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## **THE EFFECT OF HUMAN CAPITAL ON REGIONAL ECONOMIC GROWTH IN SULAWESI ISLAND, INDONESIA**

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### **Abstract**

*This empirical study aims to determine the effect of human capital, namely the average length of schooling and life expectancy on regional economic growth on the island of Sulawesi. The type of data used is secondary data in the form of panel data, which consists of time series data for 10 years from 2010-2019 with cross section data for 6 provinces in Sulawesi, while the data source comes from the Central Statistics Agency. The data analysis method is in the form of panel data regression analysis with the Fixed Effect Model which is analyzed using the Eviews 10 Software program. The results showed that (1) Simultaneously, the human capital variables, namely the average length of schooling and life expectancy had a positive and significant impact on economic growth*



*in Sulawesi from 2010 to 2019. (2) Partially, the average length of schooling and life expectancy had positive and significant effect on regional economic growth in Sulawesi from 2010 to 2019.*

*Keywords: Human Capital, Average Old School, Life Expectancy, Economic Growth*

## INTRODUCTION

The ultimate goal of national development is directed in three developments, namely the dimensions of human and community development, dimensions of development of leading sectors, as well as dimensions of equity and territoriality (Bappenas, 2017). The dimension of national development reflects long-term economic development that is expected to be implemented in a sustainable manner, so as to create economic growth through increasing the development of education, technology, and health, increasing economic growth conditions in Sulawesi as seen from the Gross Regional Domestic Product (GRDP) on the basis of constant prices in 2019, economic growth in the provinces of North Sulawesi was 5.66 percent, Central Sulawesi was 7.15 percent, South Sulawesi was 6.92 percent, Southeast Sulawesi was 6.51 percent, Gorontalo was 6.41 percent, and West Sulawesi was 5.66 percent. This shows that there is a difference in the rate of economic growth in provinces in Sulawesi Indonesia.

Human capital is an important factor in determining the productivity of an economy, if productivity reflects wages, then the higher the productivity, the higher the yield of its national economy will grow. Human capital has a central role in economic development, in addition to the presence of physical capital that has an effect on economic development. Human capital tends to have an accumulative and long-term effect compared to physical capital.

The measurement of educational indicators is to use the component of the average length of schooling. The average length of schooling can clearly describe the quality of a person's education, such as elementary school graduates with S1 or S2 graduates will have differences in abilities that affect the level of productivity in 2010-2019 the average length of schooling increases from year to year, but In 2019, the highest and lowest average length of schooling is North Sulawesi Indonesia.

In addition to education, to see the quality of human capital is to use health indicators. The measurement of health indicators is the life expectancy rate which is the average estimate of the number of years that a person can take during life (Mantra, 2000). Life expectancy has increased during the period 2010-2019 but in 2019 there was a gap between provinces, meaning that each province makes a different contribution to the economic of growth.

Based on the description above, it can be understood that, the increasing of human capital through improving the quality of education and health will increase the skills and productivity of labor to produce output, which hopefully can become one of the supporting capitals for economic growth. Based on the data and phenomena of this study intends to examine the effect of human capital on regional economic growth in Indonesia.

## **LITERATURE REVIEW**

### **Harrod Domar's Theory of Growth**

Harrord-Domar's growth theory emphasizes that the determining factor in development is investment. Investment will form capital that will produce output in the economy. Todaro and Smith (2006) (in Saputri,2014) reveal that every economy must essentially reserve or save a certain part of its national income to add or replace capital goods (buildings, tools, and raw materials).

### **Solow-swan Growth Theory**

The Solow growth model is a pillar that greatly contributes to neoclassical growth theory. This model, in essence, is a development of the Harrord-Domar formulation by adding a second factor, namely labor, as well as introducing a third independent variable, namely technology, into the growth equation.

### **Endogenous Growth**

According to Froyen (1996), the main difference between the Solow model and the endogenous growth model lies in their treatment of technological factors. In Solow's model, technological progress is considered as something of an exogenous nature, whereas in the new growth model, technological factors are treated as something endogenous. The production function of the new growth model version, the output level depends on the level of capital stock,  $K$ , and the amount of labor,  $L$ .

### **The concept of human capital**

Todaro (2000) (in Nurkholis, 2018), reveals that human capital can be measured through the fields of education and health. Education and training can be a plus of a human being. This can be explained if the higher a person's education or the more they attend training, the higher the ability and skills possessed. Meanwhile, health is an interrelated field with education.

