results of research conducted by Mirza [7]; Baeti [23]; Bhakti, et al [24]; Retnasari & Cahyono [25] whose research results are that the variable economic growth (GRDP) has a positive and significant influence on the human development index variable. However, the results of this study are different from the results of research conducted by Fatimah [26] which states that economic growth has no significant effect on the Human Development Index. So it can be concluded that economic growth has a direct influence on the human development index in the long term and also in the short term. If economic growth increases, the income per capita of the community will increase so that it can increase the community's ability to meet the needs of life. Then human development also increases. This is in accordance with the opinion of Putong [12] that the increasing economic growth, the income per capita of the community will also increase, thus encouraging the increase in the Human Development Index.

Table 3. Cointegration Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RES (-1)	-0.713529	0.168956	-4.223176	0.0010
C	0.071370	0.066173	1.078537	0.3004

Source: data processed 2020

Table 4. Long-term Regression Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	69.98443	0.198843	351.9585	0.0000
GRDP	1.01E-07	7.16E-09	14.06052	0.0000
DUMMY	-13.68929	0.796049	-17.19653	0.0000
R-squared	0.966778	Mean dependent var		69.56375

Source: data processed 2020

Table 5. Short-term Regression Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.363227	0.099356	3.655834	0.0038
D(GRDP)	4.52E-08	1.85E-08	2.438688	0.0329
D(DUMMY)	-10.46541	1.271454	-8.231063	0.0000
RES (-1)	-0.380157	0.154615	-2.458739	0.0317
R-squared	0.993249	Mean dependent var		0.077333

Source: data processed 2020

The dummy variable in this study was used to determine the difference before and after the change in the HDI method. The estimation results show that the dummy variable in the long term and in the short term is significant. Thus it can be concluded that the change in the HDI method has an effect on the HDI, namely a decrease in the HDI number. Although the change in the HDI method has resulted in a small HDI figure, the new method is better able to describe the condition of human development in the field. The previously used Literacy Rate (AMH) indicator was considered unable to describe the actual conditions, while the Average Years of Schooling (RLS) indicator as a substitute for the AMH indicator were considered more capable of describing the actual conditions in the field. The previously used Literacy Rate (AMH) indicator was considered unable to describe the actual conditions, while the Average Years of Schooling (RLS) indicator as a substitute for the AMH indicator were considered more capable of describing the actual conditions in the field.

4. CONCLUSION

Based on the results of research and discussion in the previous chapter, it can be concluded that Economic Growth (GRDP) has a positive and significant influence on the Human Development Index (HDI) both in the long term and in the short term. The coefficient of ECTt variable in the ECM model is 0.380157 or 0.4 which indicates short-term balance fluctuations will be corrected towards long-term equilibrium, where about 40% of the adjustment process occurs in the first year and 60% occurs in the following year.

Suggestions that can be given in this study are for local governments to increase economic growth and use it to build quality human resources. In the short term, the development priority is to improve the quality of basic services and social protection to the community. In the

long term; improve the quality of education and technology to support productivity. Economic growth directed at improving the quality of human resources will increase community productivity and strengthen regional competitiveness.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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