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The Effect of Education Expenditure, Health Expenditure, and Infrastructure Expenditure on Education Levels, Health Quality and Sanitation in Regencies/Cities in Indonesia

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Abstract

The purpose of this study was to analyze the effect of government expenditure on the number of people who graduate from elementary school, graduate from junior high school, literacy rate 15-24 years, literacy rate 15-55 years, school participation rate 7-12 years, school participation rate 13-15 years, family planning users, immunization, users of water and sanitation in districts/cities in Indonesia. The instrument of this study used panel data regression, which uses panel data of 2016-2019 in districts/cities in Indonesia. The panel data estimation technique used is the standard effect, fixed-effect, and random effect models. Government expenditure is measured using expenditure on education, expenditure on health, and expenditure on infrastructure. The results obtained are that government expenditure on education has a significant effect with 5% on the number of people who graduate from elementary school, the literacy rate of 15-55 years, and the school participation rate of 13-15 years in districts/cities in Indonesia. In the health sector, government expenditure significantly affects family planning users in regencies/cities in Indonesia. In contrast, government expenditure in infrastructure significantly affects users of safe water and the availability of sanitation in regencies/cities in Indonesia.

Keywords
education expenditure; health expenditure; infrastructure expenditure

I. Introduction

One of the factors in the economic progress of a nation is the level of economic growth. This makes most countries always strive to increase economic growth in their country. Economic growth is significant for a country to play a role in increasing public consumption of goods and services and as a contributor and providing a variety of goods and services in a larger social field such as in the fields of education, health, and others that aim to improve people's living standards.

An indicator influences economic conditions in a country. Gross domestic product is one indicator that aims to see the economic conditions at a certain period. Based on data from the Central Statistics Agency, Gross Domestic Product is several added values obtained from all business units in a country or is defined as several values of goods and services that have been produced in all economic units. The graphic data presented below shows the development of the gross domestic product in Indonesia over the last 20 years.

The critical role of the government is vital in efforts to increase the progress of economic growth in a country. Policies related to efforts for economic growth and progress are monetary and fiscal policies. Monetary policy is said to be related to the level of circulation of money in the community. Then the fiscal policy is explained as a policy

made by the government related to its expenditure and income and aims to create high employment or employment opportunities without inflation (Sukirno, 2006). With this fiscal policy, the government allocates state revenues in taxes and non-taxes in state spending.

The education, health, and economic sectors are critical sectors in improving human resources in Indonesia. Expenditures made by the government for the health sector are usually in the form of routine expenses such as teacher salaries, BOS funds, and others and expenditures for development such as the construction of school buildings and others. The distribution of government spending is based on sub-sectors in education, including early childhood education, primary education, secondary education, official education, religious education, non-formal and informal education, educational assistance services, higher education, youth and sports, and research and development.

Education is a very important human need because education has a duty to prepare Human Resources (HR) for the development of the nation and state (Pradana et al, 2020). Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and Mujahiddin, 2020). Education is expected to be able to answer all the challenges of the times and be able to foster national generations, so that people become reliable and of high quality, with strong characteristics, clear identities and able to deal with current and future problems (Azhar, 2018).

The existence of a budget allocation made by the government in the education sector reflects the government's efforts to improve the provision of services in the field of education to the community as an essential component in the growth of human resources. In addition, the budget allocation serves to fulfill the mandate that comes from the constitution or the ministry, which states that the budget allocation from the education sector reaches at least 20% of the state budget (Kemenkeu, 2017).

In the health sector, expenditures allocated by the government can be in the form of routine expenditures and development expenditures to improve health and health services to the community. As in education, government spending in the health sector is also allocated to various sectors in health such as the individual and community service sector, the provision of medicines and health supplies, the population and family planning services sector, and other health services. The government's commitment regarding the budget allocation for the health sector is to meet the figure of 5% of the total state budget. This has been stipulated in Law Number 9 of 2009 concerning Health (Ministry of Finance, 2017).

