

DOES HUMAN CAPITAL INVESTMENT MATTER FOR GROWTH? EVIDENCE FROM INDONESIA DURING THE FISCAL DECENTRALIZATION ERA

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Abstract

The purpose of this study is to investigate the role of regional government expenditure, workers' education level, and government expenditure for health and education sector in economic growth by using secondary data published by National Bureau of Statistics Indonesia. Panel data estimation approach was adopted to analyze the data. The result of the study shows that education contributes significantly to the improvement of labor productivity. Other findings indicate that the population has positive impacts on various aspects of human development and labor productivity while the total area owned by the local government has no effect on both of the two aspects aforementioned. It implies that human resource is an essential component for economic growth and for human development itself.

Keywords: Human Capital Investment; Government Expenditure; Fiscal Decentralization.

JEL classification: H51, H52, H72, H75

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1. Introduction

Along with the decentralization, there are numbers of money flowing massively, from the central government to the regional government. As a result, the subject and the object of development become closer to the local government who has a discretionary authority to manage the budget, and therefore, the development movement can be maximally optimized for the benefit of many people.

Desentralization has many dimensions and are generally divided into three categories, namely administration desentralization, political desentralization, and fiscal desentralization. Among the three categories, the readiness aspect of fiscal desentralization is one which is often ignored. The influence of fiscal desentralization to the society prosperity in regions depends on the readiness of local government's capacity in managing the finance. If the local government is ready to manage the fiscal, the APBN finance which is administered to the region can improve the welfare of its people optimally. And it means that the management of

fiscal becomes more efficient and the corruption can be effectively abolished. On the other hand, when the desentralization is done so suddenly, there will be unreadiness from the local government in managing the fiscal which greatly increases, and therefore, the amount of money which is administered to the regions will merely lead to waste.

Kyriacou dan Sagalés (2008) state that desentralization can improve our government quality in various ways. The quality of government can be improved in various ways such as the following:

1. Decentralized government will be better informed about local conditions and so can better satisfy citizen preferences.

2. Citizens themselves may be better informed about local government activity and, assuming that local politicians are locally elected rather than centrally appointed, good or bad performance in such a setting can be directly rewarded or punished.

3. In a fiscally decentralized setting with inter-jurisdictional mobility and thus competition, it is expected that locally elected governments offer public goods more efficiently (responsive to local demands and at lower cost) and also to be less corrupt since economic agents would flee more corrupt regions

Decentralization brings about the principle of mechanism accountability which consists of an external competition with another government and also the pressure of the government itself related to the local democracy (Bardhan and Mookherjee, 2005). Undoubtedly, however, some weaknesses in the government accountability commonly occur in developing and transition countries due to the malfunction of local democracy which is related to the asymmetry of knowledge, wealth, social status, and political participation patterns.

Decentralization should not be merely interpreted as a way for increasing the amount of money managed by the local government, but in fact, it requires creativity and innovation from the local government in its spending aspect. When the local government emphasizes its financial management on the revenue aspect, many charges or taxes, which aim at increasing the revenue will inevitably occur. Then, if this is done haphazardly without considering the overall impact on the economy, it will exactly decrease the revenue in the future because we know that the taxes or levies collection and so forth would be disincentive (in other words, having a negative economic multiplier). In contrast, when the government considers the expenditures very well, the targeted priority or specific sectors are expected to create an optimal economic multiplier.

Investment expenditures must be given the highest priority due to the fact that they can create greater multipliers compared to consumption expenditures. Through investments, the expenditures will not merely flow and simply vanish at the end, but it will be a key factor for increasing the output level in the future.

Stansel (2009) argues that government expenditures in a general meaning are not really necessary in relation to the economic growth. However, much better results can be achieved if these expenditures are distributed and allocated into a more specific component, that is investment expenditure (the greater the investment done by the government, the higher the growth will be achieved). Besides, the government investment is also effective in lowering the unemployment rate in particular areas.

In the development, human capital investment is an important expenditure because it aims at improving the quality of human resource itself. Considering the fact that human capital is the main production factor in generating output at the micro level, this investment is worth doing, though, the benefits can not be obtained in the short-term period. It is also necessary to emphasize the quality of human resource at the macro level from a certain area in its economic development.

