

Causality Relationship Between Public Investment and Private Investment: the Case of Indonesia

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ABSTRACT

Public investment in APBN annually budgeted as capital expenditure. However, public investment not only in the form of physical capital but also in the non-physical forms of human resources that can be looked at education expenditure and health expenditure that called as human capital. The purpose of this study is to provide empirical evidence about causality that occurred between public expenditure and private sector investment in Indonesia with 33 provinces over the study period 2010-2013. The statistical tool used in this study is the Three-stage Least Squares from E-Views. Results of this study indicate that there are causal relationship between public investment in infrastructure and private investment and between public investment in infrastructure and public investment in human resources. However, no causal relationship occurs between the public investment in human resources and private investment. As a control variable, GDP has positive and significance effect on private investment.

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INTRODUCTION

Economic growth is an indicator to know the successful of economic development. Public sector, private sector, and human resources are needed to increase economic growth. In some concept called Trilogi Pembangunan, government is one of the economic agents besides private sector and cooperative that has an important role to maintain the economic stability in order to increase economic growth because government has a task to provide public needs and services to the society that can't be provided by private sector. That task is expressed in the government expenditure in Anggaran Pendapatan dan Belanja Negara (APBN) annually. Include the government role in order to increase the quality of human

resources through education and health. Trilogi Pembangunan appears when Indonesia was at the time of Soeharto in PELITA III.

Human resources as a labour is a capital to make some movement in development. Growth and quality of labor are positive factor that spur the economic growth. Quality of the production factor of human resources is very influenced by rate of education and health. Investment on human resources is amounts of funds spent and income opportunities for the investment process. This investment has a role to spur the economic growth.

There is relationship between role of economic agents. Government through expenditure keep the stability its country with provide facilities that support citizen activity and another economic agents. Private sector has a focus on increasing economic growth with increase the productivity that make the investor want to do some investing activities, and of course cooperative has a role to distribute result from economic and expenditure that spent by government.

Private investment is an important factor to increase the economic growth. Private investment is all of type of investing activity undertaken by domestic investor and foreign to do bussiness in Indonesia. This investing activity is supervised by BKPM (Badan Koordinasi Penanaman Modal). Based on Trilogi Pembangunan, private sector has a function about economic growth, so more and more investor that do some investing activity in Indonesia will give an affect to the increase of economic growth.

Different from existing research, this study focuses on government spending in the form of investment in Indonesia, in which case the investment is not only depicted in the form of physical or infrastructure but also investment in human resources which also has an influence on the private sector represented by government spending in education spending and health spending, and private sector investment. In addition, this study also do not just look at how government investment can influence private sector investment, but the researchers wanted to see more about the causal relationship that occurs between government investment and private sector investment which is observed through statistical tool from E-Views called Three-Stage Least Squares.

Another contribution was conducted by researchers in this study the researchers also tested to see the relationship between public investment made in physical capital (infrastructure) and government investment made in human resources. Also in this study to measure the quality of human resources is not only portrayed through education spending and health spending by the government alone, but researchers added some other proxy who can help explain the quality of human resources owned by a local. Another proxy used to describe the quality of human resources is the literacy rate and life expectancy. The proxy will be explained through descriptive statistics which would help explain the condition of the area that will be examined.

LITERATURE REVIEW

Theories about the role of the private sector of the economy has been existed since 1732 beginning with the classical economic theory from the year 1773-1790 pioneered by Adam Smith who explained the principles of personal interest (self-interest) and the spirit of individualism (*laissez faire*). This mashab adherent believe that the liberal economic system automatically can achieve public welfare and government intervention is very small or even non-existent. But the flow is not able to resolve the crisis phenomena that occurred in the 1930s so it appeared the flow of Keynesian pioneered by John Maynard Keynes which aims to overcome these problems. In this theory the government has an active role in controlling the economy.

Private investment plays an important role in shaping the pattern of development in the region. This investment will lead to the formation of local capital (Zaris, 1987). Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) to be one important source of financing for growing region and was able to contribute significantly to development. According to Law 25 of 2007 Article 1 on Investment, Foreign Direct Investment (FDI) is an investment activity to conduct business in the territory of the Republic of Indonesia, made by a foreign investor, either using foreign capital and joint venture with domestic investors , While the Domestic Direct Investment or (DDI) is the investment activity to conduct business in the territory of the Republic of Indonesia by a domestic investor using domestic capital.

