



The Effect of Investment Efficiency toward Economic Growth in South Sumatera and Jambi Province

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Abstract: The study aims to measure and compare the efficiency level of investment to boost economic growth in South Sumatera and Jambi Province. This study use quantitative approach with time series data between 2007 to 2016 from the Central Bureau of Statistic (BPS) and publication related to the study. The efficiency of investment was measured by Incremental Capital Output Ratio (ICOR) approach and analyzed using Ordinary Least Square (OLS). The study indicates that (1) the relationship between investment efficiency which measured by ICOR approach and economic growth of each provinces (South Sumatera and Jambi) is negative; (2) this research show that investment efficiency in Jambi Province give more effect to its economic growth than South Sumatera and Jambi Province has grown better than South Sumatera Province in the same development stage without an increase in the proportion of investment to Gross Domestic Regional Product.

Keywords: Efficiency, investment, ICOR, economic growth.

JEL Classification: L23, P33, F43

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1. INTRODUCTION

The welfare of the community in a country come from the high and low economic growth of that country. By the increasing of economic growth in a country or region, it is expected that income of the community in that area will also increase. So that, each country will always strive to achieve the optimal economic growth to bring its people to a better life (Yuliana et al., 2019).

The factors that determine a country's economic growth are determined by four factors: (1) capital accumulation, including all new investments, such as land, physical equipment (machinery), and human resources; (2) population growth; (3) technological progress; and (4) the institutional resources (Suhel & Bashir, 2018).

One of the several factors that influence the economic growth is investment. Investment is one of the important variables in encouraging the creation of economic development. The efforts to achieve high economic growth, the creation of new jobs and poverty alleviation which ultimately puts investment as the main engine of the economy (Suhel & Bashir, 2018).

Table 1. Economic Growth in South Sumatera and Jambi Province

Year	South Sumatera	Jambi
2012	11.73	11.15
2013	10.69	12.95
2014	9.30	11.42
2015	8.27	7.08
2016	6.87	10.70

Source: Badan Pusat Statistik, 2017

The South Sumatra and Jambi Province are located in Sumatera Island and have similar characteristics. This data shows that economic growth between the provinces of Jambi and South Sumatera is not very different. Economic growth in each province is still sourced from the mainstay sectors, such as mining, plantations and processing industries. Both of that provinces have a wealth of natural resources, especially the potential of primary energy and food which has a strong appeal to the entry of investment to improve the regional economy. This is supported by the location of the two provinces are between Java Island and Singapore/Malaysia which are very economically strategic. Apart from the potential of energy and food which is a superior potential in the Province of South Sumatra and Jambi, another sectors also need more attention so that the production which produced will increase and eventually it will increase the amount of GDRP in both of that provinces.

In order to optimize the utilization of natural resources of South Sumatra and Jambi Province, both by improving the technology to increase production and opening new industries so that it can spur the opening of new employment opportunities which in the end it will increase economic growth and welfare of the people of the Province South Sumatra and Jambi itself. For this reason, of course, the additional capital (investment) is needed to achieve the targeted economic growth. Based on its sources, this investment derived from government and private investment. However, economic development without regard to efficiency in the use of investment of resources that are owned will only produce un-optimal economic growth. For this reason, in order to achieve certain economic growth targets, it is very necessary to estimate investment needs correctly.

The Harrod-Domar model links the influence of additional capital stock to output that known as ICOR (Incremental Capital-Output Ratio). ICOR calculation is needed in determining how much investment needs at the level of economic growth that is expected to grow and it can be seen how efficiently the investment invested in a certain period. The lower of the ICOR ratio, the higher level of investment efficiency (Arsyad, 2010).

