Determinants of Private Investment and The Effects on Economic Growth in Indonesia

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Abstract— **Investment is important part of development economic, especially on increase of economic growth. Through investment, various of production facilities will be provide, thus will give optimally production output and value added, as a result can improve the economic growth. Investment activities can be done by two main sectors, government and private. Majority of government investment commonly to finance physical and non-physical development that could not be conducted by society. Lack of capital in government sector influence low of encourage on physical infrastructure as driving of business and economic activities. That condition will impact on private investment. This study will explain the effect of government investment and another economic variables, such as economic growth, investment credit, interest rate, inflation and exchange rate, and the influence of private investment on economic growth in Indonesia**

*Keywords—***Engineering-management-Economics, Determinant of private investment, Economic growth**

I. INTRODUCTION

The development of private investment in Indonesia, can not be separated from the overall national economy in which investment growth seem to run in parallel with the improvement in macroeconomic conditions nationally and regionally, growth of private investment will increase when the regional and national economic conditions will better. Private investment was influenced by economic factors, such as the real interest rate, inflation and exchange rate [1], [2]. In addition to these variables, some experts said that private investment was influenced by public investment, credit to private sector investment and economic growth [2], [3], [4], [5].

Some economists emphasized investment (public and private) in affecting economic growth [6]. These concerns become increasingly intensified after the discovery of empirical fact that the level of investment in a number of countries have been able to encourage economic growth [7], [8], [9].

II. LITERATURE AND HYPOTHESIS DEVELOPMENT

A. Related Literature

DETERMINANTS OF INVESTMENT

Describing a model of the determinants of investment could be formed by theory and empirical study approach.

Based on the concept of marginal capital (the marginal efficiency of capital or MEC), Keynes tried to explain the demand for investment where investment demand is determined by the size of the value of the present value of the expected net gain (R) over the additional capital expenditure incurred by the cost of capital at this time (C_k).

Based on the theory of internal funds as proposed by Jan Tinbergen, that demand a investment determined and depends on the level of profits. The level of benefit in question is the level of expected profit in the future. While the expected benefits in the future is generally reflected by the level of real interest rates (I) and the level of risk that is expected to occur in the future. In some case studies, the rate of inflation (INF) and the exchange rate (ER) is often used as a proxy of the level of risk.

Meanwhile, according to neoclassical theory, the desired capital stock by a company is determined by the output and price of capital services relative to the price of output. Price of capital services in turn depends on capital goods (k), interest rate (I), and the tax treatment of corporate earnings (tax).

Thus, according to *Tobin q* theory, investment or desired capital stock (I_t) is influenced by the market price (Pm) and the replacement cost of capital goods (C_R).

Accordingly, we specify the determinants of investment could be formed:

$$I_t = f (R, I, C_K, INF, ER, GRT, k, Tax, Pm, C_R) \qquad (1)$$

where; R is expected return, I is interest rate, C_K dan C_R are cost of capital stock, INF is inflation, ER adalah exchage rate, growth adalah change of output, k is capital availability, Tax is income tax dan Pm is market price of capital stock.

Considering of data availability, not all variables on equation (1), will be use as estimator on determinants of private investment. Variables that will be used are interest rate (i), inflation (INF), exchange rate (ER) and economic growth (GRT).

On the other hand, private investment is influenced by government investment and availability of investment credits. There are two viewpoints related to the effect of public investment on private investment, and both of them are contradictory. The first group agree that the crowding-out effect of public investment on private investment. The other group is rejected the first group and suggested a crowding-in effect of public investment on private investment.

First group, the crowding-out effect of public investment on private investment [4], [5], [10]. The presence of government investment has a crowding-out effect on private investment. It was related to an increase in future tax expense to be borne by the private sector over the public investment. Meanwhile, a different opinion that the presence of of government investment has a crowding-in effect of public investment on private investment [2], [11], [12]. The existence of the

government's public sector investment expenditure for field irrigation, transportation, communications, health and education has a positive impact on private investment.

