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# Analysis Factors that Influence Public Sector Invesment

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**Abstract: -Investment in the public sector is an important thing to consider, with adequate public sector services it will help the community achieve better welfare. When people's welfare improves, it means that the economy in a country is in a stable condition so that it will attract foreign investment to enter the country. Cambodia, Laos, and Indonesia are countries that are in the ASEAN region but have small expenditures for the public sector even though the population is large in contrast to countries such as Singapore, Malaysia, and Thailand which have quite large public sector expenditures. This study tries to analyze the factors that influence public sector investment in seven ASEAN countries. The estimation technique in this study uses the Panel Data model. This model uses 7 cross section data units and 7 time series data sets. The Panel Data model is the most appropriate model to use because this study uses a time series of trade flows of each country which is then cross-sectioned with time series data of other countries' trade flows. The results showed that the variable of tax revenue and public debt had a positive and significant effect on public sector investment in the seven ASEAN countries, while the economic growthand population did not affect public sector investment in the seven ASEAN countries**

**Keywords:-** *public invesment, tax revenue, public debt, economic growth, and population.*

## I. INTRODUCTION

Investment is defined as the expenditure of investors or a company to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy (Sukirno, 2010). Public sector investment is government expenditure for implementing projects that consist of the development sector with the aim of investing.

Public sector investments (health, education, infrastructure) made by ASEAN countries have differences in investing, they are carried out in accordance with the needs of the priorities of their respective countries. Singapore and Malaysia which are considered as the most developed countries in Southeast Asia have made large investments in the public sector in 2016 amounting to 5.43% of GDP (Gross Domestic Product) for Singapore, and 7.03% of GDP for Malaysia.

| Negara | Public Sector Investment | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Cambodia | 2,93 | 2,81 | 2,96 | 3,42 | 3,1 | 3,27 | 3,38 |
| Indonesia | 3,91 | 3,19 | 4,61 | 4,66 | 4,59 | 4,88 | 5,21 |
| Laos | 2,41 | 2,21 | 2,32 | 4,03 | 3,74 | 4,46 | 4,85 |
| Malaysia | 6,67 | 7,56 | 7,64 | 7,38 | 7,31 | 7,08 | 7,03 |
| Philippines | 4,41 | 4,14 | 3,67 | 3,63 | 3,73 | 4 | 3,96 |
| Singapore | 4,51 | 4,47 | 4,61 | 4,71 | 5,11 | 5,27 | 5,43 |
| Thailand | 6,31 | 7,81 | 7,34 | 6,82 | 6,42 | 7,71 | 7,4 |

Table 1: Public Sector Investment of ASEAN Countries in 2010-2016 (in US dollars)

Source :WHO, UNESCO, World Bank (2018)

In the study of Kappeler and Valila (2007) said that public sector investment received less academic attention. Public sector investment itself is divided into several sectors including education, health, and infrastructure. With the availability of sufficient public goods, productivity of the community will not be disrupted. One source of funding for government spending is tax revenue. Following are the tax ratio data from 7 ASEAN countries:

| Negara | Tax Ratio | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Cambodia | 10,003 | 10,11 | 11,09 | 11,9 | 14,5 | 14,1 | 15,2 |
| Indonesia | 10,53 | 11,15 | 11,09 | 11,2 | 10,8 | 10,7 | 10,3 |
| Laos | 13,02 | 13,14 | 13,6 | 13,7 | 13,8 | 13,5 | 12,9 |
| Malaysia | 13,33 | 14,79 | 15,61 | 15,3 | 14,8 | 14,29 | 13,7 |
| Philippines | 12,14 | 12,38 | 12,88 | 13,3 | 13,6 | 13,62 | 13,67 |
| Singapore | 12,96 | 13,28 | 13,85 | 13,4 | 13,8 | 13,6 | 14,2 |
| Thailand | 14,93 | 16,36 | 15,44 | 16,9 | 15,6 | 16,1 | 15,6 |

Table 2: Tax Ratios for ASEAN Countries in 2010-2016 (in percent)

Source : World Bank (2018)

From Table 2 it can be seen that each year the tax revenue of each country can be said to increase, it can be said that government spending should also increase, as well as public sector investment where public sector investment is government expenditure. The need for public goods will also increase if the population continues to increase.