In his research, Denaux (2007) found that local government spending in the higher education sector was significantly higher affecting the economic growth in that region. However, the expenditure at the lower levels (i.e. the school level) does not have any influence on the economic growth. Another research study conducted at a more macro level by Oluwatobi and Ogunrinola (2011) in Nigeria also shows that government expenditures on education and health sectors can foster economic growth. In addition, Dao (2012) also asserts that the government expenditure on human capital investment is crucially important. His study shows that the economic growth of a country depends on the level of its government spending on education, health, and other investments.

Against the importance of government expenditures on human capital investment as previously mentioned, this research is worth conducting. The government expenditures, though, may be abused for wasteful expenses, which do not significantly bring many benefits for improving people's welfare. Since the role of provincial government and district government is very important in the fiscal decentralization era to achieve the development goals, it is necessary to conduct this research at the local government level (the provincial government). This is intended to determine how far the effect of government expenditures, particularly in relation to the function of human capital investment in education and health sectors.

2. Method

A model used by Yeoh and Stansel (2013) was applied in this research with some modification and augmentation to meet the purpose of the study. The model is modified as follows:

$$\begin{aligned} \ln PDRB_{kap} &= A + \beta_1 \ln(Gedu) + \beta_2 \ln(Health) \\ &+ \beta_3 \ln(GFac) + \beta_4 \ln(K/L) + \beta_5 \ln(SMK) \\ &+ \beta_6 \ln(Dip) + \beta_7 \ln(Univ) + \beta_8 \ln(Pop) \\ &+ \beta_9 \ln(Land) \end{aligned}$$

Where:

Y/L=PDRBkap: Regional GDP per capita which can be obtained from Regional GDP of each province

Gedu: government spending for education

Ghealth: government spending on health

GenFac: government spending for public facilities

K/L: capital stock per capita, using gross capital changes in regional or provincial GDP for the proxy

SMK: The ratio of workers with vocational education background (at secondary education level)

Dip: The ratio of workers with vocational education background (at higher education level)

Univ: The ratio of workers with higher education background (non-vocational)

Pop: population in the province

Land: the width of an area in the province

To find out how the effect of human capital investment to the economic development, the independent variable is replaced with the human development index. This estimation model can be used with consideration that the growth is expected to significantly contribute to the human resource development. Therefore, it can be obtained equality as follows:

$$\begin{aligned} HDI_{i,t} &= A + \beta_1 Gedu_{i,t} + \beta_2 Ghealth_{i,t} + \beta_3 GenFac_{i,t} + \beta_4 \ln\left(\frac{K}{L}\right) \\ &+ \beta_5 SMK_{i,t} + \beta_6 Dip_{i,t} + \beta_7 Univ_{i,t} + \beta_8 \ln Pop_{i,t} + \beta_9 \ln Land_{i,t} + \varepsilon \end{aligned}$$

Where, HDI is the human development index, either as an aggregate or an individual constituent components, such as the literacy level, the life expectancy, the average length of education and the real consumption per capita.

3. Results and Discussion

This study employs the data from the summaries of all provincial governments' regional budgets in Indonesia provided by the Directorate General of Regional Finance, Ministry of Finance, Republic of Indonesia and the National Bureau of Statistics. The data used were panel data from 2006 to 2012 by analysis on the provincial level all across Indonesia.

Table 1 Variable Definition

Symbol	Variables
LnPDRBkap	Regional Gross Domestic Product per capita (Log)
HDI	Human Development Index
GTOT	Government total expenditure
GEDUC	Government expenditure on education
GHEALTH	Government expenditure on health

Symbol	Variables
GFAC	Government expenditure on public facilities
K/L	Investment expenditure
SMK	The ratio of workers with vocational education background (at secondary education level)
DIP	The ratio of workers with vocational education background (at higher education level)
UNIV	Ratio of labors with higher education background-non vocational degree
POP	Population in each province (log)
LAND	Width of area in each province (log)

The dependent variable in the first model is Regional GDP per capita in the log form. Other than being a proxy for economic growth, the variable can be used to measure the level of labor productivity in each province. The second dependent variable is the Human Development Index. The HDI value is the composite of several human development dimensions such as life expectancy, literacy rate, average length of education, real consumption per capita.

