

LINKAGES BETWEEN PUBLIC SECTOR EXPENDITURE ON ECONOMIC GROWTH AND RURAL POVERTY OF INDONESIA

Ferry Prasetya, Farah Wulandari Pangestuty*

Faculty of Economics and Business Brawijaya University, Malang, Indonesia

ABSTRACT

This study aimed to determine the effect of public sector expenditure on economic growth and rural poverty in Indonesia. Using data from 32 provinces from 2006 to 2008 and the simultaneous equations model, this study revealed that government spending on education and health sectors have a significant impact in stimulating economic growth, through the output of each sector. Both sectors also have a significant effect in reducing the number of rural poor through the outcome of school enrollment, illiteracy, infant mortality and life expectancy. In contrast, expenditure on infrastructure had no significant effect both in accelerating the economic growth and in reducing poverty. Whereas, the effect of economic growth to decline the number of poor people in rural areas was also not significant.

KEYWORDS: government spending, economic growth, rural poverty alleviation, Indonesia.

INTRODUCTION

Poverty reduction and economic growth are the two goals which can be contradictory or even both is a complement. Many people argue that rapid growth would adversely impact the poor because they will be increasingly left behind and marginalized by the existing structural changes. On the other hand, if government spending on public sector used to reduce poverty it will reduce budget allocated for accelerate growth.

Todaro and Smith [1] mentioned that some of the reasons why policy that aimed to reduce the number of poor people should not slow the rate of growth, including: (1) with the latest empirical data that show the wealthy residents of poor countries did not have the desire to save money and invest most of their income into the economy of their country; (2). Low incomes and poor living standards experienced by the poor will reduce their economic productivity and as a result either directly or indirectly cause the economy to slow. So the strategy to increase income and living standards of the poor are not only improving their welfare, but also increasing productivity and economic growth. (3) With an increase in poor people's income will encourage increase in demand for domestically produced products, while the rich tend to spend their wealth for luxury products from abroad? So with the increasing demand on domestic products it will provide stimulus to local production, increase local employment opportunities and boost local investment. Furthermore, it will create rapid economic growth and a lot of people's participation in the growth itself. Therefore it can be concluded that the economic growth and poverty reduction are not two conflicting objectives.

The World Bank had the same conclusion that with appropriate policies, the poor can participate in the process of economic growth [2][3]. These conditions create a consistency of rapid decline in the poverty rate and sustainable growth. As can be seen, this happened in various case studies as well as in the comparative data between countries. For more than late 20 years, the acceleration of economic growth in China was in line with the accelerated reduction in poverty levels. The same thing happened in Vietnam where poverty fell dramatically, coupled with high economic growth [4]. Meanwhile, in general, the picture of poverty is often associated with circumstances where the majority of the population still live in rural areas with activities that have a close relationship to the traditional economic sectors [1]; Lofgren and Robinson [5] mentioned that around 80 percent the poor in Africa and Asia live in rural areas, whereas in Latin America the number was 50 percent. Moreover, it is interesting to have a closer consideration that the bulk of government spending in developing countries were allocated mostly to the urban areas for modern manufacturing sector and commercial sectors as well

Based on data from the Central Bureau of Statistics the number of the poor in Indonesia since the year 2006 - 2008 has decreased continuously. In 2006 the number of poor people in Indonesia reached 39.3 million people with a poverty rate of 17.75 percent. Then in 2008 it decreased to 34.96 million with a poverty rate of 15.42 percent. The composition of the rural poor had a greater percentage than the poor in urban areas

*Corresponding Author: Farah Wulandari Pangestuty, Faculty of Economics and Business Brawijaya University, Malang, Indonesia.
Email: fwulan@yahoo.com

(Central Bureau of Statistics of Indonesia, 2009). Since the year 2006 - 2008 the percentage of poor people in rural areas reached 63 percent while the remaining 37 percent was of the urban poor.

MATERIALS AND METHODS

This research is given the number of poor people who mostly live in rural areas requires a government responsibility. Through the expenditure, government can make various poverty alleviation programs, especially in rural areas and thus reducing the existing number of poor people. This research questions wants to answer some question as follow: (a). How does government spending on education, health, and infrastructure affect economic growth? (b). How does government spending on education and health sectors affect rural poverty?; and (c) How does economic growth affect rural poverty?