Mardiasmo (2002), in carrying out the public service function, the government is faced with the problem of making public investment decisions. Public investment decisions are needed to support the implementation of programs, activities and functions that are policy priorities. Expenditures for public investment must receive greater attention than routine expenditures, because investment / capital expenditure has a long-term effect, but it will also burden the budget for the following year. This study aims to analyze the effect of tax revenue, economic growth, public debt, and population on public sector investment in seven Southeast Asian countries.

## II. LITERATUR REVIEW

Dusan Paredes and Nathaly M. Rivera (2017) conducted a study compiled in a journal entitled "Mineral Taxes and The Local Public Goods Provision in Mining Communities". The data used are secondary data from 345 local governments in Chile in the 2009-2014 time period. The purpose of this study is to determine the effect of mineral taxes on the supply of public goods to the mining community. The methodology used is a panel data regression in which the results of the study indicate that mineral tax increases will increase the availability of public goods for the mining community.

RacioCascajo, Lpurdes Diaz Olvera, Andres Monzon, Didier Plat, and Jean-Baptise Ray (2016) conducted research compiled in a journal entitled "Impact of the Economic Crisis on Household Transport Expenditure and Public Transport Policy: Evidence from the Spanish Case ". The data used are Spanish transportation expenditure data from 2006 to 2014, the approach used is based on quantitative and qualitative from a budget survey and interviews with public transport policy makers from 6 metropolitan areas. The results showed transportation was one of the most affected by the crisis that occurred mainly on household expenditure for transportation. The organizers of public transportation participate in reducing the offer for public transportation.

Andreas Keppeler and Timo Valila (2007) conducted a study compiled in a journal entitled "Fiscal Federalism and The Composition of Public Investment in Europe". The data used are secondary data from European, EU countries15. The aim of the research carried out is to analyze who determines the composition of public sector investment in Europe, especially focusing on the role of fiscal decentralization. The analysis used is the Generalized Method of Moments which uses 6 independent variables and 1 dependent variable. The dependent variable is Public Investment divided into 4 sectors, namely Education, Health, Infrastructure, and Redistribution. Independent variables include Fiscal Decentralization, GDP, Capital Transfer, Public Debt, Budget Surplus, and Population. The results show that fiscal decentralization encourages public sector investment, especially in infrastructure.

Andreas Kappeler, Albert Sole-Olle, Andreas Stephan, and Timo Valila (2012) conducted a study entitled "Does Fiscal Decentralization Foster Regional Investment in Productive Infrastructure?". The purpose of this study is to analyze the effects of the acceptance of decentralization in infrastructure provisions at sub-national or regional levels. This research was conducted in 20 countries in Europe in the period 1990-2009. The analytical method used is the LSDV / Least Square Dummy Variable. The results obtained indicate that infrastructure investment at the sub-national / regional level increased after the receipt of decentralization.

Krisztina Kis-Katos and Bambang SuharnokoSjahrir (2014) conducted a study entitled "The Impact of Fiscal and Political Decentralization on Local Public Investments in Indonesia". The purpose of the research carried out is to investigate the impact of decentralization in Indonesia and the democratization process in allocating budgets at the local level. The data used is panel data from 271 regional districts in Indonesia in the period 1994 to 2009. Public investment is categorized in the education, health and infrastructure sectors. The results showed that fiscal and administrative decentralization increased local government response to public infrastructure coverage.

Chuanglian Chen, Shujie Yao, Peiwei Hu, and Yuting Lin (2016) conducted a study entitled "Optimal Investment Investment and Public Debt in an Economic Growth Model". The aim of this research is to study the optimum level of investment made by the government and public debt in the growth model. This study uses panel data from 1991-2014. The results show that there is an optimum level of government investment or public debt during economic growth.

