



How is the Performance of Education in Indonesia?

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ABSTRACT

This study aims to see the effectiveness of education performance in Indonesia which has been budgeted in the state budget (APBN) from 1996 to 2020. This effectiveness can be evaluated from the number of gross enrollment rates aged 15 years and over. The number of gross enrollment rates is affected by the government spending in education sector, national per capita income, and national literacy rate that is measured by the number of literacy. This study uses auto regression distributed level (ARDL) model to see the government's performance in education sector in the short term and long term. The finding of the study shows that in the short term, the government's expenditure for education sector and national literacy level supports the effectiveness of education performance. Meanwhile in the long term, literacy level supports the effectiveness of education performance.

Keywords: Gross Enrollment Rate, Literacy Rate, Government Spending, National Per Capita Income

JEL Classifications: I21, I22, I25

1. INTRODUCTION

A good country does not depend on the economy and natural resources, but it depends on human resources, management, and government policies that can support the development of a country (Daniele, 2011; Osibanjo and Adeniji, 2012). Human resource is related to education that plays a basic role for the future development of a country (Ozturk, 2001; Zidan, 2001). Seeing the importance of education for a country, Indonesia government has carried out various policies in improving the quality of education, especially for the last 15 years. There were some policies that were carried out by the government to improve the quality of education in Indonesia and those were facilitating the school establishment and operation permits, giving school subsidies that were more on target, giving training for teachers, increasing the share of state budget for education by 20%, and creating education that liberates children (Alwasilah, 2013; Sukasni and Efendy, 2017; Wijaya, 2019).

Those policies shows that Indonesia government is serious in improving the quality of education that is more competitive for children, especially when they work which is full of competitors

from both domestic workers and foreign workers (Zulfikar, 2009; Tobias et al., 2014). Moreover, teachers are also prepared to fulfill the commercial and economic needs that place more emphasis on skill, creativity, and innovation owned by each individual (Foster and Yaoyuneyong, 2016; Serdyukov, 2017). Those assets can help the government in carrying out any management that has been determined, especially in state and private companies.

To expedite those policies, the government implements regional autonomy and fiscal decentralization that aims on letting the local government to allocate the supply of public goods and economic development freely, especially in education sector (Brodjonegoro and Asanuma, 2000; Alm et al., 2001; Nasution, 2016). Regional autonomy and fiscal decentralization can also support the central government's performance in national operational development (Shah, 2004; Amagoh and Amin, 2012; Suwandi and Warokka, 2013). However, the region's power is very limited because the role from the regional income is still far from the expectation of the local budget (Nasution, 2016). Therefore, the readiness of human resources and management skills of education sector is still very limited.

2. LITERATURE REVIEW

This limitation can affect society welfare especially for rural people. Therefore, the government believes that regional autonomy and fiscal decentralization policies can increase society welfare especially in rural area (Martinez-Vazquez et al., 2015; Mahi, 2016; Arends, 2020). These policies are based on the rural people's needs on decent education and public goods that are integrated with their life (Mahi, 2016). The real evidence is that the national gross enrollment rate in rural area is always lower than the national gross enrollment rate in urban area. Based on Central Bureau of Statistic data, in 2015, the national gross enrollment rate in rural area is at 70.23% and the rate in urban area is at 85.46%, or the gap is 15.23%. Then, in 2020 the rate is 77.72% in rural area and 88.88% in urban area, or the gap is 11.16%. Although there is an increase, the number of students who finished secondary school in rural area and urban area is very different. In 2017, the number of students who finished secondary school in rural area is 9.462.813 and the number of students who finished secondary school in urban area is 12.248.010.

The data in the statistic above is certainly very affected by the income of each individual. The data of the income can be seen from national per capita income where it can be used as an indicator for a country to be considered as a developed country, developing country, or poor country. Based on the measurement set by United Nations, Indonesia is considered as developing country with \$4.160 point or it is slightly on the bottom line of developing countries group that is \$4036. This shows that there are still a lot of Indonesian people who live in poverty. It was recorded that there are 26.42 million people or 7.38% of people in Indonesia live in poverty. From that number, 71.35% of them are constrained to get facility to study and even cannot continue their study because of the high education cost proven by the data from Central Bureau of Statistic in Indonesia that in 2020 the gross enrollment rate for elementary school is 107.46%, junior high school is 90.57%, and senior high school is 83.98%.