The method of analysis to answer the problem as mentioned before will be used a model system of simultaneous equations with the approach of Full Information Maximum Likelihood (FIML). In this study the model equation was as followed:

$$PE = a_0 + a_1RS + a_2PKS + a_3JLN + a_4JMB + a_5JS + a_6PK + a_7PP + a_8PI + a_9INV + a_{10}Pop + u_1 \dots \dots \dots (1)$$

$$JPM = b_0 + b_1PE + b_2AKB + b_3AHH + b_4APS + b_5ABH + b_6Up + u_2 \dots \dots \dots (2)$$

$$AKB = c_0 + c_1PK + u_3 \dots \dots \dots (3)$$

$$AHH = d_0 + d_1PK + u_4 \dots \dots \dots (4)$$

$$APS = e_0 + e_1PP + u_5 \dots \dots \dots (5)$$

$$ABH = f_0 + f_1PP + u_6 \dots \dots \dots (6)$$

$$RS = g_0 + g_1PK + u_7 \dots \dots \dots (7)$$

$$PKS = h_0 + h_1PK + u_8 \dots \dots \dots (8)$$

$$JLN = i_0 + i_1PI + u_9 \dots \dots \dots (9)$$

$$JMB = j_0 + j_1PI + u_{10} \dots \dots \dots (10)$$

$$JS = k_0 + k_1PP + u_{11} \dots \dots \dots (11)$$

Where:

- PK = Health Sector Expenditure (Nominal)
- PP = Education Sector Expenditure (Nominal)
- PI = Infrastructure Sector Expenditure (Nominal)
- PE = Economic growth (GDP Growth)
- Pop = Population Growth
- INV = Investment
- JPM = Number of Poor (Rural)
- IMR = Infant Mortality
- AHH = Life Expectancy
- APS = School Enrollment
- ABH = Figures Illiterate
- RS = Number of Hospitals
- MCC = Total Health Center
- JLN = Long Road
- JMB = Number of Bridges
- JS = Number of School
- Up = Wages

RESULTS AND DISCUSSION

Results of parameter estimation of simultaneous equation model that is briefly shown in table 1 below. In the first equation shows that the variables have positive and significant influence on the variables of economic growth that is the number of health centers, the number of schools, education spending, and spending on health. This means that when the four variables is increased, it will also boost economic growth and vice versa if the value of the four variables has decreased the value of the variable will reduce economic growth significantly.

On the other side of the variable number of schools, long road, long bridges and infrastructure spending has positive influence on economic growth although the effect is not significant. This means that if there is an increase in the fourth variable, the variable will also increase economic growth and vice versa when the four variables if the value has decreased so also will reduce economic growth by its influence is not significant.

The first equation explained that if desired an increase in suppose that the economic growth of 1%, then at least in each province is required: the addition of hospital as much as 36 units ($1 / 0.0281$), increase the number of

health centers by 35 units ($1 / 0.0288$), increasing of road length of 10,000 km ($1 / 0.0001$), the increase in bridge length of 67,114 km ($1 / 1.49 \text{ e-}5$), increasing the number of schools as many as 667 units ($1 / 0.0015$), increase the amount of spending on education amounted to 352.1 billion rupiah ($1 / 2.84 \text{ e-}12$), increasing the number of health spending as much as 107.3 billion rupiah ($1 / 9.32 \text{ e-}12$), increase the amount of spending some 1.8 Infrastructure trillion rupiah ($1 / 5.54 \text{ e-}13$), increase the amount of investment of 17.21 trillion rupiah ($1 / 5.81 \text{ e-}14$) or a decrease in population growth rate of 1.15% ($1 / 0.8666$).

Then the second equation shows that the variable rates of infant mortality and illiteracy rates have a positive and significant influence on the number of rural poor. This means that when the value of the variable rate of illiteracy or child mortality has increased then the variable number of rural poor will also increase significantly, and vice versa if the value of both these variables come down it will reduce the value of a variable number of rural poor significantly. While variable life expectancy and school enrollment has a negative and significant influence on the number of rural poor. This means that when the value of variable life expectancy and school enrollment has increased it will lower the number of rural poor and vice versa if both variables decrease in value it will add a variable number of rural poor.

On the other hand the economic growth variable has a negative effect and no significant effect on the number of rural poor. This means that when there was an increase in the variable of economic growth it will lower the number of poor people in rural areas, although the effect is not so significant and vice versa if there are declining; economic growth will increase the number of poor people in rural areas, although the effect is not so significant.

An explanatory variable of outcome in both equations is strongly influenced by each sector of government spending. Health sector, government spending has a significant influence on infant mortality and life expectancy. While the education sector, government expenditure significant effect on school enrollment and illiteracy rates. This is as seen in the third until the sixth equation. Thus, overall governments spending on health and education sectors have a significant influence on decreasing the number of rural poor.

