Government Investment in The Education Sector for Human Capital Development

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Abstract
An indicator is considered more representative to be used as a benchmark for development, namely the Human Development Index (HDI). The Human Development Index is another alternative to the definition of development that it is not only economic resources as a means to achieve development goals. The government has made various efforts to improve the quality of education to develop quality human resources. One of the components in the education budget is the education budget through transfers to the regions and village funds. Transfers to regions and village funds consist of general allocation funds and special allocation funds. This study aims to examine the effect of the government's investment in the education sector through the education budget, particularly Special Allocation Funds-Physical (SAF Physical) and Special Allocation Funds-Non-Physical (SAF Non-Physical) on the Human Development Index (HDI). The study consists of two independent variables, i.e., Special Allocation Funds-Physical (SAF Physical) and Special Allocation Funds-NonPhysical (SAF Non-Physical), and one dependent variable: Human Development Index (HDI). The method used is a quantitative method with multiple regression analysis-ordinary least square (OLS). The data used is secondary data from the Central Bureau of Statistics/Badan Pusat Statistik (BPS) in 2010-2018. The results showed that Special Allocation Funds-Physical (SAF Physical) and Special Allocation Funds-Non-Physical (SAF Non-Physical) significantly influence the Human Development Index (HDI). The Special Allocation Funds-Physical (SAF Physical) has a negative and insignificant effect. In contrast, the Special Allocation Funds-Non-Physical (SAF Non-Physical) has a positive and significant effect on the Human Development Index. Therefore, the government is expected to increase educational investment by allocating more budgets on both physical and non-physical investment to improve the quality of Human Resources.

Keywords: human development index; SAF Physical; SAF Non-Physical

1. Introduction
Economic growth is one indicator to measure the success rate of a country's development. In many cases, researchers and experts use Gross Domestic Product (GDP) to assess economic growth. Economic growth can be determined by the increase in GDP regardless of whether the increase is more significant or smaller than the rate of population growth. It also does not factor in a change in the economic structure (Arsyad, 2016). Economic growth is also interpreted as a condition for improvements in the economy's number of goods and services (Sukirno, 2000). However, recent studies show that GDP is failing and can no longer be considered a reliable indicator in measuring economic growth (Haq, 1992; Khodabakhshi, 2011). Human Development Index (HDI) emerges as a new indicator that is considered more representable to measure development success. Human Development Index becomes another alternative definition of development, used to assess economic growth, and utilized as a means to achieve...
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development goals (Anand & Sen, 2000; Sen, 1998). The Human Development Index (HDI) was
developed to emphasize that humans and all their abilities must become the main criteria in assessing the
development of a country, not just economic growth (Arisman, 2018). Even more, human development
must be a core consideration in developing a country (Sarkar, Sadeka, & Sikdar, 2012).

Empirically proven, not only does the development of Human Resources improve the quality of
human resources at the individual level, but it also affects the state of socioeconomics on the national scale
(Alhudori, 2017; Basri, Mayesti, & Nurdin, 2019; Febrianto, 2017; Wati & Sadijarto, 2019). Research
in several countries also shows that human development as measured by HDI affects other variables
(Carneiro Pinheiro, Niederauer, & Vargas, 2014; Enefiok & Sunday, 2014; Gabriel, 2013). Therefore,
investment in developing human capital cannot be underestimated. Human resource development must
take precedence because change can only be done by people who have adequate integrity and quality.

There are four elements in human development: First, productivity, namely increasing productivity.
Second, Of People, namely equal distribution of population development, as well as population
empowerment through investments in education, health, and other social services. Third, for people,
namely empowering the population which can be done through job creation programs and expanding
entrepreneurship opportunities. Fourth, by people, namely the empowerment of citizens by improving their
dignity which can be gained through increased participation in political decision making and development
processes (Faqihudin, 2010).

Human development can be obtained through education. According to the Law number 20 of 2003
concerning the National Education System states that "Education is a conscious and planned effort to
create an atmosphere of learning and learning process so that students can actively develop their potential
to have spiritual strength, self-control, personality, intelligence, honesty, and other skills that are needed
for their self, society, nation, and country" (Legislation of the Republic of Indonesia, 2003). The expert
opinion defines education as the influence, assistance, or demands given by those responsible to students
Education emphasizes that educators are agents of change who provide stimulation and reinforcement
and design learning activities to achieve change in their students. While learning emphasizes someone
who is expected to accept changes in behavior, knowledge, and skills (Knowles, 1986).