One of the other factors that influence the development of human resources in the country is government spending on infrastructure. Infrastructure is the most critical component in the development process that can support various other sectors. As Friawan (2008) explained, three main reasons make infrastructure considered the essential thing in the economic integration. First, the reason is the existence of new infrastructure as the main engine that drives economic growth. The second reason is that the existence of infrastructure development can get good benefits from the integration; the last reason is that the infrastructure network's availability is considered necessary to expedite the activities of trade and investment.

II. Review of Literature

2.1 Government Spending on Education, Health, and Public Works

Productive local government expenditures include government spending relating to affairs in the health sector, public works, and education. Regional government spending allocated for these three affairs is beneficial for realizing a society that is knowledgeable, healthy, and has a long life worthy.

Local government expenditures are expected to increase the human development index, which in this study is the entirety of regional expenditures, both direct and indirect expenditures, then allocated to regional financial management power holders in affairs in the health, education, and employment sectors. General.

Based on the explanation above, what is meant by government expenditure on education affairs contained in this study is the total regional government expenditure from the direct expenditure group and indirect expenditure group, which is allocated fairly and equitably by the holder of the authority for regional financial management to carry out government duties and functions in education affairs. . Then what is meant by government spending on health affairs in this study is the total expenditure of local government, both direct and indirect expenditure groups which are allocated fairly and equitably by the holder of the authority for managing regional finances to carry out government duties and functions in health matters. In addition, government spending on public works in this study is a group of direct and indirect expenditures that are allocated fairly and equitably by the holder of the authority for managing regional finances to carry out government duties and functions in public works matters.

2.2 Government Spending and its Impact on the Dimensions of Human Development

In the theory of endogenous growth, government spending is considered one of the factors that can encourage increased economic growth. Government spending plays a role in the country's economic growth process, which assumes that government spending is a productive activity. Government spending activities that have a productive nature and are directly in contact with the interests of the public will be able to become a stimulus in the country's economy and improve people's living standards. For example, the existence of infrastructure development will be a driver of increased investment. With this investment, it is hoped that economic development and growth will occur through a *multiplier effect* to increase the absorption of new workers for the availability and increase in employment opportunities and increase per capita income. In summary, with an increase in government spending, it is hoped that it will eventually increase the HDI.

III. Research Method

The scope of this research is the influence of government spending on the quality of education, health, and infrastructure in Indonesia in 2016-2019. This type of research is descriptive with a quantitative approach.

In this case, the research location in Indonesia consists of 460 districts/cities. Secondary data is a combination of *cross-section* data of 460 districts/cities and *time series* from 2016-2019 obtained from the Ministry of Finance. The method of collecting the literature study method. The data analysis technique used in this research is a quantitative analysis using regression tools, namely the *standard effect model, fixed-effect model*, and *random effect model*.

The research variables used in this study were literacy rates, school participation rates, education levels, family planning users, immunization, and sanitation facilities as dependent variables. At the same time, the independent variable is government spending on education, health, and infrastructure in Indonesia.

IV. Results and Discussion

One of the objectives of the regional autonomy policy is that the community's welfare can be realized. The participation of local governments is highly expected in order to make this happen. One of them is through government spending. The government's spending allocation strategy needs to be optimized in education, health, and infrastructure.

Widarjono (2013) states that the regression model estimation method using panel data can be done through three approaches, including the following.

a. *Common Effect Model* (CEM), this technique is the most straightforward technique for estimating the parameters of the panel data model, namely by combining cross-sectoral data and time series as a single unit without looking at differences in time and entities.
b. *Fixed Effect Model* (FEM), the *fixed-effect* model approach assumes that the intercept of each individual is different, while the slope between individuals is the same (the same). This technique uses a *dummy* variable to capture the differences in intercepts between individuals.
c. *Random Effect Model* (REM), REM assumes that each company has a different intercept, where the intercept is a *random* or stochastic variable. This approach is also known as the *Error Component Model* (ECM). The correct method used to estimate the *random effect* model is *Generalized Least Square* (GLS).