Investment Neo-Classical theory suggests that the growth rate of real GDP positive effect on private investment, or so-called accelerator effect (Greene, et al., 1991). GDP is the total value of final goods/services produced by all economic units in the country, including goods and services produced by other citizens who live in the country or regional. Rate of national income will increase the income of high society, and further public revenue this high will increase the demand for goods and services, the high corporate profits will increase and this will encourage investment.

Government expenditure is value of spending undertaken by the government are used for the benefit of society. Spending on education and health facilities, expenditures to provide the police and army, salary expenses for government employees and expenditures to develop the infrastructure created for the benefit of society. Based on the World Bank Government spending also consists of various activities for the well-being of the community and also to economic development, especially in developing countries.

According to BPS, central or local government spending by function consists of expenditures of public services, defense, public order and safety, economic, environmental, housing and public facilities, health, tourism and culture, religion, education, social protection. Meanwhile, according to

Minister Regulation No. 37 of 2010 on Guidelines for Preparation of Budget and Expenditure in the budget consists of routine expenditures (apparatus) and development spending (public expenditure).

Related to public expenditure in education spending, there is Law No. 20/2003 on the National Education System which requires the central and local government to allocate a minimum of 20 percent of their budgets to the education sector, beyond the salaries of these benchmarks. Management authority primary and secondary education has been fully transferred from central government to the provinces and districts. Shopping area for education sector increased both in terms of numbers and in part of the national education spending.

Health expenditure is the type shopping areas are used in order to fund the implementation of government affairs under the authority of the provincial or district / city in the health field. Under Law No. 36 of 2009 Article 171 paragraph (2) states that the major government health budget is allocated at least 10% of the budget excluding salaries. Consequences This government will show the accumulation of government spending on health expenditure, is an investment well as government interference in realizing an increase in the index of human development in Indonesia.

Local government investment in the Regional Budget (APBD) is reflected through capital expenditure budgeted annually. If the increase in budget revenues in the municipal district of a province was not followed by an increase in the funds allocated to the investment, it will have an impact on the provision of physical infrastructure and adequate infrastructure for the district and the city with the expansion. Lack of infrastructure will directly cause the economic potential of a region can not be utilized optimally (Wahyuningsih, 2012).

Investments can be done not only on the physical, but also in the field of non-physical. Non-physical investments include education, training, migration, health care and employment. Non-physical investments more or better known as investment in human resources is the amount of funds spent and income opportunities during the investment process. Investment in human resources will form human capital (human capital), which will provide rewards greater income in the future. Human capital (human capital) is one of the important factors that support change and technology development, while the technology along with physical capital investment and population growth is a function of the output. In the new theory of economic growth or the so-called endogenous growth theory (endogenous growth theory), external factors are involved as a determinant of economic growth and human capital as one of these factors (Hjerpe, et al., 2007).

Based on Neoclassical Arguments, substitution or complementary relationship exists between government spending and private investment. Substitutability hypothesis stems from the view that higher government spending on capital goods will increase the level of accumulation of capital above the optimal level, it will make private agencies cut their investments with the aim to bring back the optimal

rate of capital accumulation in the economy. As a substitute government spending on capital goods would cause crowd-out or reduction in private investment. Conversely, the complementary hypothesis government spending on infrastructure and human resources is likely to increase the marginal productivity of private capital and then will encourage more private investment which is likely to lead to crowd-in effect or increased private investment (Wang, 2005).

RESEARCH HYPOTHESES

Effect of Government Investment In Infrastructure To Private Investment

According to research by Aschauer (1989b) showed that at the aggregate level, the impact of public provision in the capital infrastructure of the activity of private investment directly found a positive correlation and stated that in areas such as public utilities, roads, education, spending on government investment may be reduce spending in the private sector, resulting in increased productivity of the private sector that will attract investors to invest in Indonesia.

