WHICH EDUCATIONAL INDICATORS HAVE THE MOST INFLUENCE ON INDONESIA'S ECONOMIC GROWTH?

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ABSTRACT

The efforts to encourage economic growth require development capital such as human resources. Therefore, it becomes important to improve the quality of human resources through education in order to encourage economic growth. This study aims to compare which education indicators provide the greatest influence in explaining Indonesia's economic growth. There are three models used in this study with different education indicators, namely literacy rates, average length of schooling and school participation rates in the period of 2004-2018. The analytical tool used is panel data regression. The results of this study show that literacy rates has the most influence on Indonesia's economic growth compared to average length of schooling and school participation rates.

Keywords: literacy rates, average length of schooling, school participation rates, economic growth in Indonesia.

INTRODUCTION

Economic growth will create investment and employment. Therefore the workforce can be absorbed, poverty and unemployment of the population will also be reduced by high economic growth (Seran, 2017).

Economic growth is a process of changing a country's economic conditions on an ongoing basis towards better conditions for a certain period. An economy is said to experience a change in its development if the level of economic activity is higher than that is achieved in the previous period. The higher economic growth usually signs the higher the welfare of the people. In supporting economic growth, the human resources needed in the world of work should be of high quality. With high quality human capital and who mastering technology, it will produce value added so the economic growth will increase (Kort, M.P 2002: 539).

One effort that can be done so that the quality of human resources upturns is education (Schultz, 1961). Through education, people get the opportunity to properly manage their lives and develop their abilities. The higher the level of education, the wider economic opportunities in striving for progress and improvingthe community life (Djojohadikusumo, 1994). The attention in higher education intensifies over time because people realize the importance of providing better education for the future of their children and for the economy as a whole (Islam, Ghani, Kusuma and Theseira, 2016). Education is seen as the most effective investment in humans, which changes individuals and society, and also contributes to a country's economic system, through its role in ensuring the workforce. (Cintintalan and Badulescu, 2015).

Many previous studies have revealed the relationship between education and economic growth. The researchers used different education indicators in measuring the relationship between education and economic growth. Reza (2013) examined the level of education per worker on Indonesia's economic growth by using panel data regression methods. The results of his research show that there is a positive and significant impact on economic growth in Indonesia. Tasel and Bayarcelik (2013) analyzed the effect of human capital on economic growth as stated by the endogenous growth model. The results of his research indicate a positive relationship between human capital as measured by elementary, secondary and high education levels on economic growth. Thus, an increase in investment in human capital at the level of education can increase economic growth. That is, an increase in investment in human capital at the level of education can increase economic growth. Yeoh and Chu (2012) conducted a study conducted in China in 2012 shows that countries with high literacy rates tend to attract many investors and entrepreneurs. This has a big impact on the country's economy. Therefore, literacy numbers are the key to advancing China. Mariana (2015) in her research finds that the higher education has a positive effect on economic growth. Afzal, Rehman, Farooq and Sarwar (2011) also states that higher education causes high economic growth.

Gumus and Kayhan (2012) state that there is a significant relationship between GDP per capita with school participation rates at the primary level in two directions, one direction at the secondary level and no relationship between GDP per capita and school participation rates at the tertiary level. Sodik and Nuryadin (2011) show the results of research that regional economic growth is influenced by investment and junior high school achievement. However, high school and elementary school achievement do not affect regional economic growth. Kasri (2011) states that physical capital and secondary education, especially the Secondary Education Program, provide the highest contribution to economic growth.

Lim (1996) said that high economic growth in Japan and South Korea is most likely caused by quality human resources, this is evident from the high literacy rate, so that labor is easy to absorb and adapt to technological changes and the economy is happening.

Handayani (2016) shows that the average length of school as an indicator of education directly has a positive and significant effect on economic growth, this means that the higher the average length of school an individual can have a direct effect on economic growth. The next study was carried out by Foldvari (2009) who also used the average length of school to proxies education. This study suggests following the theory of Lucas (1988), where the average length of schooling should be used as a proxy for the portion of resources devoted to the formation of human resources.

Referring to the empirical studies discussed above, it can be seen that education is generally measured by several indicators, namely literacy rates, average length of schooling and school participation rates. The difference in education indicators is why researchers are interested in analyzing more deeply the relationship between education and economic growth by comparing.