The explanatory variables are divided into three groups of variables for measuring the effectiveness of government expenditure on the economic growth and human development index. These five groups are (1) government expenditure group, (2) education types and population, and (3) area. The first group--the government expenditure group--is categorized into total expenditure, expenditure for education sector, government expenditure for health sector, and government expenditure on public facilities (infrastructure), and investment expenditure variables. The second group represents the stock of human resource in both quality and quantity. The proxy for human resource stock quality is represented by the ratio of labors with vocational high school, diploma, and higher education backgrounds, whereas the quantities are represented by the population variable, which is transformed into the forms of logs. The last independent variable is the variable for the width of the area, which is transformed into log form.

In general, the data description in HDI including the government expenditure on education, government expenditure on health, and the total government expenditure is illustrated in the four following figures. Figure 1 indicates the HDI level in each province and national HDI in 2012. Based on the ratio, the percentage of provinces with HDI level higher than the average of national HDI is less than 50%. Only 14 out of 33 provinces have higher HDI level than the national HDI average. Jakarta, the capital of Indonesia, reaches the highest HDI level of 78,33 whereas the region with the lowest HDI level at 65.86 is Papua.

Figure 1 Provincial HDI and National HDI in 2012

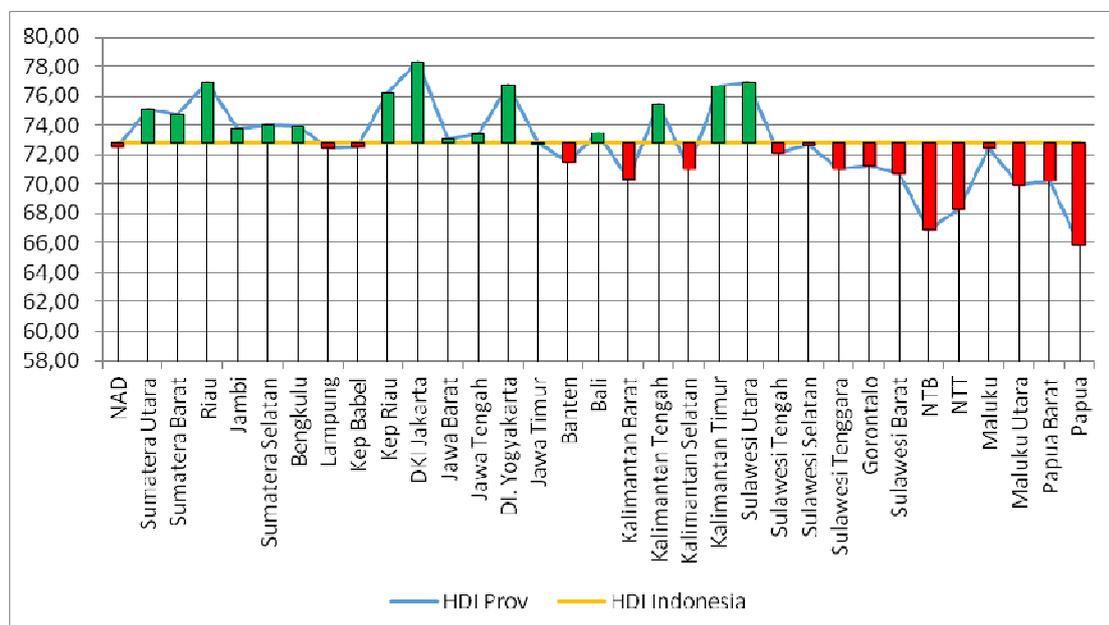


Figure 2 Government expenditure per capita on education sector based on the province and the average of national expenditure