We follow the research of Situmorang & Sugiyanto (2011) which analyze the effect of economic efficiency on economic growth of 32 Provinces in Indonesia, using panel data methods and the Fixed Effect Model. The main finding is summarized that an increase in efficiency through a decrease in ICOR will encourage an increase in economic growth of 32 provinces in Indonesia. ICOR shows the use of more efficient investments in increasing economic growth in 2011-2015. Based on this situation, this study aims to determine the effect of economic efficiency through the ICOR approach to economic growth in South Sumatra Province and Jambi Province.

2. LITERATURE REVIEW

Economic growth is the process of increasing the production of goods and services an economy (Djojohadikusomo, 1994). The goal of economic growth in the form of rising

levels of real production (national income) and living standards (the real income per capita) by providing and directing the process of production factors. National income is the value of goods and services produced within a country in a given year. This value can be calculated according to current prices (ie the prices prevailing in the year in which 2 GDP is measured) and according to a fixed price that is at the prices prevailing in the base year (Sukirno, 2006).

The theory of economic growth can be interpreted as an explanation of the factors that determine the increase in output per capita in the long term, and an explanation of how these factors interact with each other so that a process of economic growth (Prasad, 2012). Generally, two factors that affect the economic growth are factor of economic and non-economic factors. Economic factors include natural resources, capital accumulation, organization, technological advances, labor, division of labor and production scale. Factors non Economy includes social factors, cultural factors of human, political factors, and the administration.

The investment is one of the regional macroeconomic variables has an important role in creating regional economic growth (Suhel & Bashir, 2018 and Yuliana et al., 2019). Investment or capital formation or investment includes expenditures (a) the purchase of various types of capital goods, namely machinery and equipment production, to establish various types of industries and enterprises; (b) expenditure to build residential houses, office buildings, factory buildings, and other buildings; (c) increase the value of the stock of goods that have not been sold, raw materials, and goods that are still in the process of production by the end of the national income calculation. The sum of these three components is called the gross investment, including investment to increase the ability to produce in the economy and replace capital goods which have been depreciated (Sukirno, 2006).

Harrod and Domar provide a key role for investment in the process of economic growth, especially regarding the dual character of investment. First, investment creates income and both investments increase the production capacity of the economy by increasing the capital stock. Therefore, as long as net investment continues, real income and output will always increase. However, to maintain the equilibrium level of income in full employment from year to year, both real income and output must both increase at the same rate when the productive capacity of capital increases. If not, any difference between the two will cause excess capacity or idle capacity. This forces employers to limit their investment expenditures so that it will ultimately adversely affect the economy, namely lowering income and employment in the next period and shifting the economy out of the path of steady growth in balance. So if work is to be maintained in the long run, investment must always be enlarged (Jhingan, 2012).

The center of attention of Harrod revolves around economic growth which can take place continuously in a pattern of stable equilibrium. Harrod's theory has general growth criteria and economic assumptions, namely:

- The rate of economic growth is defined as $g = \Delta Y / Y$;
- The desire to save is a proportional part of national income, $s = S / Y$;
- Additional capital for a given period is the same as the existing investment, $\Delta K = I$
- All savings are channel in net investment, $S = I = \Delta K$ so that $s = S / Y = I / Y$
- $\Delta K / \Delta Y$ is defined as ICOR (Incremental Capital Output Ratio), denoted by k ;

Then growth can be formulated as:

$$g = \frac{\Delta Y}{Y} = \frac{\Delta Y/I}{Y/I} = \frac{I/Y}{I/\Delta Y} = \frac{S/Y}{\Delta K/\Delta Y} = \frac{s}{y} \dots\dots\dots (1)$$

Which means that economic growth depends on the tendency to save society (s) as well as measures of economic efficiency (k) (Hakim, 2014).

Efficiency is an activity to use resources appropriately, there is no waste of existing resources. Companies usually make efficiency in order to reduce costs and facilitate the process of managing the company to achieve company goals easily. Investment activities carried out by the company must be efficient in order to give benefits to the company. Investment efficiency is the optimal level of investment from the company, where the investment is a type of investment that is profitable for the company (Suryana, 2014).