Through the second equation can also be explained that if the desired reduction in the number of rural poor population in each province for example as many as 100,000 people then at least the necessary policies in each province are: increased economic growth rate by 18.1 percent ($100,000 / 5.5519, 7$), reduction in infant mortality of 4.35 ($100,000 / 22.942,83$), increase the life expectancy of 0.66 ($100,000 / 152.142,1$), the increase in school enrollment rate of 1.06 ($100,000 / 93,531$), decreased illiteracy rate of 1.17 ($100,000 / 85,469.65$) or an increase in the wage rate of 43,013 rupiah ($100,000 / 2.32$).

Then the third equation until the eleventh equation is the relationship between government spending to output or outcome in each sector. As an example of the third equation shows that the variable of Health Sector Expenditures (PK) significantly and negatively related to variable Infant Mortality Rate (IMR). This means that if there was an increase in health spending variable it will lower the value of the variable rates of infant mortality and vice versa if the value of the variable health spending down then it will raise the value of the variable infant mortality rates significantly. So forth until the eleventh equation.

Table 1. Summary of Estimation Results

1	PE (Z-Stat)	=	7.948284 (9.092789)*	+	0.02813 (0.41828) + 9.32 e ⁻¹² (3.365413)*	RS + PK +	0.0288 (4.4887)* 5.54 e ⁻¹³ (1.09525)	PKS + PI +	0.00011 (0.365392) 5.81 e ⁻¹⁴ (0.932137)	JLN + INV -	1.49 e ⁻⁰⁵ (0.14132) 0.86664 (-3.12705)*	JMB + POP	0.001498 (4.85882)*	JS + PP	2.84 e ⁻¹² (3.51489)*	R ² =0.26	
2	JPM (Z-Stat)	=	-18650707 (-3.853466)*	-	5519.71 (-0.17733)	PE +	22942.83 (1.581891)*	AKB -	152142.1 (2.858049)*	AHH -	93531 (2.44643)*	APS +	85469.65 (4.197205)*	ABH -	2.32481 (-3.12986)*	UP	R ² =0.21
3	AKB (Z-Stat)	=	29.78872 (23.41492)*	-	3.41 e ⁻¹² (-2.12937)*	PK											R ² =0.01
4	AHH (Z-Stat)	=	68.5632 (196.0784)*	+	1.99 e ⁻¹² (4.550861)*	PK											R ² =0.03
5	APS (Z-Stat)	=	96.19278 (210.8729)*	+	3.35 e ⁻¹³ (2.126329)*	PP											R ² =0.02
6	ABH (Z-Stat)	=	7.207184 (9.189103)*	-	3.96 e ⁻¹³ (1.437735)*	PP											R ² =0.02
7	RS (Z-Stat)	=	3.214304 (4.556578)*	+	1.58 e ⁻¹¹ (18.67123)*	PK											R ² =0.78
8	PKS (Z-Stat)	=	43.34489 (3.171349)*	+	3.53 e ⁻¹⁰ (22.02428)*	PK											R ² =0.81
9	JLN (Z-Stat)	=	731.3417 (5.325361)*	+	1.94 e ⁻¹⁰ (2.230914)*	PI											R ² =0.07
10	JMB (Z-Stat)	=	5422.07 (10.80609)*	+	1.12 e ⁻⁰⁹ (3.677015)*	PI											R ² =0.18
11	JS (Z-Stat)	=	337.3416 (1.414785)	+	2.23 e ⁻⁰⁹ (28.47998)*	PP											R ² =0.87

Based on the discussions described above, at a significance level of $\leq 5\%$, then the answer to the previously formulated hypothesis can be described as follows:

- The first hypothesis which states that "the alleged expenditure of government education sector, health, and infrastructure has a significant influence on economic growth" is acceptable except for government spending in infrastructure because the effect is not significant.
- The second hypothesis which states that "expected government spending and health education sector has a significant effect on rural poverty" is not to be rejected.
- The third hypothesis which states that "expected economic growth has a significant effect on rural poverty" is not acceptable.

The simultaneous equations model shows that government spending on health sector has a significant influence on economic growth. This is in line with the results of research conducted by Dollar and Kraay [6]. Significant effects of this could be due to the utilization of existing funds have done well in accordance with the functions of the respective sectors and thus have a major impact on economic growth. In addition, it also can be caused by government spending on health sector produces output that is functioning properly in accordance with the objectives of the programs previously set so that in the next step to stimulate accretion affect aggregate output in the form of economic growth.

As an example of output that is an existing health centers in each district. The benefits are felt directly by the presence of health centers including a free service provided by the government to the public in the form of basic health services. So with a level of good health it will also increase the overall productivity will eventually affect the economic growth. Furthermore, with the health services that are free of charge at least the people no longer need to budget some of his income. The existing budget allocated by the community for the fulfillment of other needs that are more productive so that in the aggregate (overall) will also have a role in stimulating economic growth.