Education has a significant role in creating quality human resources since education is the basis of
strategic human resource development (Ali, 2009; Idrus, 2012; Sudarsana, 2016). Therefore, the
education sector must provide the best service by continuously improving the quality and quantity of
education. Besides, the government must be able to provide equal access to education for all people. This
is as mandated by Law Article 28C (1): "Everyone has the right to develop themselves through the
fulfillment of his basic needs, the right to receive education and benefit from science and technology, arts
and culture, to improve his quality of life for the welfare of humanity."

The government has made various efforts to improve the quality of education to develop quality
human resources. One of them is to increase government investment in the education sector by budgeting
20% of the total State Revenue and Expenditure Budget and Regional Revenue and Expenditure Budget
in each region for the education sector. One component in the education budget is the education budget
through Transfers to Regions and Village Funds. According to the Regulation of the Ministry of Finance of
the Republic of Indonesia No. 48/Pmk.07/2019 concerning Management of Non-Physical Special
Allocation Funds, Transfers to Regions and Village Funds are "part of the state expenditure allocated in the
State Budget and Expenditures to regions and villages to fund the implementation of functions that
have been mandated to the regions and village" (Ministry of Finance, 2019). Transfers to regional and
village funds consist of general allocation funds and special allocation funds. This study discusses special
allocation funds consisting of Special Allocation Funds-Physical (SAF Physical) and Special Allocation
Funds-Non Physical (SAF Non-Physical).

The Regulation of Ministry of Education and Culture No.1 of 2019 concerning the Operational
Guidelines for Special Allocation Funds-Physical in Education Sector stated that the SAF Physical in the
education sector is intended to fund educational activities related to basic services that the government
must carry out to meet the learning facilities and infrastructure standards of each educational unit
according to with national education standards (Ministry of Education and Culture, 2019). This is done in
accordance with Law No. 20 Article 45 (1) "Every formal and non-formal education unit provides facilities
and infrastructure that meet educational needs following the growth and development of the physical,
intellectual, social, emotional, and psychological potential of students" (Indonesian Government, 2003).
Meanwhile, based on Ministry of Finance Regulation Number 48/PMK.07/2019 concerning Management
of Special Allocation Funds Non-Physical Funds stated that SAF Non-Physical is "funds allocated in the state
budget of revenue and expenditure to regions to help fund non-physical special activities which are
regional affairs" (Ministry of Finance, 2019). Special Allocation Funds-Non Physical consists of
professional allowances for regional civil servant teachers, additional salary for regional civil servant
teacher basic income, special allowances for regional civil servant teachers in particular areas, school
operational assistance, operational assistance for early childhood education, operational assistance
health, family planning operational assistance, funds for increasing the capacity of cooperatives and
SMEs, and population administration service funds. In 2019 there were four additional types of Non-
Physical Special Allocation Funds, namely operational assistance in organizing equality education,
operational assistance in organizing museums and cultural parks, tourism service funds, and assistance in
the cost of waste management services (Pratama, 2019).
The government has allocated 20% for education, but it did not improve the condition of education in Indonesia. This can be seen from several aspects: first, there are still many educational facilities and infrastructure at an inadequate level and uneven in all regions. The data taken from the Ministry of Education and Culture shows that there were 90,749 heavily damaged classrooms and 60,760 damaged classrooms. It is also revealed that from 214,409 schools, only 144,293 schools had libraries, and out of that number, 77,750 were slightly damaged, 6,436 were seriously damaged, and 5,529 libraries were damaged. Furthermore, out of 214,409 schools, only 50,150 schools have science laboratories (Ministry of Education and Culture, 2018). Second, school participation rates are still low, especially at the university level. In 2018 the school participation rate (APS) aged 19-24 years was 24.29%, the university gross enrollment rate (APK) was 25.12%, and the college net enrollment rate (APM) was 18.59% (Central Bureau of Statistics Indonesia, 2019). Third, the poor quality of Indonesian education, based on the reading ability, mathematics, and science, ranked 10th among the lowest (OECD, 2019). Fourth, the quality of human resources is still low. In 2017 Indonesia ranked 6th out of 10 ASEAN countries and ranked 116th in the world (UNDP, 2017).

This study aims to examine the effect of the government's investment in the education sector through the education budget, particularly Special Allocation Funds-Physical (SAF Physical) and Special Allocation Funds-Non-Physical (SAF Non-Physical) on the Human Development Index (HDI).