The indicator commonly used to measure investment efficiency is Incremental Capital Output Ratio or ICOR. According to the Central Bureau of Statistics, (ICOR) is a quantity that shows the amount of additional new capital (investment) needed to increase / increase one unit of output. The ICOR magnitude is obtained by comparing the amount of additional capital with additional output. Because unit capital forms are different and diverse while output units are relatively not different, then to facilitate calculation both are valued in terms of money (nominal).

The ICOR concept was originally developed by Harrod and Domar which later became known as the Harrod-Domar model. This model basically shows the relationship between output (regional income) of an economy with the amount of capital stock needed. Capital stock is the condition of the stock of capital (capital goods) available at a certain time. So if want to increase regional income by 1 unit, you need an additional capital stock of ICOR. The capital stock in year t is basically the accumulation of investment (capital goods) from a given year (year (t-s)) where s = 1, 2, 3, up to the t-year. Suppose an investment starts in the t-year and continues until the year (t + 1), that is, the condition is assumed to consist of only two years, then the capital stock in the t-year and year (t + 1).

In calculating ICOR, the investment concept used refers to the concept of the national economy. Definition of investment referred to here is fixed capital formation / formation of fixed capital goods consisting of land, buildings / construction, machinery and equipment, vehicles and other capital goods. Meanwhile the calculated value includes: the purchase of raw / used goods, large manufacturing / repairs carried out by other parties, major manufacturing / repairs carried out on its own, sales of used capital goods. Fixed Capital Formation or the formation of fixed capital goods in this case is the formation of gross fixed capital goods (PMTB) (BPS Calatog, 2008).

Situmorang & Sugiyanto (2011) research found the ICOR coefficient was -0.41. The coefficient shows the meaning that an increase in efficiency through a decrease in ICOR by 1 point will encourage an increase in economic growth of 32 provinces in Indonesia by 0.41 percent. Based on ICOR Indonesia's projections for 2011-2015 and economic growth obtained from the equation model that Indonesia's growth = 5.2 - 0.41 * ICOR, shows the use of more efficient investments in increasing economic growth in 2011-2015.

Meanwhile, Taguchi & Lowhachai (2014) in their research aims to examine the trend of additional capital-output (ICOR) ratios and their relationship to GDP per capita and GDP growth rates by panel data methods from a number of Asian countries. Panel-data analysis confirms that gross ICOR has a positive correlation with GDP per capita and a negative relationship with GDP growth rates as expected in a theoretical model. Time-series analysis verifies that Net ICOR is positively correlated with GDP per capita. Both of these analyzes show that industrial stocks do not affect ICOR's gross and net levels.

Jun (2003) the study shows that China has grown better than most countries in East Asia in the same stage of economic development without an increase in the proportion of investment to GDP and an increase in ICOR. Much of the investment efficiency is reaped through rural industrialization and the proliferation of small businesses. China's economic growth was driven mainly by rural industrialization and facilitated by a shift in rural labor from the agricultural sector to urban labor, and for rural industrialization developing the manufacturing industry. Theoretically, during the proliferation of small businesses and rural industrialization, China can continue to maintain high growth without facing an increase in the investment ratio and GDP and ICOR.

Mahmud (2008) in his research to examine what factors are causing the high ICOR and find out the effect of real rate changes on ICOR as well as knowing and measuring the level of efficiency of the national economy. This study uses the Ordinary Least Square method for real interest rate and other independent variables on ICOR. Interest rates as a variable that affects ICOR apparently cannot be used as the only policy to boost investment, non-conventional monetary policy breakthroughs are needed, the balance of infrastructure development and poverty alleviation to optimize output in development.