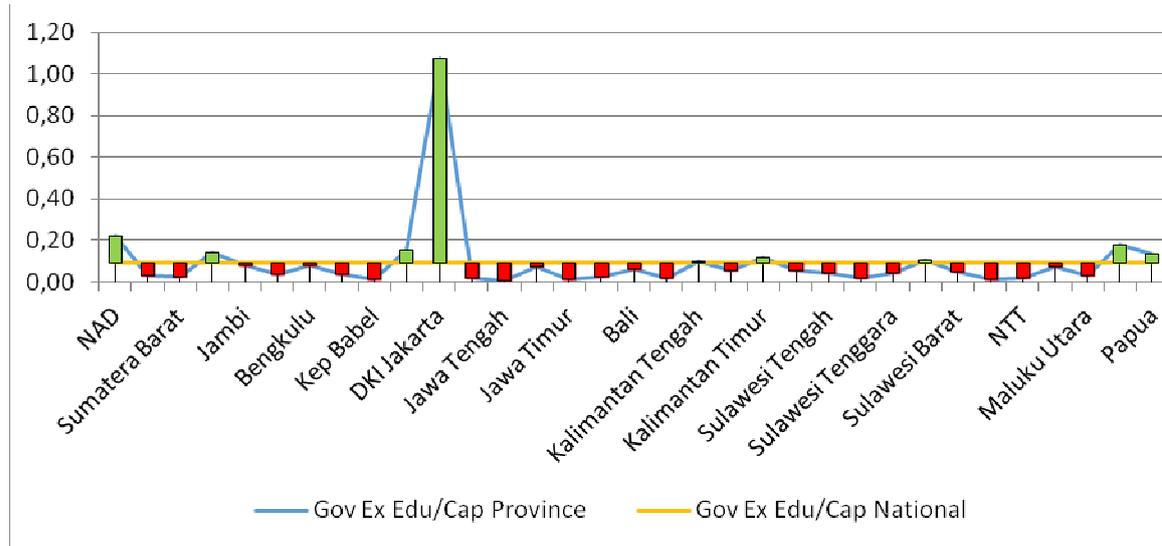
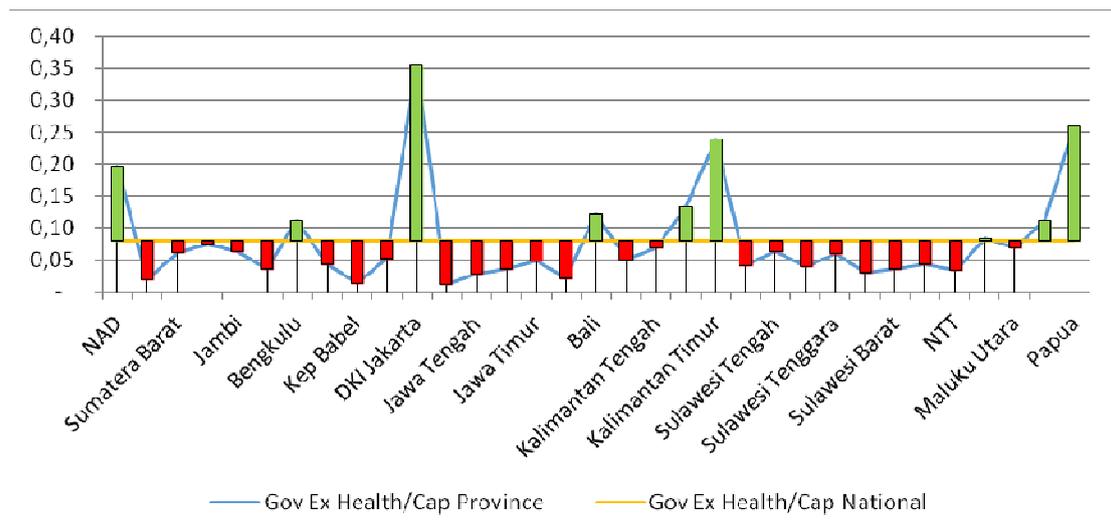
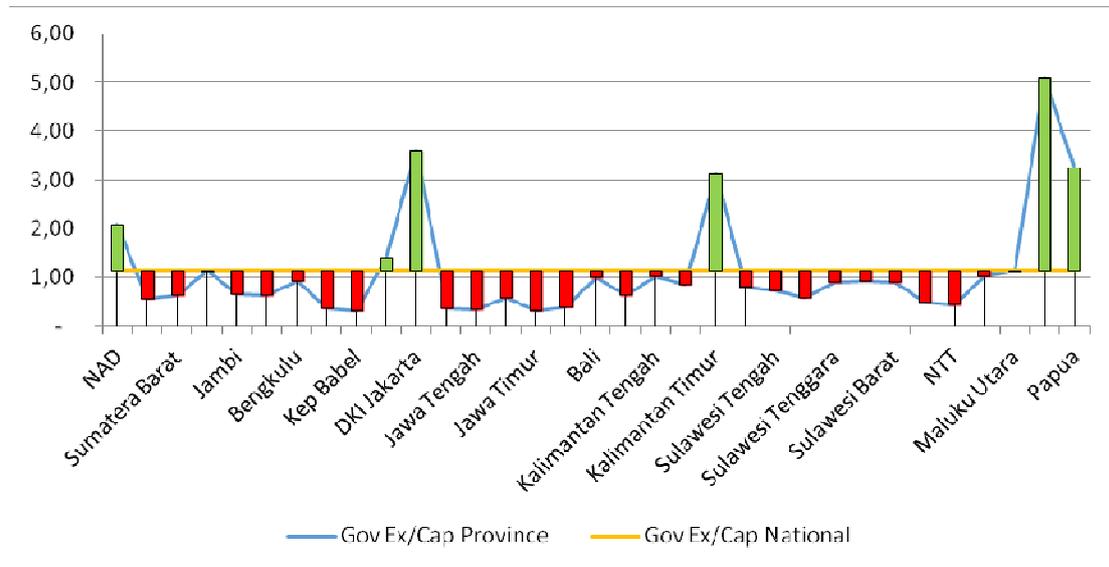