As is known this educational indicator has a positive impact on the economy, especially in the long run. The researcher wants to know which of these education indicators are better able to explain economic growth in Indonesia. Because there is no previous research that analyzes by comparing education indicators on economic growth. By finding a comparison value, many things can be explained in detail. One of them is the reason that causes the indicator to have a higher value compared to other indicators in explaining the growth of the economy. By looking at this value, this research is expected to provide insight to the government in making strategic policies for the development and development of education in Indonesia in the long run. Researchers are interested in conducting this research in Indonesia, because currently education and economic growth in Indonesia is experiencing an increase. Education is a hot issue that is being fought for. This research will give a view to the public about the condition of education and economic growth in Indonesia so that people have the awareness to improve their individual education in the long run which has a positive impact on themselves and the country.

LITERATURE REVIEW

Solow believes that economic growth is caused by capital (K) and labor (L).

$$Y = F(K, L)$$

Neoclassical flow from Solow does not take into account changes in technology and labor quality, because both of these are exogenous. On the contrary, endogenous growth states that the factors of production are not only capital and labor but also changes in technology.

Technology can be influenced, therefore technology is endogenous. Starting with a simple production function;

Y = AK

Where Y = output, K = capital stock and A = constant to measure the amount of output produced in each unit of capital.

Adherents of the endogenous growth model say that K in this model would be more useful if it was assumed widely, and there would be a constant return on capital. This is when looking at K as a science, which is an important input on economic production. Technological and scientific innovations continue to increase so that some economists believe there will be an increase in capital returns in the long run.

The endogenous growth model says that if we view science as an important input to production, technological and scientific innovations will continue to increase so that some economists think there will be an increase in capital returns in the long run.

RESEARCH METHOD

This is a quantitative research. The data used in the form of secondary panel data, which is a combination of time series data and cross section. Time series data for the period 2004 to 2018 and cross section data for 32 provinces in Indonesia. Secondary data needed in this study are data on literacy rates, average length of schooling, school participation rates, foreign investment, labor and GDP (Gross Regional Domestic Product) of Indonesia. Sources of data in this study were obtained from the Statistics Indonesia and *Badan Koordinasi Penanaman Modal* (BKPM) or Investment Coordinating Board.

The method used is panel data regression analysis. The model used in this study consists of three equation, namely:

1. $EG_{it} = \alpha_0 + \alpha_1\,LN_{it} + \alpha_2\,FI_{it} + \alpha_3\,NW_{It} + \text{€}t$
2. $EG_{it} = \alpha_0 + \alpha_1\,ALS_{it} + \alpha_2\,FI_{it} + \alpha_3\,NW_{It} + \text{€}t$
3. $EG_{it} = \alpha_0 + \alpha_1\,SPR_{16\text{-}24\,it} + \alpha_2\,FI_{it} + \alpha_3\,NW_{It} + \text{€}t$

Where:

EG	: Economic Growth
LN	: Literacy Numbers
ALS	: Average Length of School
SPR	: School Participation Rate
FI	: Foreign Investment
NW	: Number of Workers
$\alpha_1, \alpha_2, \alpha_3, \alpha_4$	: Coefficients
t	: Time (years)
i	: Provincial area (32 provinces)
µ	: Error term

The first equation uses independent variables in the form of literacy rates, foreign investment and labor. The second equation uses independent variables in the form of average length of schooling, foreign investment and labor. While the third equation uses independent variables in the form of school participation rates, foreign investment and labor. The data is processed using the STATA 16 application. This study uses three equations because the researcher wants to compare the independent variables which are educational indicators of Indonesia's economic growth.

RESULTS

This study is divided into three estimation models for panel data regression equations. The first model uses the independent variable literacy rates, labor and foreign investment, the second model uses the independent variable average length of schooling, labor and foreign investment while the third model uses the independent variable numbers of school participation, labor and foreign investment. Following are the results of data testing:

Table 1. Model Test Results

INDEPENDENT VARIABLE	EQUATION					
	1		2		3	
	Coef	Prob	Coef	Prob	Coef	Prob
Literacy Numbers	3.809353	0.000				
	(0.2824547)					
Average Length of School			2.330369	0.000		
			(0.1129702)			
School Participation Rate					0.6874751	0.000
					(0.039596)	
Foreign Investment	0.0111731	0.000	0.0078827	0.007	0.006605	0.026
	(0.0030758)		(0.0029218)		(0.0029482)	
Number of Workers	0.7297901	0.000	0.2107993	0.000	0.3774802	0.000
	(0.0475964)		(0.04326)		(0.0546225)	
R squared	76.83%		80.53%		79.38%	
F-test	0.000		0.000		0.000	
Numbers in parentheses are standard errors						

Source: Stata 16 output (processed), 2020

Based on the results of the panel data regression above, all independent variables have a significant and positive effect on Indonesia's economic growth. The results of statistical calculations of the literacy rate variable on

economic growth (Y) shows *p*-value of 0,000 or alpha less than 0.05, then the literacy rate variable has a significant effect on economic growth variables. The coefficient value is 3,809353, indicating that this coefficient number influences in a positive direction, that is, the higher the literacy rate, the higher the rate of economic growth. An increase in literacy rate can cause an increase in economic growth of 3.80.