Giovanni Melina, Shu-Chun S. Yang, and Luis-Felipe Zanna (2015) conducted a study entitled "Debt Sustainability, Public Investment, and Natural Reources in Developing Countries; The DIGNAR Model ". Policy makers in resources in developing countries often encounter complicated fiscal choices for regulating natural resource revenues, while resource revenues may drive economic growth. The research paper shows the Debt, Investment, Growth, Natural Resource (DIGNAR) model for analyzing macroeconomic and the impact of debt sustainability to expand public investment. DIGNAR can help make assumptions for explicit projections, organize policy discussions based on different simulation scenario.

## III. RESEARCH VARIABLES AND OPERATIONAL DEFINITION VARIABLES

- Public Sector Investment

  Public sector investment is government expenditure in an effort to finance their needs in fulfilling public sector services. In this study, public sector investment can be demonstrated by spending by the government in the education, health and infrastructure sectors. The value of public sector investment is seen by comparison ratio to GDP and expressed as a percent.
- Tax Revenue

  The Tax Revenue variable is a major component of fiscal decentralization. In carrying out its functions effectively and get freedom in making expenditure decisions in the public sector. The value of tax revenue is seen as a ratio of the total tax revenue to GDP and expressed as a percent.
- Economic Growth (PE)

The variable of economic growth is economic statistics as the best single measure of public welfare. The underlying thing is because economic growth measures the state of the economy that exists in a country. In this study economic growth is calculated in percent and uses constant prices.

- Public Debt (HP)
  The variable public debt is debt that is owned by the government, both internal and external. In this study public debt is shown by a ratio of ratio to GDP.
- Population (Pop)
  Variable population is a person who legally lives or lives in an area. In this study population growth is expressed in percent.

Data collected using secondary data are public sector investment data used for public sector investment variables are secondary data from WHO, UNESCO, and the World Bank from 2010-2016. The data used for the tax revenue, variable is a type of secondary data obtained from the World Bank in 2010-2016. The data used in the variety of economic growth are a type of secondary data obtained from the World Bank in 2010-2016. The data used in the variable public debt are using secondary data and was obtained from the CIA World Fact Books in 2010-2016. The data used in the variable population are using secondary data.

## IV. ANALYSIS METHOD

This research uses quantitative descriptive analysis method. According to Sudjana (2001) quantitative descriptive analysis is used for the purpose of describing or explaining phenomena, events or events occurring at the present time in the form of meaningful numbers. The estimation technique is then continued using the Panel Data model. This model uses a cross section data unit and time series data sets. The Data Panel Model used is the Fix Effect Model. Fixed Effect assumes that the intercept of each individual is different while the slope between individuals is fixed (the same). This technique uses dummy variables to capture intercept differences between individuals.

The analysis tool used is Eviews 7 software to estimate the significance of determinants of public sector investment using the Data Panel. The relationship between the independentvariable and the dependent variable in this study can be stated with the basic equation as follows:

$$I_{it} = \alpha + \beta_1 Tax_{it} + \beta_2 HP_{it} + \beta_3 PE_{it} + \beta_4 Pop_{it} + e_{it}$$

Information:

| | |
|---|---|
| α | : Regression coefficient |
| I | : Public Sector Investment (% of GDP) |
| Tax | : Tax Revenue (% of GDP) |
| HP | : Public Debt (% of GDP) |
| PE | : Economic Growth (%) |
| Pop | : Population Growth (%) |
| i | :Shows the notation for cross section, in this study the cross section is country |
| t | : Shows the time series notation, in this study the time series are 7 ASEAN countries |
| e | : Error term |

## V. RESULTS AND DISCUSSION

This research uses data processing tools with Eviews7. To find out the magnitude of the influence of an independent variable on the dependent variable, this study uses a Fix Effect Modelthat uses cross-section data in 7 Southeast Asian Countries and within 7 Years. Multiple linear regression is used to determine the effect of changes from an independent variable (Tax Revenue, Economic Growth, Public Debt, and Population) to the dependent variable (Public Sector Investment).