Based on the complementarity hypothesis in Neoclassical arguments, government spending on infrastructure will increase the marginal productivity of private capital and then will encourage private investment which is likely to lead to crowd-in effect or increased private investment although some cases in a country leads to crowd-out effect. Based on the above theory, it can be formed hypotheses:

H1a: Investment in infrastructure has an effect on private investment.

Effect of Private Investment To Government Investing In Infrastructure

The idea of physical capital (infrastructure) has an impact on private investment activity has been discussed in the literature written by Buitter (1997). In addition there are also arguments in Neoclassical, two hypotheses are substiability and complementary hypothesis that suggests that the relationship between government and private sector investment. Private investment will be greater for value of of the infrastructure provided (Erenburg, et al., 1995).

Meanwhile, according to the Trilogy concept of economic development in a country will work properly if there is cooperation in the economic agents, especially in this study is the private sector and government. To support the increased economic growth, the private sector has a role to improve productivity by increasing the output so that the cost per unit incurred getting smaller and profits derived

also getting bigger so see that investors are interested to invest so that the state is not experiencing a shortage of funds to carry out economic activities and the economy was able to grow.

The increasing of corporate profits will make the company pay more taxes and it means that the state has an income of more taxes. To support the activities of the private sector, government has an important role in the provision of infrastructure that one source of revenue to fund the provision of infrastructure is sourced from taxes so that the distribution or production activities undertaken by the private sector runs smoothly. Seeing this, it can be said that the higher the level of private investment, the government's role in providing the necessary infrastructure is also getting bigger.

Based on the opinion of Erenburg (1995) which states that the amount of private investment will be the amount of the infrastructure were provided, and based on the concept of the Development Trilogy, the researchers were able to formulate a hypothesis:

H1b: Private investment has an effect on government investment in infrastructure.

Effect of Government Investment In Human Resources To Private Sector Investment

In the complementary hypothesis in Neoclassical arguments, not only government spending on infrastructure but government investment in human resources will also increase the marginal productivity of private capital and then will encourage private investment which is likely to lead to crowd-in effect or increased private investment.

The emphasis on investment in human resources is believed to be the basis for improving the productivity of factors of production in total. Investment in human resources in order to improve the quality can be done by the government in terms of education and health. With education and a healthy body condition, the labor productivity will increase and affect the productivity of the private sector.

Based on research conducted by Wang (2005) shows that the allocation of government expenditure in education and health expenditures have a positive impact on private investment. The article explained that government spending in education and health can improve human capital and labor productivity are expected to encourage increased private sector output which would result in investors increasingly interested in promoting investment.

According to research conducted by Hjerpe et.al (2007) showed that investment in human resources is able to improve the productivity of the private sector. In the study stated that usually the related study of economic growth is determined by labor. The possibility of growth and productivity effects of public expenditure indirectly measured through education and health (which have an impact on human resources) and government spending on infrastructure. In the study of government spending

in education and health are treated the same as government investment in infrastructure that is capable of affecting the productivity of the private sector and economic growth. In other words, human resources is another tool the government to invest in the private sector. Based on theory and previous studies, the researchers set a hypothetical:

H2a: Public investment in human resources has an effect on private sector investment.

Effect of Private Investment To Government Investment In Human Resources

The relationship between investments in human resources, also called human capital and productivity of the private sector have been described in the theory of economic growth or the so-called endogenous growth theory, external factors from the theory involved as a determinant of economic growth and human capital as one of these factors (Hjerppe, et al., 2007). A productive human capital will improve the productivity of the private sector that will lead to increased private investment. Therefore, government spending in education and health spending can be regarded as non-physical investment of government in shaping the quality of human resources.

Qualified human lately is the attraction of investment is quite important. The reason is the technology used by entrepreneurs increasingly modern. Modern technology is demanding more skills from human capital. Human capital is one of the important factors that support change and technology development, while the technology along with physical capital investment and population growth is a function of the output. Increasingly sophisticated technological change will have an impact on the rise in the productivity of the private sector. Due to the more sophisticated technology, the private sector, especially industry will be increasingly easier to produce its products, and to operate the device with advanced technology that is certainly necessary human resources are educated, qualified, so that optimal operation of the device and can support private sector productivity.