Second, based on the results of statistical calculations, the average length of school variables on economic growth (Y) demonstrates the results of the *p*-value of 0,000 which is less than the alpha value of 0.05, then the average length of school variables significantly influence the variable of economic growth. The coefficient value of 2.330369 signs that this coefficient figure influences the positive direction. It means that the higher the average length of school the higher the rate of economic growth. An increase in the average length of school can cause an increase in economic growth of 2.33.

Third, according to the results of the statistical calculation of the school participation rate variable on economic growth (Y) displays*p*-value of 0,000 which means less than the alpha value of 0.05, the school participation rate variable (High School and College) has a significant effect on economic growth variables. SPR coefficient value that is equal to 0.6874751 shows that this coefficient number influences in a positive direction. This means that the higher the school participation rate, the higher the rate of economic growth. An increase in school participation can lead to an increase in economic growth of 0.68.

In contrast to the education variable, other independent variables such as the labor variable are divided into three models. Based on the results of statistical calculations, the effect of labor variables on the three models on economic growth (Y) illustrates that the *p*-value results are 0,000 and coefficients are 0.7297901 (model 1), 0.2107993 (model 2), 0.3774802 (model 3). With a *p*-value of 0.000, which means it is smaller than the alpha of 0.05, the labor variable in the three models has a significant effect on economic growth variables. The coefficient value indicates that the coefficient number is more than 0 and this shows the effect in a positive direction. Therefore, the labor variables in the three models have positive and significant influence on economic growth.

The foreign investment variable is divided into three models. Based on the results of statistical calculations on the three models, the variable of foreign investment on economic growth (Y) shows the results of 0,000 (model 1), 0.007 (model 2), 0.026 (model 3) on its *p*-value and coefficient of 0.7297901 (model 1), 0.2107993 (model 2) and 0.3774802 (model 3). Each p-valueis smaller than the alpha value of 0.05. It means that the labor variable has a significant effect on the variable of economic growth, whilst the coefficient values indicate that this coefficient number influences the positive direction. Therefore it can be concluded that the foreign investment variable in the three models has significantly influence the economic growthwith a positive direction.

Therefore, among the significant education indicators tested in this research, the results showthat the literacy rate has the highest coefficient value. It means that literacy rate has the highest power to increase the economic growth compared to other variables.

DISCUSSION

The results show that the three education indicators of the independent variables, namely literacy rates, average length of schooling and school participation rates, affect Indonesia's economic growth (the dependent variable). When the performance of these three educational variables increases, economic growth will also increase. This proves that education is one of the important factors in a country to escalate the country's economic growth. This research supports many of the previous studies conducted by Reza (2013), Abdiyanto (2019) and Jalil and Idrees (2013).

Literacy Rates and Indonesia's Economic Growth

The results show that the literacy rate is a major indicator in which it has a higher contribution than other indicators in increasing Indonesia's economic growth. However,it does not mean to override the performance of other education indicators (average length of schooling and school participation rates).

This result is unique because eventhough this variable is only a measure where someone is able to read and write, yet the literacy rate turns out to have a greater effect than other variables. Literacy rates measure how many people have the basic ability to expand knowledge, access to information and skills, which lead to the capability of a person or population to improve the quality of themselves, families and even countries in various fields of life (BPS, 2019). It can be said that with the ability to read and write, a person can develop themselves in accordance with their wishes without any coercion. With someone who can read and write, it is hoped that the literacy ability of the Indonesian on existing knowledge and information will increase because the literacy ability itself has multiple effect properties.

This result is supported by a smaller number of formal workers compared to informal workers. In 2018 the number of formal workers in Indonesia reached 43.16% while the number of informal workers in the agricultural

sector reached 88.27% (BPS, 2019). The agricultural sector is mostly in rural areas, and this makes high formal education less influential on the income and welfare of rural people working in the informal sector. Technical skills training and extension programs will be more useful if carried out in the informal sector. Both of these require the ability of people to read and write, because it will be easier if these two abilities are owned by each individual. Therefore, the ability to read and write in the informal sector is useful for the benefit of skills training, which if skills are increased will also boost the competitiveness of the community which has an impact on enhancing economic growth.