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| TAX | 0.195584 | 0.043570 | 4.488975 | 0.0001 |
| PE | 0.004165 | 0.030992 | 0.134379 | 0.8938 |
| HP | 0.067156 | 0.008860 | 7.579756 | 0.0000 |
| POP | 0.030790 | 0.020038 | 1.536593 | 0.1327 |
| C | -3.177533 | 1.484324 | -2.140727 | 0.0388 |

Table 3: Results of Regression of Public Sector Investment Models in 7 ASEAN Countries

### A. *Effects of Tax Revenues on Public Sector Investment*

The results showed that the Tax Revenue variable had a positive and significant influence on public sector investment in 7 Southeast Asian countries. This empirically proves that tax revenue has an influence on public sector investment with a coefficient value of 0.1995, which means that if there is an increase in tax revenue by 1 percent, public sector investment in 7 Southeast Asian countries will increase by 0.1995 percent with the assumption of cateris paribus.

When there is an increase in tax revenue, then the public sector investment in 7 countries in Asia Asia will increase, and vice versa if the tax revenue has decreased, then the public sector investment will decrease. These results are consistent with research by Paredes, and Rivera (2017) where an increase in tax revenue will increase the supply of public public goods. Likewise with the research of Kis-Katos, and Sjahrir (2014) where tax revenues increase, public sector investment increases. Based on the theory of public goods, when the government wants to increase the amount of public goods provided, the amount of tax to be levied will be even greater because one source of financing for public goods is the tax received by the government.

### B. *The Effect of Economic Growth on Public Sector Investment*

The results showed that the economic growth variable with a coefficient of 0.004 had a positive but not significant effect (α = 5%). Therefore, the variable of economic growth has no effect on public sector investment in Southeast Asian countries. This is due to the fact that most Southeast Asian countries are still developing countries, where attention to the needs of the public sector is still lacking. seen from existing data where the economic growth of Southeast Asian countries is fluctuating, there are even some countries that tend to decrease inversely with increased public sector investment. The results of this study are the same as those of Purnawati (2006) where it is precisely public investment that drives economic growth.

*C. Effect of Public Debt on Public Sector Investment*

The results showed that the variable Public Debt has a positive and significant effect on public sector investment in 7 Southeast Asian countries. This empirically proves that the public debt has an influence on public sector investment with a coefficient value of 0.067, which means that if there is an increase in public debt by 1 percent, public sector investment in 7 Southeast Asian countries will rise by 0.067 percent with the assumption cateris paribus. When there is an increase in public debt, the public sector investment in 7 Asian countries in Asia will increase, and vice versa if the public debt decreases, then the public sector investment will decrease. This result is in accordance with research conducted by Chen, Yao, Peiwei Hu, and Lin (2016) found that when public debt increases, the amount of investment in the public sector will also increase both in the education, health, and infrastructure sectors.

*D. The Influence of Number of Pendudu on Public Sector Investment*

The results showed that the variable population with a coefficient value of 0.030 had a positive but not significant effect ($\alpha$ = 5%). Therefore, the variable of economic growth has no effect on public sector investment in Southeast Asian countries. Unlike the research conducted by Keppeler and Valila (2007) where the population has a significant impact on public sector investment, especially in the education and health sectors. This can be caused by the lack of population participation in the availability of public goods and also in its administration, such as research conducted by Suebvises (2018) where in the research community participation can improve the performance of the public sector.

## VI. CONCLUSION

Based on the results of research conducted in seven ASEAN countries, it was found that tax revenues, public debt have a positive effect, and are statistically significant for public sector investment. This means that any tax revenues, and rising public debt will contribute to an increase in public sector investment. Sedangka economic growth, and population have a positive but not statistically significant effect on public sector investment.

The limitation in this study is that the variables used have not been able to explain the whole phenomenon that occurs in public sector investment. The advice that can be given is tax revenue to be one of the biggest financing in public sector investment so that in its use it needs to be done more stringent supervision in order to improve financing efficiency as in Mardiasmo (2002). Likewise with debt, where the use has been calculated so that the results of debt financing can be used to cover the debt.

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