Figure 3 Government expenditure on public health per capita based on the province and the average of national expenditure in 2012



Figures 2, 3, and 4 describe the government expenditure per capita on each sector (education and health) and the total expenditure. The distribution of the government expenditure per capita in each province compared to the national average is not satisfactory. Only 27% of 33 are provinces with expenditures per capita are above the national average. As shown in Figure 2, there are only 9 provinces with expenditure on education per capita above the national average. For the distribution of the government expenditure on health per capita, only 8 provinces are above the national average. If we look at the government total expenditure for all provinces compared to the government expenditure per capita, only 6 provinces or 18% of 33 provinces spend higher than the national average.

Figure 4.: Government expenditure per capita based on the province and the average of national expenditure in 2012



The result of the model estimation of economic growth using Pool and Fixed Effect approaches is presented in Table 2. In general, the model estimation of economic growth or labor productivity using Pool approach shows that most of the variables have significant effects on the statistics, except for two variables including government expenditure and population. It is worth noting in this Pool approach estimation mode that the ratio of labors with vocational senior high school background have positive and significant effect on the statistics of economic growth. Each increase by 1 point in the ratio of labors with vocational high school background to the total labors will increase the regional domestic product per capita as much as 0.14 % (column a), 0.13 % (column c), 0.14% (column e) and 0.13% (column g). The ratio of labors whose educational backgrounds are diplomas to the total labors also indicates the similar result on the economic growth. This suggests the significance of labors with diplomas on the economic growth. The result is in accordance with the ratio of labors with higher education background. Each increase by 1 point in the ratio of labors with higher education background to the total labors will increase the labor regional domestic product per capita from 0.07% to 0.12% (see column a, c, e and g).

The estimation using Fixed Effect Approach indicates a slightly different result. None of the variable representing the government total expenditure or government expenditure based on the function is significant to the economic growth. As to variables representing the labor quality, positive and significant effect on the statistics of economic growth is only provided by the ratio of labors with higher education background to the total labors. The variable for the ratio of labors with higher education background (non vocational education) consistently shows positive and significant effect in all models of estimation both Pool and Fixed Effect Approaches. However, the value for model estimation using pool approach is bigger than the value for fixed effect approach. This indicates the significance of the role of higher education in determining the labor productivity, which finally fosters the economic growth.

The population variable in both approaches gives different results in the estimation. In fixed effect approach in all models (column b, d, f, and h,) the population variable consistently gives positive and significant effects on economic growth. It indicates a positive correlation between population growth and economic growth. However, in the pool approach, the population variable does not consistently give any positive and significant effect on the economic growth (column a, c, e and g).

Table 3 describes the result of model estimation for Human Development Index using pool and fixed effect approaches. In the model estimation using Pool approach, the variables representing the expenditures does not statistically affect the value of Human Development Index, except for the government total expenditure variable. However, this variable negatively

affects the level of Human Development Index. It raises a question on the effectiveness of government expenditure on the human development index in each province.

In the pool approach used, four estimation models were employed. Only one model involving the government total expenditure (see column a and c) shows a positive correlation between investment per capita and Human Development Index, despite the small magnitude, that is an increase of annual investment per capita of 1 million rupiahs will be followed by an increase of HDI level as much as 0.01%.

The labor quality represented by the variables for the ratio of labors with certain kinds of education backgrounds (Vocational High School, Diplomas, Higher Education Degrees) have positive and significant effect on the Human Development Index, namely ratio of labors with vocational high school background and ratio of labors with higher education background. In all estimation models, the ratio of labors with higher education background made greater contribution to the Human Development Index than those with vocational high school background.