The relationship between Human Capital and Economic Growth The development of human capital is supported by priority factors, namely the level of education, health and economy of each human being in improving the quality of human resources, Investment to improve the quality of human resources is carried out is very decisive in encouraging the pace of economic growth in real terms, where the impact of human resource investment must be able to exceed the impact of physical investment in increasing the growth rate of human resources which is carried out is very decisive in encouraging the pace of economic growth in real terms, where the impact of human resource investment must be able to exceed the impact of physical investment in increasing the growth rate.

In addition, health can affect economic growth through several ways, such as improving one's health will cause an increase in labor participation, health improvement can also bring improvements in the level of education which then contributes to economic growth, or health improvements causing an increase in the population which will bring the level of labor force participation.

This is in line with endogenous growth theory which explains that growth is the decision of economic actors to invest with human capital, not just physical capital. In addition, the theory of Human Capital states that human capital can be measured through the fields of health, education and economics which can be the main investment to increase human productivity which ultimately supports the increase in economic growth. This role of capital requires investment.

## **RESEARCH METHOD**

This research adopted a descriptive design. The research uses secondary data in the form of panel data, which is a combination of time series data for 10 years from 2010-2019 with a cross section data for 6 provinces on the island of Sulawesi, namely North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo, and West Sulawesi. While the data source comes from the Central Statistics Agency, the data analysis method is in the form of panel data regression analysis with a Fixed Effect Model. Fixed Effect Model is analyzed using the Eviews 10 Software program.

## **ANALYSIS AND RESULTS**

Based on the results of the estimated regression of panel data from fixed effect models for variables from human capital, namely the average length of schooling and life expectancy as independent variables and economic growth as dependent variables. The results of the estimated equations in this study are presented in table 1.

Table 1 : Regression Test Results of The Fixed Effect Model Panel

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-46.93824	8.799684	-5.334083	0.0000
LOG(RLS?)	2.748122	0.332261	8.270987	0.0000
LOG(AHH?)	12.38958	2.227109	5.563079	0.0000
Fixed Effects (Cross)				
_SULUT--C	-0.750470			
_SULTENG--C	0.349125			
_SULSEL--C	1.165435			
_SULTRA--C	-0.368743			
_GORONTALO--C	-0.594394			
_SULBAR--C	0.199048			
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.995867	Mean dependent var	12.45196	
Adjusted R-squared	0.995311	S.D. dependent var	4.549611	
S.E. of regression	0.062116	Sum squared resid	0.200637	
F-statistic	1789.932	Durbin-Watson stat	0.595768	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.995072	Mean dependent var	10.99927	
Sum squared resid	0.205665	Durbin-Watson stat	0.515077	

Based on Table 1 above, a panel data analysis model on human capital can be described as measured through the variables of average length of schooling (RLS), life expectancy (AHH) to economic growth in provinces on the island of Sulawesi so that the results of the regression equation are obtained as follows:

$$\text{LOG } Y_{it} = \beta_0 + \beta_1 \text{LOG } X_{1it} + \beta_2 \text{LOG } X_{2it} + e_{it}$$

$$\text{LOG } Y_{it} = -46.93824 + 2.748122 \text{LOG(RLS)} + 12.38958 \text{LOG(AHH)} + e_{it}$$

Based on the equation above, it can be seen that the value of the regression coefficient of the Average Length of Schooling (RLS) variable is 2.75 which means that every increase in the number of RLS by 1 unit, economic growth will increase by 2.75 percent. The value of the regression coefficient of the Life Expectancy Rate (AHH) variable is 12.39 which means that every increase in the number of AHH by 1 unit, economic growth will increase by 12.39 percent.

In table 1, D1–D6 is the dummy value of the interception of 6 provinces in Sulawesi where by substituting the dummy value into equation (1), the regression equation of the Fixed Effect model panel data for each Province is as follows:

$$\text{LOGSULUT} = - 0.600958 - 46.93824 + 2.748122_{\text{RLS}} + 12.38958_{\text{AHH}}$$

$$\text{LOGSULTENG} = - 0.223028 - 46.93824 + 2.748122_{\text{RLS}} + 12.38958_{\text{AHH}}$$

$$\text{LOGSULSEL} = 1.303785 - 46.93824 + 2.748122_{\text{RLS}} + 12.38958_{\text{AHH}}$$

$$\text{LOGSULTENG} = - 0.223028 - 46.93824 + 2.748122_{\text{RLS}} + 12.38958_{\text{AHH}}$$

$$\text{LOGGORONTALO} = - 0.496068 - 46.93824 + 2.748122_{\text{RLS}} + 12.38958_{\text{AHH}}$$

$$\text{LOGSULBAR} = 0.239296 - 46$$

In this similarity, the value of the provincial dummy coefficient can be seen that there is a difference in the value of the dummy coefficient which means that there are differences in characteristics between each province within the Sulawesi region. In the 6 provincial regression equations, there are 3 dummy coefficients that have a positive value, namely the provinces of Central Sulawesi, South Sulawesi and West Sulawesi. This shows that the 3 provinces have an influence on the high economic growth rate.