4.1 Education Shopping Test

Based on tables 1 to 7 (attached) it can be concluded in the following equation:

SD = 3.971810 - 0.0669 EDUC + e
Junior High School = 54.64599 - 0.138259 EDUC + e
AMH1524 = 95.41446 + 0.290901 EDUC + e
AMH1555 = 86.38418 + 0.824230 EDUC + e
APS712 = 96.53625 + 0.104327 EDUC + e
APS1315 = 4.224655 + 0.023314 EDUC + e

In this test, based on the regression test using Eviews with the FEM model and the random effect model, it is known the effect of education spending on the population graduating from elementary school, graduating from junior high school, literacy rate 15-24 years, literacy rate 15-55 years, school participation rate 7-12 years, and the school participation rate of 13-15 years that part three variables are not influenced by education spending, namely graduating from junior high school, literacy rate 15-24 years and school participation rate 7-12 years.

Based on the estimation results in Tables 1 to 7, it shows that the R^2 coefficient value of the SD variable is 25%, the AMH 1555 variable is 91%, the APS 1315 variable is 24%, which means that variations of changes in the education expenditure variable can explain the variation in the population graduating from elementary school. , graduated from junior high school, the literacy rate is 15-24 years, the literacy rate is 15-55 years, the school participation rate is 7-12 years, and the school participation rate is 13-15 years. At the same time, the rest is explained by variations in other variables outside the model reflected in the confounding variable (*error term*).

Of the six dependent variables that have been tested, the variable that is most influenced by education spending is AMH 1555. Education expenditure has the most significant influence on AMH 1555, where the coefficient value is 0.824 with a significant level of 5%.

4.2 Health Shopping Test

Based on the regression results in tables 8 and 9 (attached), it can be concluded in the following equation:

KB = 1.3490 + 0.0408 HEALTH + e

IMMUNE = 1.8047 + 0.0105 HEALTH + e

In this test, based on a regression test using Eviews with a random effect model, the effect of health spending on family planning users is known that partially these two variables affect health spending.

Based on the estimation results in Tables 8 and 9, it shows that the R^2 coefficient of the family planning variable is 69% and the IMUN variable is 64%, which means that variations from changes in health spending variables can explain the variation in the variables of family planning devices (KB) users and children who have been immunized. (IMUN), while the rest is explained by variations in other variables outside the model, reflected in the confounding variable (*error term*).

4.3 Infrastructure Shopping Test

Based on the regression results in tables 10 and 11, it can be concluded in the following equation:

WATER = 1.8741 - 0.0117 INFRA + e

TOILET = 1.6913 + 0.0101 INFRA + e

Based on a regression test using Eviews with a fixed-effect model, it is known that partially the availability of decent water and the availability of sanitation (toilet) are affected by infrastructure spending.

Based on the estimation results in Tables 10 and 11, it shows that the R^2 coefficient of the WATER variable is 86%. The TOILET variable is 93%, which means that the changes in the infrastructure spending variable can explain the variation of the variable water decent (WATER) and the availability of own latrines/ together (TOILET). In contrast, the rest is explained by variations in other variables outside the model reflected in the confounding variable (*error term*).

Of the two independent variables that have been tested, the variable with the most significant influence is the availability of sanitation (toilet). The availability of sanitation (toilet) has the most significant influence where the coefficient value is 0.0101 with a significant level of 5%.

4.4 Individual Testing of Education Shopping

Based on Tables 1 to 7, it can be seen that the education expenditure variable individually harms elementary school graduation with the at-count value of -2.12, which is greater than the t-table value of 1.96. The individual significance test shows that the education expenditure coefficient in the selected model is -0.0669. This means that every 1% increase in education spending will decrease the average elementary school graduation by 0.0669%, assuming that other variables are constant (*centers paribus*). It can be

concluded that education spending in Indonesia shows a negative and significant effect on elementary school graduation.

The education expenditure variable does not affect graduating from junior high school with the at-count value of 0.18, smaller than the t-table value of 1.96. It can be concluded that the education budget in Indonesia does not affect graduating from junior high school.