The number of population made positive contribution to the Human Development Index in all estimation models in Pool approach except on the estimation model g (see column g). Each increase in the population as many as 1000 individuals will increase the Human Development Index up to 3.8%.

The fixed effect approach gives different estimation results on several variables. The government total expenditure variable only has a significant effect on the Human Development Index when the variable accommodates the ratio of labors with diplomas background. Based on the functions of expenditures, the government expenditure in education seems to have a negative effect on the Human Development Index, whereas the government expenditure on health has a positive effect on the formation of Human Development Index. An increase of 1 million rupiahs on the expenditure will increase the Human Development Index by 0.66% and 0.62%.

The comparison of the effectiveness of the government total expenditure and the government expenditure in each sector on the economic growth (labor productivity) using the fixed effect approach is presented in Table 4. In general, both the government total expenditure and human capital investment in education and health (or expenditures based on the functions) does not affect the labor productivity, and in other words, it is not productive to increase the labor productivity.

The investment expenditure by private sectors is more productive in increasing the labor productivity. This finding is similar to the previous studies, which are used as references. Besides, the finding based on the types of education is relevant to the theories and indicates a positive effect, which grows greater as the education level gets higher. However, statistically, only labors with higher education background are able to increase the labor productivity. It means that the greater the ratio of labors with university degree to the total labors correlates to greater labor productivity. Other findings suggest that the population increases labor productivity whereas the width of the area (land) does not affect the labor productivity.

Table 2 Economic Growth Estimation Model

Variable	Pool (a)	FE (b)	Pool (c)	FE (d)	Pool (e)	FE (f)	Pool (g)	FE (h)
C	-2.021266***	-13.94149	-2.264660***	-13.00442	-1.888083***	-13.91003	-2.098825***	-12.92469
GTOT	8.29E-10	5.72E-09	-1.38E-09	5.07E-09				
GEDU					-3.24E-08	-3.58E-08	-4.73E-08	-3.71E-08
GHEALTH					-1.34E-07	8.34E-08	-1.20E-07	7.82E-08
GFAC					5.64E-08***	-4.76E-09	3.97E-08**	-4.78E-09
(K/L)	4.71E-09***	2.11E-09**	5.23E-09***	2.20E-09***	5.49E-09***	2.67E-09***	6.16E-09***	2.79E-09***
SMK	0.136684***	0.008467	0.127603***	0.010898	0.141367***	0.008710	0.131268***	0.011207

Variable	Pool (a)	FE (b)	Pool (c)	FE (d)	Pool (e)	FE (f)	Pool (g)	FE (h)
DIP			0.114869***	0.025130			0.108307***	0.026345
UNIV	0.118777***	0.110692***	0.074455***	0.105754***	0.112249***	0.109478***	0.073043***	0.104166***
POP	-0.022785	1.870299***	-0.017046	1.793098***	-0.033311	1.858658***	-0.029551	1.776605***
LAND	0.399566***	-1.118636	0.405827***	-1.102854	0.401050	-1.104851	0.407440***	-1.086963
R-squared	0.721828	0.924719	0.737185	0.924965	0.730384	0.925294	0.743172	0.925561

Note: * significant at 10%, ** significant at 5%, *** significant at 1%

Table 3.: Human Development Estimation Model

Variable	Pool	FE	Pool	FE	Pool	FE	Pool	FE
C	55.13554***	-31.37445	55.16638***	-24.20894	55.98753***	-31.74560	57.68626***	-24.31264
GTOT	-1.43E-07**	5.35E-08**	-1.43E-07**	4.86E-08				
GEDU					-7.84E-08	-2.23E-07***	-1.86E-07	-2.33E-07***
GHEALTH					-4.42E-07	6.61E-07***	-1.70E-07	6.22E-07***
GFAC					6.21E-08	-5.02E-08	7.81E-08	-5.04E-08
(K/L)	1.20E-08**	5.54E-09*	1.20E-08*	6.20E-09	5.68E-09	9.39E-09***	8.04E-09	1.03E-08***
SMK	0.460688***	0.026530	0.461839***	0.045120	0.462814***	0.024567	0.425068***	0.043406
DIP			-0.014557	0.192165			0.084400	0.198732**
UNIV	0.574306***	0.562313***	0.579923***	0.524552	0.537607***	0.559118***	0.564158***	0.519045***
POP	0.385614**	9.300680***	0.384887**	8.710348	0.365696**	9.266069***	0.266572	8.647101***
LAND	0.368480***	-4.053635	0.367687***	-3.932952	0.318708**	-3.966468	0.252801*	-3.831528
R-squared	0.510784	0.952957	0.510798	0.953720	0.506375	0.954250	0.488781	0.955057