When viewed from the concept of Trilogi Pembangunan, increasing private sector investment can not be separated from the role of government that is not only in the form of the provision of physical capital, but also in terms of human resource investment. Government investing human resources can be seen through the expenditure of education and health spending. The higher the level of productivity of the private sector, the higher the quality of the human resources needed to support the economic growth that made the private sector.

Based on the theories and concepts from Trilogi Pembangunan, it can be said that the growth of increasingly sophisticated technology will make investors increasingly interested in investing because it is the private sector has a high productivity level and to be able to operate increasingly sophisticated

technology is required human resources of high quality, because growth technology but does not offset the increase in the quality of human resources, the level of production generated will not be optimal and will make investors to invest down. So as to offset the increase in private investment, should offset the government's role in improving the quality of human resources. Based on this it can be formed hypothesis:

H2b: Private investment has an effect on government investment in human resources.

Effect of Government Investment In Human Resources To Government Investing In Infrastructure

Government investing on human resources can be seen through the expenditure of education and health spending. The higher the level of productivity of the private sector, the higher the quality of the human resources needed to support the economic growth that made the private sector. If human resources are of good quality then it will certainly have a good income and avoid poverty (Suryawati, 2005).

The importance of the role of human capital in development appears at the attention of various parties such as the government and private sector investments and expenditures that allocates the region in order to improve the quality of human capital. Indeed, the investment allocated for the benefit of human capital is not immediately visible results within a short time period. So it is no wonder that the government budget is often the case of attraction between investment in economic infrastructure (physical) and investment in human capital development.

Improvements in education and health will strengthen human development, which in turn will support economic growth. When a country's economy grows then it will attract investors, especially foreign investors to invest. Given these conditions, the need for infrastructure development in order to smoothly import-export activities. Port is the gateway of a country. In addition to the construction of other infrastructure, port infrastructure is the key to competitiveness, especially for export-import flows of goods. If the port is not efficient, then logistical would be disrupted, which in turn will weaken the nation's economy. As an archipelagic country, Indonesia's infrastructure development priorities is to integrate the infrastructure of inter-island archipelago seems to be the mainland, such as multiply and enlarge the capacity of sea ports. Based on the statements it can be established exposure hypothesis:

H3a: Government investment in human resources has an influence on government investment in infrastructure.

Effect of Government Investment In Infrastructure To Government Investment In Human Resources

Infrastructure development is one of the important and vital aspect to accelerate the process of national development. Infrastructure also plays an important role as one of the driving wheels of economic growth. This is because the movement rate and economic growth of a country can not be separated from the availability of infrastructure such as transport, telecommunications, sanitation, and energy.

World Bank (1994), defines the infrastructure in the context of the economy as an umbrella term that many activities related to "social overhead capital". Further "social overhead capital" is seen as the foundation for improving the standard of living, the national land use better and sustainable economic growth.

In the document "Strategic Plan of the Ministry of Public Works 2005-2009" as RPJMN 1 contained the vision of the Ministry of Public Works is "Providing infrastructure PU reliable, useful and synergy with other sectors in support of regional development and housing, in order to achieve Indonesia that is safe and peaceful, fair and democratic and more prosperous." One of the mission is to establish a human resources professional. Although the existing Strategic Plan 2010-2014 as RPJNM 2 but aspects of society impetus for infrastructure development persist despite different vision and mission.

For the 2015-2019 Strategic Plan as RPJMN 3 is still a draft that has a direction strengthen overall development in various fields of one of them by emphasizing the achievement of economic competitiveness based on the superiority of natural resources and qualified human resources and the ability of science and technology continues to increase.

Based on RPJMN 1 to 3, it can be said that in order to build a quality infrastructure that have a long economic age and support the economic growth needed quality human resources as well. Because of the absence of human resources educated and have a good health of the human resources will not be able to support the development of quality infrastructure such as human resources will not be able to work optimally. Therefore, the government also needs to invest in human resources so that human resources in order to have good quality that is able to realize the development of quality infrastructure as well. Based upon this hypothesis, it can be formed as follows:

H3b: Government investment in infrastructure affect government investment in human resources.