2. Research Methods
2.1 Analysis Data
This research employs a quantitative approach with Multiple Linear Regression Analysis - Ordinary Least Square (OLS) with the help of the computer program EViews.10. The research variables consist of two independent variables: Special Allocation Funds-Physical and Special Allocation Funds-Non Physical in the education sector. The research utilizes Human Development Index (HDI) as the dependent variable, and the type of data used is secondary data (Figure 1). The data source comes from the Ministry of Finance for the period 2010-2018. Before conducting a regression test, the classic assumption test is performed, including normality test, autocorrelation test, heteroscedasticity test, and multicollinearity test. This research does not test the linearity assumption because this study does not intend to form a new Best Linear Unlimited Estimation model (BLUE model).

This research uses the regression equation to describe the relationship between the independent and dependent variables containing the constant value as written in equation 1

\[ HDI = \alpha + \beta_1 X_1 + \beta_2 X_2 + \mu \]  

Note: HDI = Human Development Index; \( X_1 \) = Special Allocation Funds-Physical; \( X_2 \) = Special Allocation Funds-Non Physical; \( \mu \) = term of error; \( \beta \) = regression coefficient; \( \alpha \) = constant

2.2 Hypothesis
Hypotheses are quick answers to research that must be proven. The hypothesis proposed in this study is: 
H1: There is the Effect of Special Allocation Funds-Physical and Special Allocation Funds-Non Physical Simultaneously on the Human Development Index; 
H2: There is the Effect of Special Allocation Funds-Physical Partially on the Human Development Index; 
H3: There is the Effect of Special Allocation Funds-Non Physical Partially on the Human Development Index.

![Analytical Framework](image)

Figure 1. Analytical Framework

3. Result and Discussion
3.1 Normality Test
A normality assumption test is conducted to assess whether the data is normally distributed. The normality test is done by looking at the Probability Jarque-Bera value. If the Jarque-Bera Probability < 0.05, at \( \alpha = 5\% \), it can usually be distributed. Based on the normality test results in Figure 2, the Jarque-Bera Probability value of 0.551942 > 0.05. It implies that the data is normally distributed, and the normality problem does not occur.
3.2 Autocorrelation Test

An autocorrelation test is performed to detect a relationship between variables in the model and the change in time. One method of autocorrelation is the Breusch-Godfrey Serial Correlation LM Test. If the Prob Chi-Square value < 0.05, autocorrelation occurs. Based on the autocorrelation test in figure 3, the Prob Chi-Square value is 0.1195 > 0.05. This signifies that the autocorrelation problem does not exist.

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

<table>
<thead>
<tr>
<th>F-statistic</th>
<th>1.138545</th>
<th>Prob. F(2,4)</th>
<th>0.4061</th>
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<tbody>
<tr>
<td>Obs*R-squared</td>
<td>3.264858</td>
<td>Prob. Chi-Square(2)</td>
<td>0.1955</td>
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</tbody>
</table>

3.3 Heteroscedasticity Test

A heteroscedasticity test is conducted to test whether there is an inequality of variance from the residuals of one observation to another in the regression model. A good regression model is one where heteroscedasticity does not occur. Based on the results of the Heterokedasticity test in figure 4 with the Breusch-Pagan-Godfrey Test, the Chi-Square value on Obs*R-Squared 0.5304 > 0.05. This implies that heteroscedasticity does not occur in the regression model in the study.

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

<table>
<thead>
<tr>
<th>F-statistic</th>
<th>0.492153</th>
<th>Prob. F(2,6)</th>
<th>0.6340</th>
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<tr>
<td>Obs*R-squared</td>
<td>1.268381</td>
<td>Prob. Chi-Square(2)</td>
<td>0.5304</td>
</tr>
<tr>
<td>Scaled explained SS</td>
<td>0.394940</td>
<td>Prob. Chi-Square(2)</td>
<td>0.8208</td>
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</table>

3.4 Multicollinearity Test

The researcher performs a multicollinearity test to detect whether there is a correlation or relationship between independent variables. If the Variance value is more significant than 10.00 it means that there is multicollinearity. Based on the multicollinearity test results in figure 5 with the Variance Inflation Factors test, the Centered VIF Special Allocation Funds-Physical value is 1.136533 < 10.00 and the Special Allocation Funds-Non Physical 1.136533 < 10.00. This implies that the regression model in this study does not have multicollinearity.