The government responds to the anxiety of people who live in poverty by raising national and local education budget from 14% in 2008 to 20% in 2011 of the state budget until now. This increase was aimed to increase the quality of human resource that will give impact on decreasing social and economy inequality in every region in Indonesia. This increase does not have impact because there are still a lot of children who cannot get formal education, especially children who live in a poor family. In the distribution of the budget, the distribution is not on target, there is an abuse of power, and the budget is corrupted by unscrupulous officials. The impact is that there are level, social, and economy inequality between people in urban area and people in rural area.

This impact is clearly seen in the most remote tribe in Indonesia that the people are still illiterate. Even in the urban area, there are still many people who are illiterate. It was recorded that 4.1% of Indonesian people, aged over 15 year, are illiterate or there are 3 million children who are illiterate. This condition is a cause for concern since Indonesia has been independent for 75 years. Therefore, Indonesia is in the 72nd position of 77 countries in 2019, according to PISA.

There are many studies in the field of education, starting from Schultz (1961) who discussed human investment in the field of education that supports the acceleration of economic growth better than capital investment. This study was also supported by Becker (1975) who stated that the quality of human education is based on the appropriateness of school facilities and infrastructure, parents' job at a fair wage, and school information that can be obtained easily by students.

In the 1990s and the early 200s, the discussion in the studies of education developed. The examples are the studies conducted by Murray et al. (1998) and Card and Payne (2002) who discussed school financial information for the long term education and economy especially for those who live in poverty.

From 2005 to the mid of 2019, the discussion of the studies in education became more complex. The studies conducted by Ludwig and Miller (2007), Deming (2009), and Jackson (2012) discussed government's expenditure for education sector. They emphasized more on the students' need at school through school budget, and subsidies and scholarships from the government for excellent and underprivileged students.

Then, the discussion of education was about the students' competitiveness in learning as a result of the curriculum made by the government. The studies conducted by Hossain and Roy (2016) and Pasban and Nojedeh (2016) discussed how to make students competitive and how to make them a good leader. The students were taught to compete to be better than others so they were taught to make each other down. Their studies are on the contrary to the studies conducted by Gillies and Asman (2003), Peterson and Seligman (2004), Medford and McGeon (2012), and Wagner and Ruch (2015) who discussed students would have a good quality if they had a very good character and cooperation so the education that was based on the competitiveness and not good for students could be avoided.

3. METHODOLOGY

This study uses quantitative analysis that reveals a problem by relating the running time conditions in an integrated manner. This study also wants to describe how the government's allocation for education budget, per capita income, and illiterate rate affect the performance of education in Indonesia. The data is secondary data taken from Central Bureau of Statistic (BPS) and Ministry of Finance. This study uses Auto-Regression Distributive Lag (ARDL) method that is aimed to observe the performance of education in the long term and short term. ARDL method is begun with OLS model:

$$GER_t = \beta_0 + \beta_1GE + \beta_2LIT + \beta_3YPC + \epsilon_t \quad (1)$$

GER is gross enrollment rate, GE is government expenditure in education sector, LIT is literacy measured by literacy rates, and YPC is per capita income. Equation (1) is linear equation so it should be changed into log-linear model in order to give precise

and efficient results compared to simple linear model. The model of the non-linear equation is:

$$\text{LnGER}_t = \beta_0 + \beta_1 \text{LnGE} + \beta_2 \text{LnLIT} + \beta_3 \text{LnYPC} + \mu t \quad (2)$$

μ is error term and t shows time index. The main parameter is $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\mu < 0$. This parameter is used to determine the minimum number of squares of the residual. In ARDL model, there are only heteroscedasticity, normality, and auto correlation for classic assumption test, meanwhile there is no multicollinearity. This happens because in this model there is a unit root test to check whether the data is stationary or not. If all variables are at the level and first difference, the equation model will be

$$\Delta \text{GER}_t = \beta_0 + \sum_{i=1}^m \beta_{1i} \Delta \text{GE}_t - i + \sum_{i=1}^m \beta_{2i} \Delta \text{LIT}_t - i + \sum_{i=1}^m \beta_{3i} \Delta \text{YPC}_t - i + \gamma \varepsilon_t - 1 + \mu t \quad (3)$$

Δ represents a change of dependent variable, γ represents coefficient speed of all parameters, $\varepsilon_t - 1$ represents the period in error correction term (ECT). Equation 2 also shows the short term relationship that is derived from Equation 1. In Engle-Granger model, all variables have to be at the first level (I(1)) and ECT is at Level 0, (I(0)) so it makes the relationship between variables tighter. If $\varepsilon_t - 1$ is the substitution of the integration of lag on all variables, the equation will be

$$\Delta \text{GER}_t = \beta_0 + \sum_{i=1}^m \beta_{1i} \Delta \text{GE}_t - i + \sum_{i=1}^m \beta_{2i} \Delta \text{LIT}_t - i + \sum_{i=1}^m \beta_{3i} \Delta \text{YPC}_t - i + b_6 \text{GE}_t - 1 + b_7 \text{LIT}_t - 1 + \text{YPC}_t - 1 + \mu t \quad (4)$$

Statistically, μ is not only predicted to be negative and significant in speech adjustment for each variable but also to be supporting suggestion of variable cointegration (Pesaran et al., 2001). The procedure in bounds test is based on F test or DW-Stat that are the initial method in using ARDL.