Based on the background issues, the study of theory, previous research and development hypothesis, then formed a framework of thinking as follows:

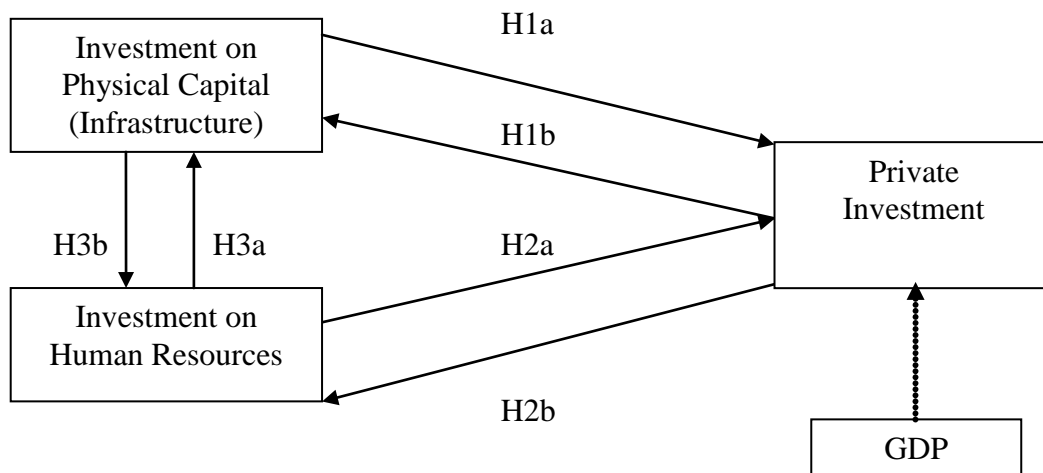


Figure 1: Conceptual Framework

RESEARCH MODEL

Research Data

The data used in this research is secondary data and is the data panel. The data are obtained through data held BPS, Bank Indonesia, BKKBN and BKPM. The data is obtained through a report form hardcopy and through the official website. Due to limitations on the availability of data, then the period of study is 2010-2013. The data used is to use the data sample 33 provinces in Indonesia from 34 provinces in Indonesia except North Borneo newly ratified on October 25, 2012.

Research Variables

Tests the researchers did was to test causality, so the researchers did not identify the category of the dependent variable and independent variables as a research variables will be treated as a dependent variable in an equation causality, but it would be the independent variable in the equation other causality. The variables used were variable government investment in physical capital, government investment in human resources and private investment. For equations with the dependent variable of private investment will be controlled by the control variables GDP.

Table 1: Research Variables

Variables	Measurement
Private Investment	The natural logarithm of domestic and foreign private investment

Investment on Physical Capital	The natural logarithm of capital expenditures per
Investment on Human Resources	The natural logarithm of the total expenditure of health and education expenditures
GDP	The natural logarithm of total GDP

Statistical Tools: Three-Stage Least Squares

Many important economic theory expressed in the form of simultaneous equations. Simultaneous equations is better than a single equation, because in the economic field there are many mutual relations. The implicit assumption of the model of simultaneous equations is that the explanatory variables are the cause and the dependent variable is the result. This situation shows the influence between two economic variables: one variable affects another variable and then the variable is again influenced by other variables tersebut. Salah one technique that is able to properly estimate the model is the method of Three-Stage Least Squares Estimator (3-SLSE) from E-Views. The size of the goodness of the estimation method can be seen from the method has been able to produce a consistent parameter estimator.

Empirical Model

Tests will be conducted to test the hypothesis sixth can be done by applying the following equation 3:

$$INV = c_1 + c_2INF + c_3SDM + c_4PDRB + e_1 \quad (1)$$

$$INF = c_5 + c_6SDM + c_7INV + e_2 \quad (2)$$

$$SDM = c_8 + c_9INF + c_{10}INV + e_3 \quad (3)$$

INV = Private sector investment

INF = Public investment on infrastructure

SDM = Public investment on health and education

RESULTS AND ANALYSIS

Descriptive Statistic

Republic of Indonesia is a unitary republic consisting of 34 provinces. The province is the most common administrative divisions in Indonesia, and has a number of autonomous powers under the 1945 amendment. Each province has the respective governments, headed by a governor. Provincial People's

Representative Council acts as a legislative body at this level. At the national level, each province has four representatives in the Regional Representatives Council, which elected through general elections.