### **Coefficient of Determination ( $R^2$ )**

The coefficient of determination ( $R^2$ ) in the selected model, namely the Fixed Effect Model, is 0.9958 or the coefficient value is close to 1, meaning that independent variables can be said to be stronger in providing the information described to predict dependent variables. This shows that 99.58 percent of the dependent variable, namely cross-provincial economic growth in Sulawesi, can be explained by its free variables.

### **Simultaneous Test / Statistical Test F**

Based on the results of the estimation of table 1, it is known that the probability value (Fstatistic) of  $\alpha = 5\%$  or 0.000000 is smaller than 0.05, it can be concluded that human capital, namely the average length of schooling and life expectancy, has a positive and significant effect on regional economic growth on the island of Sulawesi.

### **Partial test/statistical test t**

Based on the results of the estimation of Table 1, showing the results of the t test obtained from the fixed effect model regression, it is known that the coefficient value (t-count) of the average length of school variable is 2.75 with a probability value (T-statistic) obtained is

$0.0000 < \alpha = 5\% (0.05)$  which means that the average length of school length variable has a positive and significant relationship with the dependent variable (economic growth).

The effect of human capital on economic growth  
Based on the results of the processing of panel data regression, an interpretation can be obtained that simultaneously human capital measured by education (average length of school) and health (life expectancy) has a positive and significant effect on economic growth in the 6 provinces in Sulawesi which means that Together with all independent variables affect the dependent variable.

This is in line with the theory of endogenous growth which explains that growth is the decision of economic actors to invest with human capital, not just physical capital. In addition, the theory of human capital states that human capital can be measured through the fields of health, education and economy which can be a major investment to increase human productivity which ultimately supports increased economic growth.

The influence of the average length of school on economic growth  
Based on the results of the estimated panel data regression processing, the t test results show that the average length of school (RLS) variable has a positive coefficient of 2.75 with a probability value (p-value) of 0.0000 smaller than a significant level of 0.05 which means that when the average length of school increases by 1 percent, the regional economic growth on the island of Sulawesi will increase by 2.75.

Education is one indicator in determining the quality of human resources. The average length of schools gives a picture of the level of knowledge of the community in pursuing education which will ultimately increase productivity through the skills possessed by the workforce. The higher the level of education of a person and the longer a person goes to school, it will increase their knowledge and skills so that it will encourage increased productivity.

### **Effect of Life Expectancy on Economic Growth**

Based on the estimation results of panel data regression processing on the t test, it shows that the variable life expectancy (AHH) has a positive coefficient number of 12.39 with a probability value (p-value) of 0.0000 and is smaller than the significant level of 0.05 indicating that when life expectancy increased by 1 percent, then economic growth increased by 12.39 percent.

Stated by Todaro and Smith (2006) in Saputri (2014), that health is the core of welfare and education is the main thing to achieve a satisfying and valuable life. Health is a prerequisite for increasing productivity while the success of education also relies on good health. The dual role as input and output causes health and education to be very important in economic development.

Based on the description above, the results of this study are in line with previous research conducted by Aminuddin (2017), Fauzan (2017) and Maulana (2015) which states that indicators of human capital are education with the average variable of school length and health with variable expectations. Life has a positive contribution to regional economic growth. Human capital is specifically measured by the level of education and health level.

## CONCLUSION

- a. Based on the results of the regression, it can be stated that human capital measured by education has a positive and significant effect on economic growth in the 6 regions of Sulawesi Province, Indonesia.
- b. The results of this study turned out to be in line with previous research conducted by Aminuddin (2017), Fauzan (2017) and Maulana (2015).
- c. The result of this study is that human capital turned out to be a determinant of driving development in the Sulawesi region, so that it should be a priority for government policies to be more focused in formulating policies that are able to be used in order to improve and accelerate human capital accumulation in encouraging economic growth in the Sulawesi region.
- d. The results of this study have contribution of forward study at the related field for encouraging the economic growth in the Sulawesi region, and other regions in Indonesia.

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