In term of the availability of funds, most of the capital generally not owned but rented [6]. The investment loan is usually enacted to provide an incentive for companies to invest. The availability of investment credit will bring the industry at a level higher capital stock, thus lead to increased investment. The positive impact of investment on private investment credit [4], [5], [10], [11].

Based on the description above, the determinants of private investment growth (IS) is formulated as a function of:

$$IS_t = \beta_{10} + \beta_{11}GRT_t + \beta_{12}i_t + \beta_{13}IP_t + \beta_{14}INF_t \\ + \beta_{15}CR_t + \beta_{16}ER_t + \varepsilon_t \tag{2}$$

where, IP is government investment, CR is investment credit.

ECONOMICS GROWTH

In the growth model, especially regarding the effect of private investment on growth will be based on the logic of the new growth theory models, namely that economic growth in the long term can only be created if there is endogenous technological progress and development of human resources [6], [13]. Advances in technology must be accompanied by an increase in the quality of human resources. While human capital in question here are: abilities, skills and knowledge per worker.

The theory of endogenous growth emphasizes that the sources of output growth is driven not only physical investment as done by previous investigators, but also much more important is the investment in human resources as government spending on education and the importance of government spending in R & D [6], [13].

Human capital (HC) in the new growth theory has an important role in the process of development and economic growth. Human capital model explains that the higher the level of education that is owned by the workers, the higher its human capital [6]. Increased investment will encourage the growth of new jobs and lead to the increase in economic growth of a country. Investment is a tool to accelerate the growth rate of production in developing countries [14]. Thus it is clear that an important and strategic role of investment to create employment opportunities for economic growth. Empirical evidence about positive influence of human capital on economic growth [9], [14], [15].

Any increase in private investment will increase the community's ability to produce output. Private Investsi directed to attempt to expand the scale of production and full utilization of existing resources in a region/ country, so that the investment can raise national output and economic growth. Private investment as a component of an unstable economy as the price fluctuates [13]. Therefore, private investment is placed as the most important determinant for determining the rate of economic growth [8], [14], [16].

Productive government spending will positively correlated to economic growth. Productive government spending is government spending is in the form of investments includes physical investment, human resource investments and investment in R & D. The government spending like this that has a positive effect on economic growth.

Furthermore, labor (TK) is suspected to have an influence on economic growth. The fewer people who are unemployed (full unemployment), the real GDP growth will increase in line with increased output produced by labor. Classical economists said that the factors could be influenced on economic growth was population and labor productivity. Similarly, in the Neo Classical theory of economic growth Solow-Swan, noted that in addition to affecting economic growth and technological advances are saving the quantity and quality of labor. While in theory the new growth explained about the importance of the role of human resource development (human capital) and labor effectiveness in influencing growth. Workforce quality and effective are the factors that can lead to greater labor productivity and output in order to drive economic growth. Empirically, it also demonstrated that labor quality has a positive effect on economic growth [14], [17].

Based on that explanation, the model of economic growth (GRT) is formulated as a function of:

$$GRT_t = \beta_{20} + \beta_{21}IS_t + \beta_{22}IP_t + \beta_{23}HC_t + \beta_{24}TK_t + \mu_t \tag{3}$$

where; HC is human capital, and TK is labor.

B. Hypothesis Development

a. Economic growth, government investment, and the availability of credit has a positive effect on private investment, while inflation, exchange rates and interest rates negatively affect the private investment in each province in Indonesia during the study period.

The design hypothesis is:

Ho : $\beta_{11}, \beta_{12}, \beta_{13}, \beta_{14}, \beta_{15}, \beta_{16} = 0$

Ha : $\beta_{11}, \beta_{13}, \beta_{15} > 0$ and $\beta_{12}, \beta_{14}, \beta_{16} < 0$

b. Private investment, public investment, human capital, and labor have positive effect on economic growth in each of the provinces in Indonesia during the study period.

The design hypothesis is:

Ho : $\beta_{21}, \beta_{22}, \beta_{23}, \beta_{24} = 0$

Ha : $\beta_{21}, \beta_{22}, \beta_{23}, \beta_{24} > 0$

III. DATA AND EMPIRICAL MODEL

This study uses secondary data which are time series data and the annual cross section data for each province were collected through a survey of literature from multiple sources publications. Secondary data for this study were obtained from several sources with the publication data from 1990 to 2011.