Table 2: Descriptive Statistic

	INV	SDM	INF	GDP
Mean	9.58E+12	9.30E+11	8.96E+11	1.94E+14
Maximum	9.59E+13	1.74E+13	1.07E+13	1.26E+15
Minimum	2.34E+10	7.05E+10	1.09E+11	5.39E+12
Std. Dev.	1.59E+13	2.20E+12	1.43E+12	2.82E+14
Observations	132	132	132	132

Source: Output Data

Based on the table 2 for the variable investment obtained a mean value or an average value for the investment in Indonesia from 2010-2013 amounted Rp9.580.000.000.000. While the maximum value is obtained investment amounted Rp95.851.268.047.020, these figures represent the amount of investment that is owned by the province of West Java in 2013.

In the SDM variables measured by government spending on education and health, shows that the average value of government investment in human resources in Indonesia from the year 2010-2013 amounted Rp930.000.000.000. As for the maximum value obtained results Rp17.449.401.064.775 which represents value of government investment in human resources in the province of Jakarta in 2013. As for the minimum value obtained yield was Rp70.537.791.291 which represents value of government investment in human resources in West Sulawesi in 2011.

Infrastructure variables showed that the average value of investments in infrastructure in Indonesia from the year 2010-2013 amounted Rp896.000.000.000. In Table 2 also shows that the maximum value of government investment in infrastructure amounted Rp10.696.012.194.000 representing government investment in infrastructure in the province of Jakarta in 2013 while the minimum value of the investment in infrastructure amounted to Rp108. 997 026 000 which represents government investment in infrastructure in Gorontalo province in 2010.

In the GDP variables measured by GDP at current prices by province, shows that the average value of government investment in human resources in Indonesia from the year 2010-2013 amounted Rp194.000.000.000.000. As for the maximum value obtained yield was Rp1.255.925.781.819.820

which represents the value of GDP in the province of Jakarta in 2013. As for the minimum value obtained yield was Rp5.389.831.565.710 which represents the value of GDP in North Maluku in 2010.

To further understand how the quality of human resources in Indonesia is carried out descriptive statistical testing on life expectancy (AHH) which represents in terms of health and literacy rate (AMH), which represents the side of education. Due to data limitations, the period used is from the 2009-2012 and obtained results as shown in Table 3 below:

Table 3: Life Expectancy (AHH) and Literacy Rate (AMH)

	AHH	AMH
Mean	69,1 years	93,2%
Maximum	76,0 years	99,3%
Minimum	62,5 years	64,1%
Observations	132	132

Source: Output Data

Based on Table 3 shows that in order to demonstrate the value of the variable AHH AHH average during 2009-2012 in Indonesia is 69.1 years. In addition, the results also indicate that the maximum value at the AHH is for 76 years representing a value AHH owned DIYogyakarta province in 2009. Other results that can be seen is the minimum value of AHH produced was 62.5 years representing the province of West Sulawesi on 2010.

For variable AMH seen that these variables during the years 2009-2012 has an average value of AMH in Indonesia is 93.2%. In Table 3 also shows that the maximum value of AMH is at 99.3% which represents value of AMH owned by the province of North Sulawesi in other 2010. Hasil that can be seen is the minimum value of AMH produced amounted to 64.1%, which represents the province of Papua on 2011.

Test Three-Stage Least Squares

Results of hypothesis testing can be seen in Table 4 below:

Table 4: Test Three-Stage Least Squares

<p>Model 1: $INV = c_1 + c_2INF + c_3SDM + c_4PDRB + e_1$</p> <p>Model 2: $INF = c_5 + c_6SDM + c_7INV + e_2$</p>

Model 3: $SDM = c_8 + c_9INF + c_{10}INV + e_3$		
	Coefficient	Prob.
C(1)	-12.30900	0.0002
C(2)	0.948310	0.0000*
C(3)	-0.312093	0.1683
C(4)	0.737243	0.0000*
C(5)	3.667277	0.0001
C(6)	0.761760	0.0000*
C(7)	0.101957	0.0000*
C(8)	-1.655422	0.1723
C(9)	1.017080	0.0000*
C(10)	0.035161	0.2201
INV (private sector investment), INF (public investment in infrastructure), SDM (public investment on human resources), PDRB (value of GDP as control variable).		