Therefore, after seeing the state of the above policy can be taken by the government to achieve economic growth through spending on the health sector, among others, government should increase budget allocations required each year. Besides, its utilization should also be done effectively and efficiently in accordance with the goals and objectives to be achieved.

Besides the health sector, education sector, government spending also has a significant impact on economic growth. This is in line with the results of research conducted by Jung and Torbecke [7]. Significant effects can be caused by the use of funds from the sector expenditure has been done well. In addition, it is also caused by government spending on the education sector to produce an output which works fine in accordance with the goals and objectives previously set. So with a good quality education that will serve to absorb modern technology needed by developing countries to expand existing production capacity so as to create growth and sustainable development.

Output produced by the education sector expenditure is in the form of school. With the schools scattered throughout the region will provide equal opportunities to all people can easily obtain for education. Existing learning activities will operate effectively given the proximity of residential distance to the school. In the presence of a location near the parents need to spend additional funds for transport children to school. So that the existing budget could be transferred to fulfill other needs that are more productive. Due to the use of funds that are more productive, from here in the aggregate are expected to contribute toward for economic growth.

In addition to the improvement of existing educational level, the level of work that will be obtained even be better. With the level of work the better it will also raise income levels and social welfare which in turn can help drive economic growth. Therefore, after seeing the condition of the above policy can be taken by the government to achieve economic growth through spending on education sector including the government expected to be able to utilize the existing budget allocations effectively and efficiently in accordance with the goals and objectives to be achieved. Moreover, considering that the amount of the education budget is very large and growing number as in article 31 paragraph 4 of the 1945 Constitution which mandates that the state must prioritize the allocation of education budget by 20% of Government Revenues and Expenditures Country / Region, then the government through the existing budget must make improving the quality of education in society. Plus the government was supposed to make education equitable for all communities to obtain the same educational opportunities.

On the other hand the infrastructure sector, government spending has no significant effect on economic growth. This is in contrast to research conducted by Lofgren and Robinson [5] and Fan and Rao [4] where these two studies show that government spending in infrastructure has a significant influence on economic growth.

Should government spending on infrastructure sector has a significant impact on economic growth given the total amount of spending is higher than the total expenditure on health sector which for its own health spending significant effect on economic growth. Therefore it can be concluded that no significant effect could be caused by a leak in the use of existing funds so that their use be not optimal. Utilization of funds to finance projects that are not used in accordance with the allocation for example when used for the construction or repair of infrastructure such as road infrastructure. In the process, the value of the road that was built not in accordance with the budget allocated so that the roads are easily damaged. Though the road is one means of support which has an important role to stimulate economic growth. So the overall effect of government expenditure to economic growth infrastructure sectors to be not so significant.

After seeing the aforementioned circumstances between policies that can be taken by the government to achieve economic growth through spending on infrastructure sectors such as required strict supervision on the use and allocation of the budget spent. This needs to be done to prevent more leaks in the use of the budget. Besides, the government should implement the principle of accountability should be for the use of budget spent can be accounted for in accordance with the goals and objectives previously set so that it will obtain maximum benefits and results.

Then on the other side of the infrastructure investment needs will require adequate infrastructure, a very large amount of funds and it is not possible if the requirement is only met through government spending alone. Therefore the government in this case can work with the private sector to meet its infrastructure needs of the course with the bid or withdraw the reward will be given. With this partnership at least the government's burden in meeting the need for infrastructure facilities can be reduced. In addition the government also could divert some of the existing budget for other important needs that are urgent.

Furthermore, the simultaneous equation model which is also known that economic growth no significant effect on decreasing the number of poor people. This is in contrast to the results of research conducted by David Dollar and Aart Kraay [6]. No significant effect could be caused by the absence of equitable result of economic growth so that the benefits perceived by the population in rural areas are very small.

Real economic growth occurred there in the urban areas. Various sectors have contributed greatly to economic growth most of it poured into urban areas so that the benefit is only enjoyed by residents in small towns, although some also felt by residents in rural areas. This is what causes the effect of economic growth achieved by not having a major impact on decreasing the number of rural poor. Plus government expenditure to support the economic growth of investment into productive sectors of the economy largely carried into the modern sector in urban areas.

Therefore, policies that can be taken by the government through economic growth in reducing the number of rural poor, that is the government should do the distribution better so that the benefit can be felt by all citizens especially those living in rural areas. So in this case, the welfare of rural population rises and reduces the number of poor people. In addition the government also in making policies to encourage economic growth must be biased against the poor especially those living in rural areas. This can be done by investing in productive economic sector to be an advantage in rural areas.