The analysis model is multiple regression method using panel data. Equation(2) is determinant of investment model, and equation (3) is economic growth model. On both models, previously we have tested assumptions of the classical model, such as multicollinearity, heteroscedasticity, and autocorelation.

The models will be used in this study are:

Determinants of private investment model:

$$IS_t = \beta_{10} + \beta_{11}GRT_t + \beta_{12}i_t + \beta_{13}IP_t + \beta_{14}INF_t \\ + \beta_{15}CR_t + \beta_{16}ER_t + \varepsilon_t \tag{4}$$

Economic growth model:

$$GRT_t = \beta_{20} + \beta_{21} IS_t + \beta_{22} IP_t + \beta_{23} HC_t + \beta_{24} TK_t + \mu_t \qquad (5)$$

where: IS is private investment period t; GRT is economic growth in period t; IP is public investment period t; INF is inflation rate in period t; CR is the availability ofED credit investment period t; ER is exchange rate in period t, HC is human capital period t; TK is the proportion of working population to total population in period t;

IV. RESULTS

Determinants of Private Investment

In general, the estimation results of the effect of economic growth (GRT), government investment (IP), interest rates (I), inflation rate (INF), credit to private investment (CR) and exchange rate (ER) on private investment is as follows:

IS = − 543,56 + 4,24 GRT − 1,45 I + 4,72 IP
    − 4,59 INF + 2,72 CR + 0,84 ER   (6)
    (-2,65) **   (3,35) **   (−4,25)** (4,23)**
    (−2,29)*   (2,86)**   (2,49)*

F-stat = 236,16 R^2 = 78,23 %

Description: *) Significant at α = 5%
              **) Significant at α = 1%

One of the other findings of this study are positive and significant effect of economic growth (GRT) to private investment. These results indicate that economic growth has prompted an increase in private investment and reverse declining economic growth will reduce private investment. Conclusions on this finding is that economic growth is a variable considered private investors in private investments in Indonesia that economic growth has a positive effect in increasing private investment [18], [19], [20].

It can be explained from the influence of economic growth on private investment, increase of economic growth, it reflects of growing and increasing production sectors. The more production sectors can grow and develop properly and conducive, output in the form of goods and services will be abundant in the domestic market. If the domestic market is unable to absorb the products produced by the production sectors, as a result of the amount bid exceeds domestic demand, then it can be utilized for marketing in foreign markets thus increasing the level of net exports and foreign exchange acceptable increased. This condition is likely to encourage firms to conduct private investment.

Furthermore, the results of this experiment indicate that interest rates negatively affect on private investment [2], [10], [12], [14]. Interest rate determines investment in real sector activity where if interest rates rise, investment will decline. Conversely, if interest rates dropped, it will cause investment demand be increased [14], [21].

A result of this study is the positive effect of public investment on private investment activity. This means that the bigger the government the more corpulent investments available facilities and infrastructure needed by the private sector to undertake productive activities, including investments [1], [2], [3], [12], [20]. The availability infrastructure is a factor supporting the activities of domestic and foreign, and national economy. Thus, the argument that

the negative effect of government investment "crowding out" private investment, namely the reduction in funding and resources available to the business world because some of the funds and the resources used by the government to make investments, as well as concerns the determination of the tax rate greater future as a result of the activities of private investment [4], [5], [10] can not be proven.

This means that during the period of study for the case of Indonesia, there is a crowding in effect of public investment on private investment government. The existence of the government's public sector investment expenditure for field irrigation, transportation, communications, health and education has a positive impact on private investment.

Based on these results, the rate of inflation has a negative effect on private investment. Many economists argued that high inflation tends to negatively affect the investment [1], [4], [5], [10], [20] that inflation had negative effect on private investment expansion. Other opinions that inflation has negative effect on private investment [5], for instance: first, inflation will cause baking interest rates become high, both deposit and credit interest rate. The high of interest rate will encourage the financing cost becomes more expensive thus have influence to the real sector. High interest rates also would discourage investors or firms to utilize funding from the banking sector because the high cost of capital make higher interest expense and investors will tend to hold their interest in investing in the real sector. Mainly for investors who need funding depends on the banking sector. These conditions make private investment become decline and reduce. Thus, the inflation rate has been encouraging private investment decrease.