4. RESULTS AND DISCUSSION

4.1. Results

4.1.1. Root test unit

Before conducting the estimation, the first step that should be done is checking whether the time series data is stationary or not by using Augmented Dickey-Fuller (ADF) and Philip Perron (PP) through all variables.

Table 1 shows that all variables are stationary at first difference with the level of 5% in ADF and PP and it is smaller than the critical value of 5%. Therefore, Table 1 shows that this study is in accordance with the ARDL criteria.

4.1.2. Test for long-run relationship between variables

After all data are stationary at first difference, the next process is determining the length of the lag to carry out ARDL model. This determination is conducted to observe the relationship and good

impact between independent variable and dependent variable. Besides, it can stabilize and normalize the model to check if this study can be done for a long term model.

Table 2 shows that the best lag is lag 2. Therefore, ARDL regression only can be carried out at lag 2 and if it is more than lag 2, the result will be bad and bias and it cannot be carried out in the long term.

4.1.3. Autocorrelation, heteroscedasticity, and normality

As in multiple regression, there is also classical assumption test in ARDL model. However, multicollinearity in ARDL regression is changed into normality test. Normality test is conducted to check whether this study is normally distributed or not. The following is the result of autocorrelation, heteroscedasticity, and normality in this study.

Table 3 shows that all independent variables have relationship with dependent variable, all variables are not homogeneous, and all variables are normally distributed. This means that this study using ARDL is normally distributed, and there is no autocorrelation and heteroscedasticity.

4.1.4. Model stability

After the model in this study is proven that it has relationship and it is homoscedasticity and normally distributed, the next step in ARDL model is testing the stability of this study. In ARDL model, stability test uses two methods and those are checking CUSUM test and checking CUSUM of Squares test where there are 2 border lines to prove that other lines in these borders are on the right track, as it is shown in Figures 1 and 2.

Figures 1 and 2 show that the blue line is between two red lines. This means that all variables and model used in this study are stable. This condition is very good to see the short term and long term impact.

Table 1: Unit root test

Variable	ADF		PP	
	Level	First difference	Level	First difference
GER	1.9063	-4.3538*	-1.7927	-6.4643*
GE	-2.1920	-7.0781*	-2.0124	-7.5144*
LIT	-3.8995*	-4.5608*	-3.9543*	-4.5720*
YPC	-8.2008*	-10.8241*	-4.9425*	-5.5122*

Source: Eviews 11

Table 2: Lag length criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-137.724	NA	2.6445	12.3238	12.5213	12.3735
1	-77.6881	93.9684	0.0591	8.4946	9.4820	8.7429
2	-67.3111	12.6328*	0.1117*	8.9836*	10.7609*	9.4306*

Source: Eviews 11

Table 3: Autocorrelation, heteroscedasticity, normality

Test	Null hypothesis	Stat. test	Prob.
Serial correlation	No correlation	5.5694	0.0817
Heteroskedasticity	Homokedasticity	7.3392	0.3944
Jarque-Bera	There is normal distribution	0.9159	0.6326

Source: Eviews 11

4.1.5. Bounds test

After all the previous conditions are met, the last condition that should be met is bounds test to see the impact's strength of each independent variable to dependent variable in the long term. The first bounds test was introduced by Pesaren et al. (2001). If the statistic test is smaller than the table limit, the model cannot be carried out and independent variables do not have the long term effect. However, if the statistic of bound test is bigger than the bound test in the table, the model can be carried out and all independent variables affect dependent variables in the long term.

Table 4 shows that the result of the bound test is 7.0414, meanwhile the smallest limit of statistic at the level of Pesaren table is 3.65 and the smallest limit of statistic at first difference of Pesaren table is 4.66. Therefore, F-stat value is bigger than F-table so the long term regression can be carried out and it is in accordance with the conditions in ARDL model.

4.1.6. Short term results

After all conditions in ARDL model are met, the short term regression is carried out with the criteria of ARDL model. The short term regression uses Equation 3 that uses error correction model in the previous period.