Heng & Choong (2002) in his study analyses the key investment differences between Singapore, Hong Kong and Taiwan, the three NIEs with comparable data breakdown. While the government facilitates investment through infrastructure development, market-oriented domestic enterprises and foreign companies make much of the investment in Singapore. Singapore's returns to capital investment are not inferior to other Asian economies. In terms of total factor productivity (TFP), the findings vary according to the computation method used. But even if the traditional approach adopted by Alwyn Young is used, more recent data suggest that while Singapore's TFP growth had been negligible compared to Hong Kong between 1971 and 1986, it has improved significantly since then. Singapore's earlier phase of rapid capital deepening with associated low TFP growth is giving way to more sustainable and perceptible simultaneous growth in capital intensity and TFP. Singapore's experience accords with that of the U.S. and Japan, which also recorded low TFP growth in the early stages of their economic development.

3. MATERIALS AND METHODS

The scope of this study is to analyze the investment efficiency with ICOR approach in South Sumatera and Jambi Provinces and the impact on economic growth. Observation period is from 2007 to 2016. The data will be analyzed include data of ICOR and GDP data. The data used is secondary data time series in the form of annual data. The study will be analyzed by using regression method.

This study analyzed the correlation of investment efficiency by using ICOR approach to the economic growth in South Sumatera and Jambi Provinces. In this case, investment efficiency which measured by using ICOR approach can affect the economic growth. The lower value of ICOR means that investment used more efficient. The impact of efficiency investment used is the higher economic growth.

In this study, the equation form is:

$$G_{it} = \beta_0 + \beta_1 ICOR_{it} + e_{it} \dots \dots \dots (2)$$

Where: (β_0) is constant; ($ICOR_{it}$) is Incremental Capital Output Ratio; (G_{it}) is Economic Growth; (e_{it}) is error term

4. RESULTS AND DISCUSSION

4.1. The Effect of Investment Efficiency to Economic Growth in South Sumatera

Based on the results of data collection regarding Incremental Capital Output Ratio in 2007-2016, obtained variable descriptive statistics research is as follows:

Table 2. The result of model estimation in South Sumatera

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	21.10477	1.420844	14.85369	0.0000
ICOR	-2.491817	0.336511	-7.404851	0.0001

Source: Author’s calculation

Table 2 shows the summary statistic of the investment efficiency and economic growth correlation from 2006 to 2017. Based on the results of all tests that have been carried out, the regression results, obtained by the following equation:

$$G_{sumsel} = 21.10477 - 2.491817 ICOR_{sumsel} + \epsilon \dots\dots\dots (3)$$

Based on the regression, the constant C = 21.10477 showed that if the independent variable is 0, then the economic growth in South Sumatera provinces still increase 21.10 percent. ICOR coefficient indicates the number -2.491817 which means when the other variables equal to zero, an increase of one percent in ICOR figures will have an impact on decreasing economic growth of 0,24 percent.

The estimation results for the variable economic growth show the value of t-test probability is of 0,0001 < alpha 5% or 0,05, meaning ICOR partially have significant impact on economic growth. Determination coefficient R² is used to calculate how much variance of the dependent variable can be explained by the independent variables. The R² value obtained by 0,872676. That is, the economic growth in South Sumatera Provinces amounted to 87.26 percent can be explained by the independent variable in the model. While the remaining 12.74 percent is explained by other variables outside the model are held constant (ceteris paribus).

4.2. The Effect of Investment Efficiency to Economic Growth in Jambi

Based on the results of data collection regarding Incremental Capital Output Ratio in 2007-2016, obtained variable descriptive statistics research is as follows:

Table 3. The Summary Statistics of Investment Efficiency to Economic Growth in Jambi

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	25.42513	2.585610	9.833320	0.0000
ICOR	-6.046226	1.294792	-4.669650	0.0016

Source: Author’s calculation

Table 3 shows the summary statistic of the investment efficiency and economic growth correlation from 2006 to 2017. Based on the results of all tests that have been carried out, the regression results, obtained by the following equation:

$$G_{jambi} = 25.42513 - 6.046226 ICOR_{jambi} + \epsilon \dots\dots\dots (4)$$

Based on the regression, the constant $C = 25.42513$ showed that if the independent variable is 0, then the economic growth in Jambi province still increase 25.42 percent. ICOR coefficient indicates the number -6.046226 which means when the other variables equal to zero, an increase of one percent in ICOR figures will have an impact on decreasing economic growth of 6.04 percent.