Second, inflation can reduce the real value of money on saving hence people will prefer to invest in another assets. This condition is not beneficial for banks, the banking sector will face liquidity problems and as a source of funds for the acquisition of the real sector.

Third, inflation may cause a decline in the real value of wealth in the form of cash money, in other words, the value of cash money becomes smaller because nominally have to face commodity price per unit is higher than ever. Instead, they have a lot of wealth in the form of fixed assets / non-liquid assets (upper middle class), it benefited from the price increases. Thus inflation will make the income gap wider.

Fourth, inflation will cause the rate of economic growth in Indonesia has become dropped. For example in the foreign trade sector, Indonesian export commodities become less able to compete with a similar commodity in the world market. In other words, the production output will drop, both for export-oriented products as well as products for the domestic market. It will make worse on economy because will cause increasing of unemployment in the country.

The results of the analysis of other variables show that the availability of investment financing in the form of investment loans has positive and significant effect on private investment. The increase of banks role in financing investment through bank loans to business or real sector investment would increase the level of investment and economic growth [3]. There was a relationship between the availability of debt finance for investment purposes with the growth of private investment and economic growth [19]. Empirical results

explained that the increase in investment loan financing has encouraged private investors [1].

The greater portion of bank funds provided to support the investment credit would encourage the growth of private investment [20]. Private investment (private investors) in the country would increase if availability of adequate funding and the role performed by the banking sector with providing credit facilities investment for investors [11]. Investment bank lending had an important role in determining the level of private investment and economic growth [4]. Results of studied have shown the positive impact of financing the banking system credit to the private investment and economic growth.

For exchange rate variable, the results of this study indicate that the direction of the exchange rate has a positive effect on private investment. Direction of influence is positive, implying that an increase in the exchange rate (depreciation) may lead to an increase in private investment. Conversely a decrease in the exchange rate (appreciation) may cause a decrease in private investment. Previous studied which stated that exchange rate had a positive effect on private investment. Increased in the exchange rate (depreciation) had positive effect on private investment and conversely an appreciation of the exchange rate had a negative effect on private investment. [5], [10], [22].

Depreciation or devaluation tended to affect the terms of trade [23]. A depreciation of the exchange rate would be stimulated the production of exports and import substitution. Depreciation would push the price up and the price of imports into exports to be down in a foreign currency. On the other hand, it increased the price of export products and a variety of product substitution (replacement) products imported from abroad.

Growth Economic Model

Based on the results of testing the research model of economic growth, obtained the following result:

$$GRT = 4{,}328 + 0{,}001\ IS + 0{,}031\ IP + 2{,}219\ HC + 2{,}166\ TK \tag{7}$$

$$(2{,}242)^*(2{,}439)^{**}(6{,}211)^{**}\ (6{,}229)^{**}$$
$$(2{,}696)^{**}$$
$$\text{F-stat} = 1855{,}637\ R^2 = 94{,}13\ \%$$

One important conclusion of the results of empirical studies has been that the private and government investment is a key determinant of economic growth. Private investment has a positive and significant effect on growth. There was a positive and significant influence investment government on economic growth. Both the empirical finding that increasing private investment and public investment will affect on increasing economic growth [7], [8], [14], [16], [24].

Public investment is another important factor that is considered to affect the economic growth. Experts agree that the government investment in the field of infrastructure and public investment has a positive influence on economic growth. That is, an increase in government investment will drive growth. This view is based on the assumption that government investment is needed to stimulate economic activity. Therefore, the necessary infrastructure continuously and evenly spread over the territory of Indonesia. In some

areas, such as in Java, infrastructures are well established, but in other parts of the region (outside Java), the availability of infrastructure is not adequate with a very poor quality. Due to the lack of infrastructure, access to resources and population to be relatively limited market and production activities into less developed.