According to Table 5, the variables of literacy and government expenditure in education sector affect the performance of government in education field in the short term. Meanwhile,

Figure 1: CUSUM test

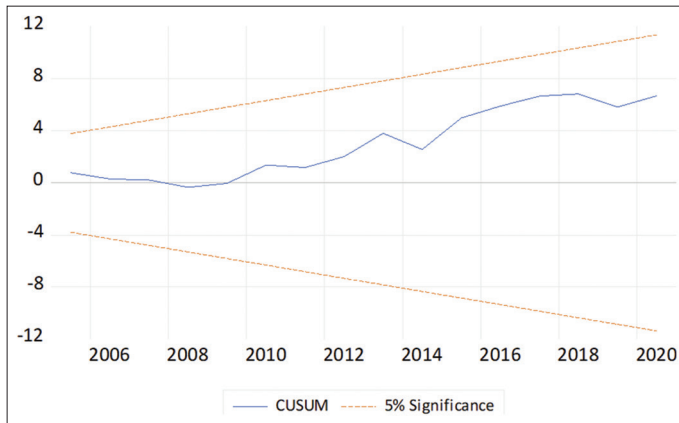
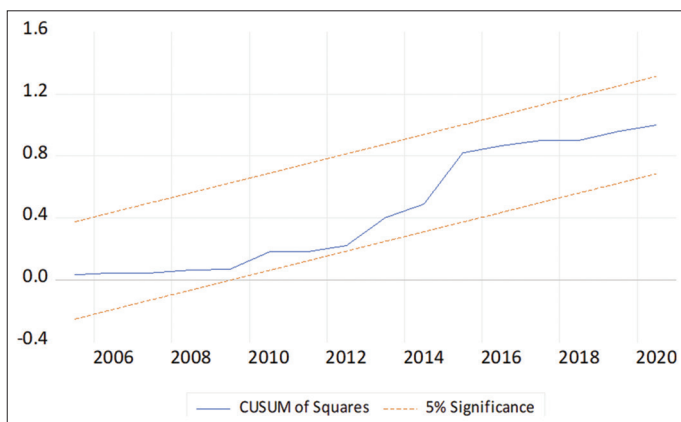


Figure 2: CUSUM of squares



per capita income does not give impact on the government performance in education field. Table 5 also shows that $ECT(-1)$ is negative and significant. This means that all variables in this study is very related in the long term.

4.1.7. Long term results

After knowing that $ECT(-1)$ is negative and significant, the relation of the model in the long term is similar with the multiple regression and it uses Equation 1. The long term regression shows that independent variables follow the existing circumstances in affecting dependent variable. The following is the estimation results in the long term of this study.

Table 6 shows that literacy makes a contribution to education performance in Indonesia. However, the government expenditure and per capita income does not make a contribution to education performance in Indonesia.

4.2. Discussion

Tables 5 and 6 show different results on the contribution of government expenditure in the education sector to national education performance. In the short term, the government expenditure in education sector makes a contribution, meanwhile in the long term it does not make a contribution. This result is in accordance with the study conducted by Gupta et al. (1999), Bashir and Amir (2019), Arshad and Seenprachawong (2019) who stated that the education budget carried out by the government is appropriate and sufficient to help people especially those who are in the low to middle class society or those who live in poverty so they can enjoy the same facilities as those who are in the middle to high society. This budget

Table 4: Bounds test

F-bounds test	Value	Null hypothesis Significant (%)	No level relations hip I(0)	I(1)
T-statistic test	7.0414	10	2.37	3.2
F-statistic	3	5	2.79	3.67
K		2.50	3.15	4.08
		1	3.65	4.66

Source: Eviews 11

Table 5: Short run results

Variable	Coefficient	Std. Error	t-Stat.	Prob.
GE	-0.3645	0.1971	-2.1493	0.0130*
LIT	2.3406	0.7334	3.1915	0.0057*
YPC	-1.1975	2.1914	-0.5464	0.5923
$ECT(-1)$	-0.2814	0.0788	3.5719	0.0025*

Source: Eviews 11

Table 6: Long-run results

Variable	Coefficient	Std. Error	t-Stat	Prob.
GE	-1.0060	0.8955	-1.1234	0.2778
LIT	7.5518	2.8866	2.6161	0.0187
YPC	-9.8075	14.5722	-0.6730	0.5105
C	-442.0031	109.3401	-4.0425	0.0009
R-squared		0.9787	AIC	4.7281
Adj R-squared		0.9693	SC	5.1208
F-stat		104.8234	DW stat	2.5615

Source: Eviews 11

also gives low cost education through scholarships or subsidies administered by the government (Ihugba et al., 2019). Therefore, it can give impact on the increase of national education performance that is seen from the gross school enrollment rate in every level.