Note: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 4.: The comparison of the effectiveness of the government total expenditure and government expenditure per sector on the economic growth (Fixed Effect)

Variable	Expenditure based on Function (a)		Total Expenditure (b)	
C	-13.91003	-12.92469	-13.94149	-13.00442
GEDU	-3.58E-08	-3.71E-08		
GHEALTH	8.34E-08	7.82E-08		
GFAC	-4.76E-09	-4.78E-09		
GTOT			5.72E-09	5.07E-09
K/L	2.67E-09***	2.79E-09***	2.11E-09**	2.20E-09***
SMK	0.008710	0.011207	0.008467	0.010898
DIP		0.026345		0.025130
UNIV	0.109478***	0.104166***	0.110692***	0.105754***
POP	1.858658***	1.776605***	1.870299***	1.793098***
LAND	-1.104851	-1.086963	-1.118636	-1.102854
R-squared	0.925294	0.925561	0.924719	0.924965

Note: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 5 describes the comparison of the effectiveness of the government total expenditure and government expenditure based on the sectors on the HDI using Fixed Effect approach. In general, both the government total expenditure and the expenditure based on functions namely expenditure on human capital investment in education and health affects the human development index (HDI) in the province. In details, however, the human capital expenditure on education has a negative effect on the HDI whereas the expenditure on health gives a positive effect to the HDI.

The provincial government total expenditure in the regional budget has a significant effect on the HDI. In comparison, the provincial government total expenditure and government expenditure based on the functions in the form of human capital investment (totally in health and education) are more effective than the provincial government total expenditure in the regional budget expenditure. It indicates that more detailed expenditures based on the functions are more effective to increase the human development in the region.

The investment expenditure by private sectors is more productive in increasing the labor productivity. This finding is similar to the previous studies used as references in this study. The findings based on the types of education are positively relevant to the theories and education levels made greater contribution to the human development. Statistically, the greater ratio of labors with university degree and diploma indicates the increasing human development. Another finding also suggests that the population contributes to human development.

Table 5.: The comparison of the effectiveness of the government total expenditure and government expenditure based on the sectors on the HDI (Fixed Effect)

Variable	Expenditure based on functions		Total Expenditure	
	(a)	(b)	(c)	(d)
C	-31.74560	-24.31264	-31.37445	-24.20894
GEDU	-2.23E-07***	-2.33E-07***		
GHEALTH	6.61E-07***	6.22E-07***		
GFAC	-5.02E-08	-5.04E-08		
GTOT			5.35E-08**	4.86E-08
K/L	9.39E-09***	1.03E-08***	5.54E-09*	6.20E-09
SMK	0.024567	0.043406	0.026530	0.045120
DIP		0.198732**		0.192165
UNIV	0.559118***	0.519045***	0.562313***	0.524552
POP	9.266069***	8.647101***	9.300680***	8.710348
LAND	-3.966468	-3.831528	-4.053635	-3.932952
R-squared	0.954250	0.955057	0.952957	0.953720

Note: * significant at 10%, ** significant at 5%, *** significant at 1%.

4. Conclusion

The following conclusions can be drawn from the research findings. The government total expenditure generally does not increase the economic growth or labor productivity. The labor productivity will increase along with higher levels of education, as shown by the ratio of labors with varied education background. Non-vocational education above vocational high school education is proved to be productive to increase the province's labor productivity in the region. The government expenditure on human capital investment in education and health does not improve the labor productivity. In other words, the human capital investment is not productive for the regional economy. Both the government total expenditure and expenditures

on education and health sectors are not productive to increase the labor productivity. Meanwhile, the investment by the regional private sectors is productive to improve the labor productivity. Although economically not productive, the human capital investment in health sector is able to improve the human development. The effect of the investment can be seen on the HDI and specifically on the components of HDI. This effect does not occur on the provincial government total expenditure (if it is viewed from the total expenditure in the regional budget), which is not effective to increase the human development in each province.

Other findings suggest that the number of population contributes to various components of human development and labor productivity, whereas the width of the area does not affect both human development and labor productivity. This indicates that quantitatively, human is a crucial component to economic growth and human development. As to provinces, the width of area does not contribute to the economic growth and human development.

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