Meanwhile, in addition influenced investment (private and government), economic growth is also influenced by human capital. These results prove it, that human capital positively affects economic growth [14], [15]. Form of human investment in science, skills/ expertise, values, norms, attitudes, and behaviors that are useful to humans in enhancing learning and productive capacity [9]. Increasing learning capacity and productive capacity, thus increasing one's productivity will increase the income and improve the output of goods and services for the community, which means it will increase the overall growth.

In the economic literature as the new growth theory stated human capital has an important role in the process of development and economic growth. Human capital model explains that the higher the level of education that is owned by the workers, the higher its human capital [6]. It could be argued that human capital is one factor that can lead to greater labor productivity and output, so as to encourage economic growth. Conversely, when the quality of labor is low, labor concerned be unproductive and not optimal in generating output.

Empirical result of the influence of labor quality on growth, encourage of previous empirical study, the empirical evidence shows that there is a positive and significant effect of labor quality on economic growth. The role of qualified labor (the work) was a necessary condition for economic growth [7]. Almost all economists emphasize the importance of labor (the work) as a necessary condition of economic growth [24]. The involvement of the labor factor in the production process can increase the national income and economic growth. Labor participation in development can increase output and in turn increase the rate of economic growth. Thus, labor is a key factor for economic growth that the increase in labor quality in an institution was an essential component in economic growth [25].

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Influence of independent variables on private investment in Indonesia from 1990 to 2011, as follows:
   a. Government investment, economic growth, credit availability for private investment, and exchange rate have positive and significant impact on private investment. The higher of each variable make the higher private investment, or conversely the lower of each variable will decrease private investment.
   b. Interest rates and inflation have a negative and significant impact on private investment The higher the interest rate and inflation, the lower private investment, or conversely the lower the interest rate and inflation, the higher private investment.
2. The influence of independent variables on economic growth in Indonesia from 1990 to 2011 are Private investment,

public investment, human capital, and labour have positive and significant impact on economic growth. The higher each variables make the higher of economic growth, conversely the lower each variables make the lower of economic growth.

B. Recommendations

1. The empirical result of this study that public investment has positive effect on private investment and economic growth, provide policy implications to increase government investment in infrastructure and the acceleration of infrastructure development more evenly in Indonesia. This requires more allocation of government budget expenditure for infrastructure both from Central Government and Local Government.

2. Economic growth has positive effect on private investment, the implementation of this result that to improve of economic growth through efforts to increase value-added in each production sectors.

3. Inflation has negative effect on private investment, the policy practice of it, government have to keep fairly inflation rate. Therefore, government must be kept the stability of price level in order to maintain the inflation.

4. Credit availability has positive effect on private investment, yet interest rate has negative effect on private investment. Application for policy maker that banking and capital market as financial intermediaries for maintain credit interest rate has always been at a level of reasonable, which is make easier for private investors to find capital with low cost.

5. Exchange rates has positive effect on private investment, government can use this result that to encourage stability of the exchange rate at a reasonable position. Efforts to weaken the exchange rate in the long run continuously could not be done because could disrupt of economic activity as a whole.

6. Private investment has positive effect on economic growth, implication of that is to encourage boost of private investment by creating conducive investment climate in the economy. It could be done by provision of fiscal incentives, institutional reforms such as efficient bureaucracy, rule of law, and others.

REFERENCES

[1] seruvatu. Elenoa, T. K. "Jayaraman, Determinants of Private Investment in Fiji," *Working Paper 2001/02*, *May* 2001, *pp. 1 – 38.*

[2] Khan. Sajawal, M.A. Khan, *"*What Determines Private Investment? The Case of Pakistan," *PIDE Working Papers, 2007, pp. 36.*

[3] Chhibber. Ajay, S.V. Wijnbergen, "Public Policy and Private Investment in Turkey," *PPR Working Papers 120, October, 1988. pp. 1-29.*

[4] Acosta. Pablo, A. Roza, "Sort and Long Run Determinants of Private Investment in Argentina," *Journal of Applied Economics Vol. VIII,* 2005, *pp. 389 – 406.*

[5] Jongwanich. Juthathip, A. Kohpaiboon, "Private Investment: Trends and Determinants in Thailand," *Journal of Economics 0970, December,* 2006, *pp. 1-29.*

[6] Romer. David, *Advanced Macroeconomics*, McGraw Hill International Book Company, 2006.