Note: *Significant with alpha 1%

Source: Output Data

Table 5: Estimation Results of Model 1

Model 1: $INV = c_1 + c_2INF + c_3SDM + c_4PDRB + e_1$	
R-squared	0.550301
Adjusted R-squared	0.539762
Durbin-Watson stat	0.794279
INV (private sector investment), INF (public investment in infrastructure), SDM (public investment on human resources), PDRB (value of GDP as control variable).	

Source: Output Data

Table 6: Estimation Results of Model 2

Model 2: $INF = c_5 + c_6SDM + c_7INV + e_2$	
R-squared	0.715549
Adjusted R-squared	0.711139
Durbin-Watson stat	0.783599
INV (private sector investment), INF (public investment in infrastructure), SDM (public investment on human resources)	

Source: Output Data

Table 7: Estimation Results of Model 3

Model 3: $SDM = c_8 + c_9INF + c_{10}INV + e_3$	
R-squared	0.700955
Adjusted R-squared	0.696319
Durbin-Watson stat	0.736323
INV (private sector investment), INF (public investment in infrastructure), SDM (public investment on human resources)	

Based on these tests, the results of hypothesis testing can be summarized into the following

Table 8: Summary of Results Hypotheses Testing

Hypotheses	Coefficient	Sign	Significance	Results
H1a: Investment in infrastructure has an effect on private investment.	C2	+	0,0000	As Predicted

H1b: Private investment has an effect on government investment in infrastructure.	C7	+	0,0000	As Predicted
H2a: Public investment in human resources has an effect on private sector investment.	C3	-	0,1683	As Not Predicted
H2b: Private investment has an effect on government investment in human resources.	C10	+	0,2201	As Not Predicted
H3a: Government investment in human resources has an influence on government investment in infrastructure.	C6	+	0,0000	As Predicted
H3b: Government investment in infrastructure affect government investment in human resources.	C9	+	0,0000	As Predicted

DISCUSSIONS

Effect of Government Investment In Infrastructure To Private Investment

Results of hypothesis 1 testing in accordance with the concept of the Neoclassical Arguments Complementary Hypothesis which states that government spending on infrastructure will increase the marginal productivity of private capital and then will encourage more private investment that enables will lead to crowd-in effects. Hasil this study also supports research conducted by Aschauer (1988b) states that of increasing public capital will increase the return of private capital, so that there is a crowd-in the private capital accumulation. In the study conducted Holcombe (2005) is also in accordance with a recent study has showed that in developing countries, investment from the public sector is a complementary private investment. In addition the results of this study are also consistent with studies conducted by Hatayo (2010) which has the result that there is a crowding-in effects between the long-term public investment and private investment. The study also supports research conducted by Hassan (2011) which states that public capital spending has a positive effect on private investment. Hence the hypothesis 1a, which reads "Investment in infrastructure has an effect on private investment" is acceptable.

Effect of Private Investment To Government Investing In Infrastructure

Results of testing the hypothesis 2 supports research conducted by Erenburg and Wohar (1995) which has the result that private investment and significant positive effect on public investments. In addition the results of this study also supports the idea that the rise in corporate profits will make the company pay more taxes and it means that the state has an income of more taxes anyway. Seeing this, it can be said that the higher the level of private investment, the government's role in providing the necessary infrastructure is also getting bigger. Based on the opinion of Erenburg and Wohar (1995) stated that the amount of private investment will be the amount of the infrastructure provided.

In addition to this, the results are also consistent with the concept of Trilogi Pembangunan related to the function of government and private sector. From this study it appears that the role of government in infrastructure have a positive impact for the private sector, and vice versa, the role of the private sector in the promotion of economic growth by attracting investors to invest also have a positive influence on government investment in infrastructure.