The estimation results for the variable economic growth show the value of t-test probability is of $0,0000 < \alpha 5\%$ or $0,05$, meaning ICOR partially have significant impact on economic growth. Determination coefficient R^2 is used to calculate how much variance of the dependent variable can be explained by the independent variables. The R^2 value obtained by $0,731594$. That is, the economic growth in South Sumatera Provinces amounted to 73.15 percent can be explained by the independent variable in the model. While the remaining 26.85 percent is explained by other variables outside the model are held constant (*ceteris paribus*).

4.3. Comparison between South Sumatera and Jambi Provinces

Based on area, Sumatera Island is the sixth largest island in the world. Sumatera Island is a rich island in agricultural products. The main products of Sumatera Island are oil palm, tobacco, petroleum, tin, bauxite, coal and natural gas. Based on data sourced from Badan Pusat Statistik Indonesia in 2017, the map of the spread of domestic investment based on the magnitude of the realized investment value concentrated on the Sumatera Island by 17 percent for domestic investment.

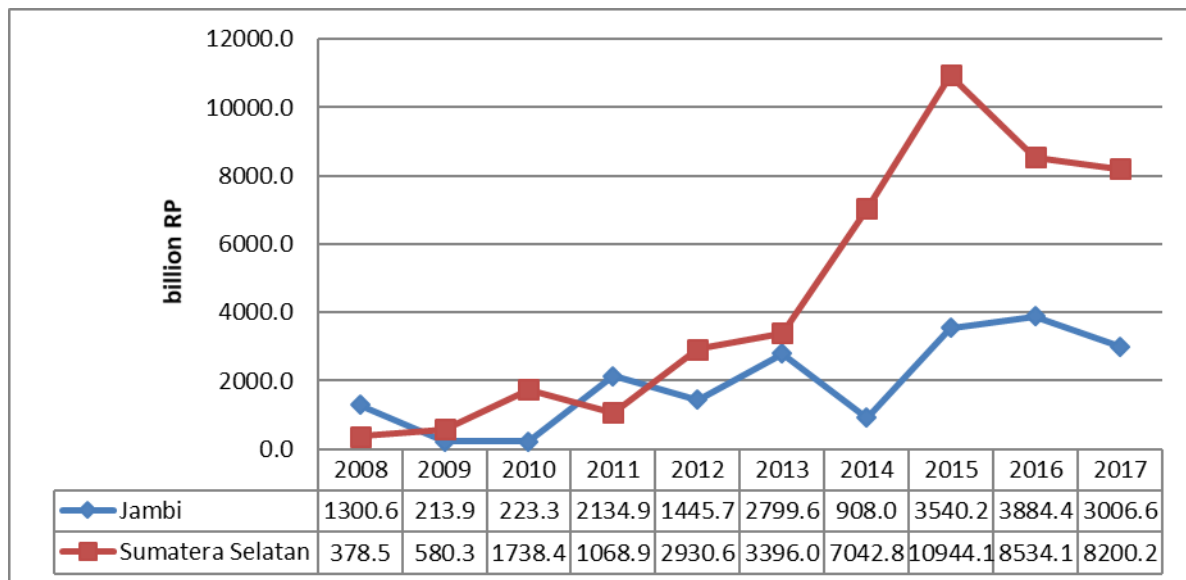


Figure 2. Realization of Domestic Investment Jambi and South Sumatera 2008-2017

Source: Data Processed

The result of this study indicate that there is a relationship quite significantly between investment efficiency that measured by using ICOR approach to economic growth in South Sumatera and Jambi. The mutually beneficial relationship between investment and efficiency which measured by using ICOR approach and economic growth is caused by the utilization of government budget for investment in each provinces produce output optimally. This condition made the productivity was high and stimulate a high economic

growth in South Sumatera and Jambi Provinces.