The results of the classic assumptions above reveal that the Multiple Regression-ordinary least square (OLS) model in this study passed the assumption test to proceed to the multiple regression test to test the research hypotheses.
Variance Inflation Factors
Date: 12/28/19   Time: 17:07
Sample: 2010 2018
Included observations: 9

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Uncentered VIF</th>
<th>Centered VIF</th>
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<tr>
<td>C</td>
<td>0.861374</td>
<td>27.48658</td>
<td>NA</td>
</tr>
<tr>
<td>SAFPHYSICAL</td>
<td>5.65E-09</td>
<td>14.46657</td>
<td>1.136533</td>
</tr>
<tr>
<td>SAFNONPHYSICAL</td>
<td>4.11E-11</td>
<td>7.773117</td>
<td>1.136533</td>
</tr>
</tbody>
</table>

Figure 5. Multicollinearity Test

3.5 Results of Multiple Regression Estimates-Ordinary Least Square (OLS)

Dependent Variable: IPM
Method: Least Squares
Date: 12/26/19   Time: 14:36
Sample: 2010 2018
Included observations: 9

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<tr>
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<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
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<tr>
<td>C</td>
<td>66.74243</td>
<td>0.928103</td>
<td>71.91277</td>
<td>0.0000</td>
</tr>
<tr>
<td>DAKFISIK</td>
<td>-0.000131</td>
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<td>-1.748643</td>
<td>0.1309</td>
</tr>
<tr>
<td>DAKNONFISIK</td>
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<td>6.41E-06</td>
<td>7.297005</td>
<td>0.0003</td>
</tr>
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<td>R-squared</td>
<td>0.925041</td>
<td>Mean dependent var</td>
<td>68.94000</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.900055</td>
<td>S.D. dependent var</td>
<td>1.679874</td>
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<tr>
<td>S.E. of regression</td>
<td>0.531076</td>
<td>Akaike info criterion</td>
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<tr>
<td>Sum squared resid</td>
<td>1.692252</td>
<td>Schwarz criterion</td>
<td>1.899121</td>
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</tr>
<tr>
<td>Log likelihood</td>
<td>-5.250207</td>
<td>Hannan-Quinn criter.</td>
<td>1.691509</td>
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<tr>
<td>F-statistic</td>
<td>37.02206</td>
<td>Durbin-Watson stat</td>
<td>0.780397</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000421</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6. Multicollinearity Test

3.6 Coefficient of Determination Test

The coefficient of determination is used to measure the model's ability to explain the variation of the dependent variable. The coefficient of determination is zero to one. If the $R$-Squared value is small, it signifies that the independent variable's ability to explain the variation of the dependent variable is minimal. If the $R$-Squared value is close to one, the independent variable in the model can explain the variation of the dependent variable very precisely. Based on the estimation results in Figure 6, an $R$-Squared value of 0.925041 is obtained. The meaning of 92.5% of the Human Development Index (HDI) variable can be explained by the Special Allocation Funds-Physical and Special Allocation Funds-Non Physical variables. The remaining 7.5%, explained by other variables not included in the analysis model of this study. The coefficient of determination test shows that government investment in the education sector through the Special Allocation Funds-Physical and Special Allocation Funds-Non Physical greatly influences human resource development. This fact shows that the government's steps support the development of human resources through special-physical allocation funds and special non-physical allocation funds.

3.7 Simultaneous Significance Test (F-Test)

A simultaneous significance test (F-Test) was conducted to determine the effect of the independent variables on the model together or simultaneously on the dependent variable. Based on the estimation results in Figure 6 with a 95% confidence level, an $F$-statistic value of 37.02206 and Prob $F$-statistic of 0.000421<0.05 are obtained. This result shows that, simultaneously, the Special Allocation Funds-Physical and Special Allocation Funds-Non Physical variables have a significant effect on the Human Development Index (HDI).

This implies that to improve the quality of human resources, the government must increase investment to finance education in the physical and non-physical development components in a balanced way. This is because the physical development of facilities and infrastructure will be in vain if it is not accompanied by a development in non-physical matters such as improving the quality of teachers and
other non-physical components. Development of the education sector in physical aspects such as school buildings will not significantly influence the increase of human resources if non-physical aspects do not accompany it. Meanwhile, those non-physical aspects support the direction of increasing human resources, such as improving the quality of human resources who carry out the teaching process of teaching staff and quality of academic and administrative services.