Effect of Government Investment In Human Resources To Private Investment

Based on the results of the third test obtained results negative influence and insignificant that does not support a study conducted by Wang (2005) which states that the allocation of government expenditure in education and health expenditures have a positive impact on private investment. Results this study actually leads to substitutability hypothesis in Neoclassical arguments. As a substitute or substitutes, government spending on capital goods will lead to crowd-out or reduction in private investment.

Effect of Private Investment To Government Investment In Human Resources

The fourth hypothesis testing results despite having a positive coefficient direction but the probability value that appears does not show a significant figure. That is because the allocation of government spending basically not only in education and health aspects only. Because in addition to investment in human resources increased private investment can also memengaruhi other expenditure allocation. Due to the allocation of government spending is not just limited to the field of education and health alone. Therefore, the number of samples that are not too much in this study led to the emergence of significant influence.

Effect of Government Investment In Human Resources To Government Investing In Infrastructure

The results obtained in this study support the fact that there is that the importance of the role of human capital in development appears at the attention of various parties such as the government and private sector investments and expenditures that allocates the region in order to improve the quality of human capital. Indeed, the investment allocated for the benefit of human capital is not immediately visible

results within a short time period. So it is no wonder that the government budget is often the case of attraction between investment in economic infrastructure (physical) and investment in human capital development.

In addition to the construction of other infrastructure, port infrastructure is the key to competitiveness, especially for export-import flows of goods. If the port is not efficient, then logistical would be disrupted, which in turn will weaken the nation's economy. As an archipelagic country, Indonesia's infrastructure development priorities is to integrate the infrastructure of inter-island archipelago seems to be the mainland, such as multiply and enlarge the capacity of sea ports. And to build a quality port then necessary human resources qualified for quality ports can be built.

Effect of Government Investment In Infrastructure To Government Investment In Human Resources

The results on the sixth hypothesis testing is in accordance with the Strategic Plan of the Ministry of Public Works documents RPJNM 1 (2005-2009) to RPJNM 3 (2015-2019). An outline of RPJNM 1 to RPJNM 3 has a purpose to build infrastructure that have a long economic age and support the economic growth needed quality human resources as well. Without a well-educated SDM and good health of the SDM will not be able to support the development of quality infrastructure such as SDM will not be able to work optimally. Therefore, the government also needs to invest in SDM so that human resources in order to have good quality that is able to realize the development of quality infrastructure as well.

CONCLUSIONS

The general objective of this study is to provide empirical evidence about causality that occurred between government spending and private sector investment. The conclusions based on data analysis are:

- a. Positive and significant influence occurs in government investment in infrastructure to private investment, and vice versa, and on government investment in human resources for public investment in infrastructure and vice versa.
- b. Government investment in human resources has a negative effect and no significant effect on private investment, but private investment has a positive effect but not significant to government investment in human resources.

The research has implications that a causal relationship occurs only between the government sector and the private sector related to government investment in infrastructure and private investment. This means that the concept of Trilogi Pembangunan between the public sector and the private sector related to

government investment in infrastructure and private investment has done well because one party to the other parties support each other. Causality also occur between investment in infrastructure and in human resources.

However, no causal relationship occurs between government investment in human resources and private investment. It has a meaning that the concept of Trilogi Pembangunan between the public sector and the private sector related to government investment in human resources and private investment has not run well because one party to the other party do not support each other.

In this study, researchers have limited the time period. The time period used in this study was too short which is 4 years from 2010 to 2013. This is due to the limited availability of public data related to variable investment and capital expenditure. Data private investment are domestic and foreign, are only available from 2010 onwards, while the capital expenditure data are only available up to 2013. Further research is expected to add a longer period of time by using other relevant variables for which data have easier access. So that subsequent research results obtained more accurate and better reflect actual conditions.

Another limitation on this research is the type of expenditure that is used in research only three, there are capital expenditure, spending on education and health spending describe government expenditures for investment. While governments have a diverse type of expenditure. However, other types of expenditure which is not in accordance with the concept of causality studies that examined the relationship between public investment and private investment. In a subsequent study is expected not only examined in terms of government investment alone, but also examined in terms of consumption so that other types of expenditure seperti belanja routine and development spending can be used and describe the quality of the expenditure made by the government.

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