As can be seen from the simultaneous equations model that the role of public sector spending to reduce the number of poor people in rural areas through outcomes generated by each existing sector. As an example of outcomes produced by the education sector, government expenditure in the form of increased school participation rate and a decrease in illiteracy rates have a significant influence on decreasing the number of poor people in rural areas. Besides, the resulting outcomes of government spending on health sector in the form of reduction in infant mortality and increase life expectancy also have a significant effect on decreasing the number of poor people in rural areas.

This means that both education and health sector expenditure has a significant influence on decreasing the number of poor people in rural areas. The results are consistent with research conducted by Hans Lofgren and Sherman Robinson in 2004 titled "Public Spending, Growth, And Poverty Alleviation In Sub-Saharan Africa: A Dynamic General Equilibrium Analysis". Significant effect might be due to government expenditure is allocated to programs in direct contact with the poor. Through these programs the poor can enjoy the direct benefits derived from existing government spending.

Suppose that the education sector expenditures that produce outcomes in the form of increased school enrollment and decrease illiteracy. With school enrollment rate increased indicating that the number of children who get an education level to be increased. In addition, a decline in illiteracy rates would cause more number of people

who can read and write. Obviously both of these will cause the level of education in the community also be increased. With a good education level then it will get better job opportunities so that the level of good work will earn a better income as well. With a good income level, the level of social welfare becomes increasingly better. The same thing happened in the health sector in which government spending to produce outcomes in the form of reduction in infant mortality and increase life expectancy. Both indicate that the level of public health, the better. With the better level of health that will increase the productivity level of society. Society in this regard will further the spirit of work that will earn a better income. With income levels better then the level of social welfare will be increased.

After seeing the above circumstances, policies that can be taken by governments to reduce the number of poor people in rural areas through the expenditure is by adding more government programs that come into contact directly with the rural poor, especially programs in education and health. This means that government spending should be focused on improving the human capital development especially in rural areas. Such programs should really be felt directly benefited by the existing poor.

CONCLUSIONS

The main results concluded that public sector, government spending has a different effect on economic growth. Spending on education and health sectors have positive and significant impact on economic growth. It can be assumed that when government spending in both sectors rises, it can raise economic growth significantly. Meanwhile, government spending in infrastructure has a positive effect and no significant effect on economic growth. It can be assumed that when the rising infrastructure spending would raise economic growth but the effect is not so significant. The number of rural poor people is significantly affected by government spending health sector through the resulting outcomes such as infant mortality and life expectancy. In addition, the number of rural poor people is also influenced by government spending on education sector through the resulting outcomes such as school enrollment and illiteracy rates. Economic growth has a negative effect and no significant effect on decreasing the number of rural poor. This can mean that when there is an increase in economic growth it will lower the number of poor people in rural areas even though the amount is not so significant.

REFERENCES

1. Todaro, Michael P. dan Stephen C. Smith, 2006, *Pembangunan Ekonomi edisi kesembilan*, Terjemahan oleh Harris Munandar, Jakarta: Erlangga.
2. Fan S., P. Hazel, dan S. Thorat, 1999. "*Linkages between Government Spending, Growth, and Poverty in Rural India*", Research Report 110, International Food Policy Research Institute, Washington DC.
3. Fongler, Wolfgang, dkk, 2007. *Kajian Pengeluaran Publik Indonesia: Memaksimalkan Peluang Baru*, The World Bank Office, Jakarta.
4. Fan S., X. Zhang, dan N. Rao, 2004. "*Public Expenditure, Growth, and Poverty Reduction in Rural Uganda*", DSGD Discussion Paper 4, International Food Policy Research Institute, Washington, DC.
5. Lofgren, Hans dan Sherman Robinson, 2004. "*Public Spending, Growth and Poverty Alleviation in Sub-Saharan Africa: A Dynamic General Equilibrium Analysis*". (Paper prepared for presentation at the Seventh Annual Conference on Global Economic Analysis, Trade, Poverty, and the Environment, organized by the World Bank and the Center for Global Trade Analysis and held at The World Bank headquarters in Washington, D.C., June 17-19, 2004), International Food Policy Research Institute, Washington, D.C.
6. Dollar, D. dan A. Kraay, 2002. "*Growth is Good for the Poor*", *Journal of Economic Growth*, 7, 195-225.
7. Tryfos, Peter, 1998. *Methods for Business Analysis and Forecasting: Text and Cases*, Department of John Wiley and Sons Inc, New York