The value of the realization of domestic investment approved by the Jambi Province government in 2008 was 1.30 trillion rupiahs, then in 2009 the realization value of the investment in domestic investment increased to 213.9 billion rupiahs, in 2010 it moved slowly rose to 223.3 billion rupiah, when in 2011 the value of the realization of the investment in the domestic investment of Jambi Province increased to 2.13 trillion rupiahs, but in 2012 the value of the realization of the investment of domestic investment in the Jambi Province declined to become 1,44 trillion rupiah, increased in 2013 amount 2.79 trillion rupiah. In 2014 the value of the realization of investment in domestic investment in Jambi Province greatly decreased by 908 billion rupiah. Meanwhile in 2015 the value of investment realization in the country of domestic investment greatly increased considerably to 3.54 trillion rupiahs, then then moved stable in 2016 to 3.88 trillion rupiahs, but slightly decreased in 2017 which was 3.0 trillion rupiahs rupiah.

The realization of domestic investment in South Sumatra Province in 2008 amounted to 378.5 billion rupiah, then increased in 2009 to 580.3 billion rupiah, then continued to increase in 2010 which amounted to 1.73 trillion rupiah. Meanwhile, the value of the realization of investment in domestic investment in South Sumatra Province declined slightly in 2011 to Rp1.06 trillion. In 2012 to 2015 the realization value of investment in domestic investment in South Sumatra Province continued to increase and tended to be stable. In 2012, it was 2.93 trillion rupiahs, then in 2013 that was 3.39 trillion rupiahs, then in 2014 it was 7.03 trillion rupiahs, and in 2015 it was 10.94 trillion rupiahs. However, for two years after 2015, in 2016 the value of investment in the domestic province of South Sumatra tended to decline to become 8.53 trillion rupiah, as well as in 2017 there was a decline to 8.20 trillion rupiah

Based on the results, the effect of efficiency investment which measured by ICOR approach to economic growth in Jambi Province higher than South Sumatera Province. Its mean that allocation of investment in Jambi Province more efficient. It is proven from the pace of economic growth in Jambi. Even in the past year, economic growth of Jambi Province was among the highest in Sumatera Island and surpassed the national economic growth. It is because by expenditure side, Jambi Province focus in addition for intensifying and extending business to increase the value added and the value chain of agricultural product which is the main sector that give more contribution on economic growth in Jambi. In accordance with the results of the study by Pangiuk (2017) of *The Influence of Investment and Government Expenditure to Economic Growth in Jambi*. This research show that investment has a significant effect on the economic growth of the Jambi Province. It shows that investment which is always increasing every year has been able to sustain economic growth in the province of Jambi. This situation makes the development of the downstream industry as a priority because this down streaming is very important for the progress of Jambi in the future.

On the other hand, in addition to business expansion, the use of investment in the province of South Sumatra is more focused on various other development programs, especially infrastructure development and the running of poverty alleviation programs through community empowerment. This causes efficiency in the use of investment in South Sumatera is lower than the Jambi Province. Economic growth of South Sumatera Province still relies on household consumption and government consumption, while the supply side growth is supported by the mining and quarrying sector as well as the manufacturing sector.

5. CONCLUSIONS

The conclusion from the results of the study include: (1) the relationship between investment efficiency which measured by ICOR approach and economic growth of each provinces (South Sumatera and Jambi) is negative. It is mean that lower score of ICOR make the usage of investment in that province is more efficient and it can stimulate the economic growth in each province higher than before; (2) this research show that investment efficiency in Jambi Province give more effect to its economic growth than South Sumatera. Therefore, Jambi Province has grown better than South Sumatera Province in the same development stage without an increase in the proportion of investment to Gross Domestic Regional Product. It is expected that the government more concern to the use of appropriate technology in order to give the positive impact on employment and economic growth.

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