The education expenditure variable has no effect on the literacy rate of 15-24 years with the at-count value of 1.03, which is smaller than the t-table value of 1.96. It can be concluded that the education budget in Indonesia does not affect the literacy rate of 15-24 years.

The education budget variable positively affects the literacy rate of 15-55 years with an at-count value of 2.45, which is greater than the t-table value of 1.96. The individual significance test shows that the education budget coefficient in the selected model is 0.82. This means that every 1% increase in the education budget will increase the literacy rate for 15-55 years by an average of 0.82%, assuming that other variables are constant (*centers paribus*). It can be concluded that the education budget in Indonesia has a positive and significant effect on the literacy rate of 15-55 years.

The education expenditure variable has no effect on the school participation rate of 7-12 years with an at-count value of 0.35, which is smaller than the t-table value of 1.96. It can be concluded that the education budget in Indonesia does not affect the school enrollment rate of 7-12 years.

The education budget variable positively affects the school participation rate of 13-15 years with an at-count value of 2.11, which is greater than the t-table value of 1.96. The individual significance test shows that the education budget coefficient in the selected model is 0.02. This means that every 1% increase in the education budget will reduce the 13-15 year school participation rate by an average of 0.02%, assuming that the other variables are constant (*centers paribus*). It can be concluded that the education budget in Indonesia has a positive and significant effect on the school enrollment rate of 13-15 years.

In this case, it is necessary to encourage the improvement of the level of education taken by the community. The government can build a sound education facility and system. Therefore investment in education is needed. The allocation is like education infrastructure and providing education services equally.

4.5 Individual Health Shopping Test

Based on Tables 8 and 9, it can be seen that individually the health expenditure variable has a positive effect on family planning device users with the at-count value of 2.70, which is greater than the t-table value of 1.96. The individual significance test shows that the coefficient on health spending in the selected model is 0.040. This means that every 1% increase in health spending will increase the average use of family planning devices by 0.040%, assuming that other variables are constant (*centers paribus*). It can be concluded that health spending in Indonesia shows a positive and significant effect on users of family planning devices.

The health expenditure variable has no effect on the immunization variable with the at-count value of 0.77, which is smaller than the t-table value of 1.96. It can be concluded that health spending in Indonesia affects the immunization variable.

4.6 Individual Testing of Infrastructure Shopping

Based on Tables 10 and 11, it can be seen that individually, the infrastructure spending variable hurts decent water with an at-count value of -2.06, which is greater than the t-table value of 1.96. The individual significance test shows that the coefficient of infrastructure spending in the selected model is -0.011. This means that every 1% increase in infrastructure spending will reduce users of safe water by an average of -0.011%, assuming that other variables are constant (*centers paribus*). It can be concluded that infrastructure spending in Indonesia shows a negative and significant impact on safe water users.

The infrastructure spending variable positively affects the availability of private/shared latrines with a t-count value of 3.99, which is greater than the t-table value of 1.96. The individual significance test shows that the infrastructure spending coefficient in the selected model is 0.010. This means that every 1% increase in infrastructure spending will increase the availability of private/shared latrines by an average of 0.010%, assuming that other variables are constant (*centers paribus*). It can be concluded that infrastructure spending in Indonesia shows a positive and significant effect on the availability of private/shared latrines.

V. Conclusion

Based on the results of data analysis that has been carried out, the following conclusions can be drawn:

The regression results of education expenditure variables partially affect elementary school graduation, high school graduation, literacy rates 15-55 years, and school participation rates 13-15 years, then health spending variables affect family planning users. At the same time, infrastructure spending partially affects users of proper water and the availability of sanitation (toilet).

One of the objectives of the regional autonomy policy is that the community's welfare can be realized. A social welfare function is an aggregate measure of community welfare based on the level of satisfaction of individual community members (Arsyad 1997, 340). The participation of local governments is highly expected in order to make this happen. One of them is through government spending. The government's spending allocation strategy needs to be optimized in education, health, and infrastructure.

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