Previous research also shows that local government's spending on the education sector influences the Human Development Index; therefore, previous researchers suggested the government increase investment/budget in the education sector (Astri, Nikensari, & Kuncara, 2013; Baeti, 2013; Sanggelorang, Rumate, & Siwu, 2015). Moreover, the government’s spending on the education sector improves the quality of human resources, but it also positively impacts economic growth (Laisina, Masinambow, & Rompas, 2015). The government’s spending on the education sector and advancement in human resources have a positive relationship with economic growth. This happens because quality education will be created as the government increases investment in the education sector. Good quality education will support a good learning process that makes a quality educational output in the form of human resources. That said, quality human resources have high productivity. Accordingly, economists developed the theory of development based on the capacity of human labour's production in a development process, which came to be known as investment in human capital (Becker, 1975; Schultz, 1961). According to human capital theory, development process must have two conditions. Firstly, the efficient use of technology. Secondly, there must be human resources that manage and/or use technology. Human resources are produced through the education process, which causes human capital theory to believe that investment in education is an investment to increase community productivity which will have a positive impact on economic growth (Subroto, 2014).

$$H1 = \text{There are effects of Special Allocation Funds-Physical and Non-Physical Simultaneously on the Human Development Index (ACCEPTED)}$$

3.8 Partial Significance Test (t-test)

Partial Significance Test (t-test) is performed to show the effect of each independent variable in explaining the dependent variable. The independent variables in the model are Special Allocation Fund-Physical and Special Allocation Fund-Non-Physical, whereas the dependent variable is the Human Development Index (HDI) with α = 5%. Based on the results of data processing in figure 5, the following equation is obtained:

$$\text{HDI} = 66.74243 - 0.000131 \text{ Special Allocation Fund-Physical} + 4.68E-05 \text{ Dana Special Allocation Fund-Non-Physical}.$$ 

Based on the partial significance test results, the t-statistic value of the Special Allocation Funds-Physical variable is -1.748643 with a Coefficient of -0.000131 and a Probability value of 0.1309<0.05. It can be concluded that the Special Allocation Funds-Physical has a negative and insignificant effect on the development of human resources with HDI as the indicator. This signifies that when the Special Allocation Funds-Physical increases, it does not significantly affect the Human Development Index (HDI). This happens because the quality and quantity of educational facilities and infrastructure are not evenly distributed throughout Indonesia. Some areas do not have adequate educational facilities and infrastructure, especially due to the imbalance quality of educational facilities and infrastructure on Java Island and other islands, cities, and villages outside of Java (Komisi X DPR RI, 2019). Based on the Ministry of Education and Culture data, 90,749 classrooms were heavily damaged, and 60,760 were damaged. Furthermore, out of 214,409 schools, 144,293 schools had libraries (77,750 lightly damaged, 6,436 heavily damaged, and 5,529 total damage). Besides, out of 214,409 schools, only 50,150 schools have science laboratories (Ministry of Education and Culture, 2018). Therefore, there needs to be an equal distribution of educational facilities and infrastructure so that everyone receives an education of the same quality.

$$H2 = \text{There are effects of Special Allocation Funds-Physical Partially on the Human Development Index (REJECTED)}$$

Furthermore, the Special Allocation Funds-Non Physical variable obtained a t-statistic value of 7.297005 with a coefficient of 4.68E-05 and a probability of 0.0003 <0.05. Hence it can be concluded that partially the Special Allocation Funds-Non Physical variable has a positive and significant effect on the development of human resources with HDI as the indicator. This implies that as the Special Allocation Funds-Non-Physical increases, the Human Development Index (HDI) will also increase. This proves that investments in education funding in the non-physical sector effectively build quality human resources. One of the investments is by improving the quality of teachers. Eminently, improving the quality of teachers is important because teachers are the spearheads in the education world since they directly interact with students. In this regard, Usman (2006) revealed that teachers are the estuaries in developing human resources and educational innovation, and especially important in the resulting curriculum or the output of educational efforts (Usman, 2006). Therefore, the government must increase investment to finance the non-physical education sector to improve the quality of human resources.
4. Conclusion

The analysis and interpretation of the data show that both variables, the Special Allocation Funds-Physical and the Special Allocation Funds-Non Physical in the education sector, significantly affect the quality of human resources with HDI indicator. As for the partial or each variable individually, the Special Allocation Funds-Physical has a negative and insignificant effect on the Human Development Index (HDI). Meanwhile, the Special Allocation Funds-Non Physical variable has a positive and significant effect on the Human Development Index. These results show that a balance application between the Special Allocation Funds-Physical and Special Allocation Funds-Physical is required to improve the Human Development Index. This means that if the government wants to increase HDI they must increase investments in education funding through regional transfer budgets and village funds, including Special Allocation Funds-Physical and Special Allocation Funds-Non-Physical in a balanced and consistent manner. The government must also pay attention to the equal distribution of education for each region so that there is no imbalance in quality and quantity between one region and another through various policies that encourage that goal.

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