However, the government policy in issuing a budget of 20% only can be applied in the short term because of the increase in the education cost every year. According to the data of Ministry of Education and Culture of Indonesia, the education cost increase 5-10% every year while the education budget from the state budget does not always increase every year. This will make the amount of subsidy given to each school is different (Fadli et al., 2019). This difference is very visible in each region where the schools in urban area get bigger subsidy than the schools in the rural area so there will be differences in the completeness of facilities and infrastructure that supports the teaching and learning process (Megawati, 2020). To follow the education standard set by the government, each school has to find a way to cover the lack of operational costs. The collection of fees can burden poor families who cannot afford to send their children to national standard schools (Carlitz, 2009). There are also many parents who choose not to send their children to a higher level of education (Munda and Odebero, 2014). Therefore, there will be a difference in human resource quality in each region that will give impact on the difficulty of improving evenly distributed learning outcomes in Indonesia (Asnawi, 2015; Megawati, 2020).

Tables 5 and 6 also show that literacy make a positive contribution to the education performance in Indonesia in the short term and long term. This result is in accordance with the study conducted by Muriel and Smith (2011), Aristovnik (2012), and Persico et al. (2015) who stated that the allocation of education budget is on target and there is no lack in its mechanism so the quantity and quality of education facilities and infrastructure are in accordance with school needs. This statement is in accordance with the result of this study that in the short term, the budget of education sector makes a contribution for the national education performance. Moreover, the government policy of fiscal decentralization gives positive effect on the performance of education through local budget, local scholarship, and school operational aid. Those funds can be used by school to buy books, practicum tools, repair and addition of new classroom, and private scholarships for students who have high achievements.

Well supported facilities and infrastructures also can make a contribution in the long term, especially for the children interest to study and try new innovations. According to Aristovnik (2012), those innovations are the development and use of technology that support students' education. The next factor are parents' assistance and parenting in increasing children's interest to learn. According to Spencer et al. (2011) and van Voorhis et al. (2013), good mentoring and parenting from an early age can increase morale and fighting power in learning materials, especially in learning materials that are exact and materials that need to be memorized. With those assistances, children will be familiar

and they won't get bored easily to learn in a long duration (van Voorhis, et all, 2013).

Tables 5 and 6 also show that per capita income does not make a contribution to education performance in Indonesia in the short term and long term. This result is in accordance with the study conducted by Wang and Liu (2016), and Bashir and Amir (2019) who stated that low per-capita income in a country shows that the poverty rate in that country is high and it has not been resolved properly. Politic and corruption factors also affect per capita income especially in domestic and foreign investment sector that give impact on the lack of job opportunities.

Moreover, the number of Indonesian population who are in the middle to low class society is still high. According to the data of Central Bureau of Statistic (BPS) in 2019, the number of Indonesian population that is in the poverty (P1) is 11.161.960 for the urban areas and 152.622.060 for rural areas in Indonesia. According to those data, the education in Indonesia is still constrained by the financial needs for education. Parents' income is also related to the children's learning activities at home. Parents who have high income can provide any facilities to support their children's education. However, parents who have low income will be lack in providing their children's needs for education.

From those BPS data, there are 4.3 million students who have dropped out of school in 2019 and 90% of them are caused by financial factor in their family. There are many of them who are exploited to work to meet family needs. Moreover, technology factor affects the national education performance. According to Aristovnik (2012), families who have high income indulge their children to learn using technology. They have assets to use and develop the existing technology in supporting their knowledge. Meanwhile, children of families who are in the middle to low class society will find it difficult to support and follow it. This statement is in accordance with this study showing that per capita income does not make contribution to education performance in Indonesia.

5. CONCLUSION

Planning and budgeting to increase quality of education in Indonesia really requires careful, directed, and targeted thinking and planning. As it was proven in this study, in the long term, government's expenditure for education sector cannot support the quality of education. As the government has identified and classified the regions that need aid in education sector, the government should work to determine the positive output that they want to achieve in the future and it needs cooperation with all ministries and all societies. The government also should give input on the aim of those budgets and direct education institution and school to increase physical infrastructure and teacher investment. Those two really support the quality of the children in the future. Moreover, the government also issues the policies to hold back the increase of education costs so the middle to low class societies or they who live in poverty can receive a proper and humane education.

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