[7] Khan. Mohsin S, C.M. Reinhart, "Private Investment and Economic Growth in Developing Countries," *World Development: Vol. 18, No. 1,* 1990, *pp. 19 – 27.*

[8] M'Amanja. Daniel, O. Morrissey, "Foreign Aid, Investment, and Economic Growth in Kenya: A Time Series Approach," *CREDIT Research Paper No. 06/05,* 2006, *pp. 19-47.*

[9] Schularick. Moritz, T.M. Steger, "Financial Integration, Investment, and Economic Growth; Evidence from Two Eras of Financial Globalization," *CESIFO Working Paper No. 1691, April* 2007, *pp. 69-85.*

[10] Lesotlho. Patrick, "An Investigation of the Determinants of Private Investment: The Case of Botswana," *Policy Research Working Paper No. 2123,* 2006, *pp. 11 – 34.*

[11] Ouattara. Bazoumana, "Modelling the Long Run Determinants of Private Investment in Senegal,"*CREDIT Research Paper No. 04/05, November* 2004, pp. 1-23.

[12] Tantiasti. Dwi, "Analisis Faktor-faktor yang mempengaruhi Investasi Swasta di Indonesia," *Buletin Studi Ekonomi Indonesia. 45 (3),* 2008, *pp. 28-53.*

[13] Todaro. Michael P, S.C. Smith, *Economic Development.* Eighth Edition, The Addison-Wesley, 2003.

[14] Lachler. Ulrich, D.A. Aschauer, "Public Investment and Economic Growth in Mexico," *Policy Research Working Paper No. 1964,* 1998, *pp. 1 – 24.*

[15] Gylfason, Thorvaldur. & Gylfi Zoega. 2000. Natural Resources and Economic Growth: The Role of Investment. *CESIFO Working Paper No. 542. April. pp. 19-45.*

[16] Krishna. K. L, "Patterns and Determinants of Economic Growth in Indian States," *Working Paper No. 144, September,* 2004, *pp. 75-101.*

[17] Sinha. Dipendra, "Export Instability, Investment and Economic Growth in Asian Countries: a Time Series Analysis," *Center Discussion Paper No. 79,* 1999, *pp. 33-65.*

[18] Carruth. Alan, A. Dickerson, A. Henley, "Econometric Modelling of UK Aggregate Investment: The Role of Profits and Uncertainty," *NBER Working Papers Series, Number 6950, July* 1997, *pp. 1-34.*

[19] Dehn. Jan, "Private Investment in Developing Countries: The Effects of Commodity Shocks & Uncertainty," *WPS/2000-11. May* 2000, *pp. 1-37.*

[20] Ribeiro. Marcio Bruno, J.R. Teixeira, "An Econometric Analysis of Private Sector Investment in Brazil," *CEPAL Review 74, August* 2001, *pp. 153 – 166.*

[21] Mankiw. N. Gregory, *Macroeconomics,* 5th edition, New York: Worth Publishers, 2001.

[22] Agrawal. P, "Interest Rates and Investment Levels: An Empirical Evaluation of McKinnon, Stiglitz, and Neo-Structaralist Hypotheses," *Journal of Economic 0110, March,* 2001, *pp. 1-29.*

[23] Krugman. Paul R, M. Obsfeld, *The International Economic, Theory and Policy.* Addison-Wesley Publishing Company, 2001.

[24] Sturm. Jan-Egbert, G.H. Kuper, J.D. Haan, "Modelling Government Investment and Economic Growth on a Macro Level: a Review," *CCSO Series No. 29, September* 1996, *pp. 24-62.*

[25] Sinha. Dipendra, T. Sinha, "Openness, Investment and Economic Growth in Asia," *The Indian Economic Journal Volume 49. No.4.* 1997, *pp. 15-68.*

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