The Indonesian economy will progressively skyrocket if all formal and informal sector workers can maximize productivity in their respective fields. Looking at the final education level of the workforce in Indonesia, workers who have never attended a school reach the number of 654,311 people, the number of workers who have not completed primary school is 4,944,957 people and workers who have completed primary school reach the number of 1,269,856 people. This data proven that even though one's education is not very high, 16,869,124 people of Indonesia have the ability to work, to receive income and survive which has an impact on enhancing Indonesia's economic growth (BPS, 2018).

The least number of people who have received education has made the Indonesian government provide supports. One of them is by launching the Indonesian Reading Movement Program. Since 2015, this program includes the ability to read, write and count. With the aim that all Indonesian people both urban and rural areas have these basic abilities so they can be productive to improve their lives and have an impact on Indonesia's economic growth better.

Average Length of Schooland Indonesia's Economic Growth

First, the Indonesian government has done many things to improve the average length of school indicators, namely by increasing formal education. One of them is to expand educational opportunities quantitatively. Many schools have been built so Indonesian citizens in the school age can undergo their mandatory education. This statement is also bolstered by school participation rates which have advanced from year to year, but have not shown the expected results (BPS, 2018). The number of open and undercover unemployment still tends to raise due to the increase in the workforce with limited skills. The upturn in the workforce and population directly urges the government to add schools. This indeed needs to be done, but solely in its quantitative form, not by accompanied its qualitative form in terms of the quality of education (Djojohadikusumo, 1994).

This weakness triggers the government to be more serious, by not only expanding its quantity but also improving its quality by having the 9-year compulsory education program listed in Government Regulations No. 47 of 2008 and continued by the 12-year compulsory education program as stipulated in Ministry of Education and Culture Regulation No. 80 of 2013. This can be seen by the average length of schooling of Indonesia's school-age population. BPS data states that the average length of schooling in Indonesiafrom year to year has increased.The latest data in 2019ranged around 8.75 (BPS, 2020). This means that the average Indonesian population undergoes his education with a period from 8 to less than 9 years.

The policy in education is exceptional for improving the quality of human resources, specifically Indonesian citizens.However, there is one thing that cannot be denied that education requires money. When someone wants to go to school, school fees become one of the things that is difficult to ignore.

The cost of education is one of the problems of the Indonesian population when they want to get education. There is a big difference between primary, secondary and higher education. It will also affect the desire of the community to go to school.When the cost of education is high, the community will consider participating in education. With the average condition of developing country people who are not like developed countries',this will affect the movement of the number of school participation rates in Indonesia.

In addition, when a person has completed his/her education, the higher the level of one's education, the consideration of someone to find a job will also be high. Developing from the thought of high education, productivity will also be high so people will aso looking for work with high incomes.Indirectly, the cost of education that has been spent can return slowly. This is what is called educational investment (Djojohadikusumo, 1994).

These considerations are what make a person is being selective when applying for a job. This can happen because of the reasons in the previous paragraph, where the higher the level of education, the higher the costs. This makes a person have hope that will receive high incomewhen they're working later. Besides status, parents' encouragement and family background can also cause someone to be more selective (Ramiayu, 2016). If this happens, many Indonesians will be unemployed which will also have an impact on economic growth.

This average indicator of school length is also supported by Ali Alsanousi's study (2017) that higher education is the strongest factor in mediating the relationship between education and economic growth and contributing to Libya's economic growth.

School Participation Rate and Indonesia's Economic Growth

The results demonstrate that the school participation rate is an indicator that also has a contribution in boosting Indonesia's economic growth. This indicated that the performance of all education indicators in this study affect the economic growth. The greater the school participation rate, the wider the facilities provided by the government to the community. This should be utilized by the community so that the quality of individuals in a society is also broaden.

The results of this study are similar to studies conducted by Hanif and Arshed (2016) which show that tertiary education has a large impact on the economy.

CONCLUSION

The results of the study prove that all variables used were literacy rates, average length of schooling, school participation rates, labor and foreign investment that had been analyzed into three different models influence the economic growth in Indonesia. If each of these variables increases, Indonesia's economic growth will also increase. This proves that these three educational variables have important roles for Indonesia's economic growth.

According to the research objective, which is to compare educational indicators and looking for the most influential indicator, it appears that first model is the best model. This first model uses the literacy rate variable as an indicator of education. Literacy rates have a greater influence in explaining Indonesia's economic growth than other educational variables.

Suggestion for government is that to make policies to improve all education indicatorssince it is benefitting countries for the long term through its economic growth. However, if the government is faced with the choice to make one indicator as a priority, it would be wise if the literacy rate becomes the priority to be improved compared to other indicators.

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