Analysis of Economic Development in North Sumatra Province

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Abstract

The study aims to analyze and explained the effect of education investment, health investment, physical domestic investment, physical foreign investment, labor quality and infrastructure spending on economic development in North Sumatra Province. Data used time series from Year 1982 to 2016. The Analysis Model uses Multiple Regression with Ordinary Least Square (OLS) method. The results of the study explained that education investment, health investment, physical domestic investment, physical foreign investment, labor quality and infrastructure spending have a significant and positive impact on the economic development of North Sumatra Province. The results of this study recommend policies that encourage human resource investment by communities and governments and encourage physical investment policies through increased domestic investment and foreign investment.

Keyword: education investment, health investment, physical investment, economic development

Introduction

Economic development is especially important for developing countries, including Indonesia. This is understandable because as with other developing countries, Indonesia is experiencing poverty and lack of job opportunities for the growing workforce every year. With good economic development, it is expected that it will be easier for Indonesia to provide more employment opportunities so that the welfare of the community can be improved.

One of the provinces in Indonesia that continues to spur development is the province of North Sumatra. North Sumatra is one of the largest and densest provinces on the island of Sumatra. The total land area of the province of North Sumatra compared with the total area of Sumatra is 32% with the largest population in Sumatera Island in 2016 of 14.1 million people. With the width and population density is not wrong North Sumatra became one of the largest provinces on the island of Sumatra.

According to data from the Central Bureau of Statistics (BPS) of North Sumatra, from 2000-2016, the development in North Sumatra seen from the value of Gross Regional Domestic Product (GRDP) on the basis of current prices continues to increase. Evident from the value of development of economic development of North Sumatra, which has positive number in 2001 the economic development of North Sumatra reached 15%. As the global financial crisis hit Indonesia in 2008, the economic development of North Sumatra has shown an increasing trend. In this year the development of economic development of North Sumatra reached 17.66%. The development of North Sumatera economic development continues to show an increase until 2016 which reached 8.14%.

The occurrence of economic development in North Sumatra cannot be separated from the role of factors that are suspected to influence it. These factors include human capital investment covering investment in education and health, physical investment both domestically (Domestic Investment / PMDN) as well as physical investment coming from abroad (Foreign Direct Investment / PMA). Besides that the investment also requires the quality of human resources and adequate infrastructure spending.

Investment is one of the key in any talks about economic development. The discourse on economic development, the creation of new jobs, and poverty alleviation ultimately put investment as a key driver since the consumption-driven economy is acutely vulnerable. According to Kuncoro (2004: 71), the accumulation of capital is needed by a country to build its economic performance. Therefore,

every country seeks to create an economic climate in order to encourage the creation of capital accumulation necessary for economic development, especially in the form of economic growth.

In addition to the physical investments mentioned above, investment in human capital is also very important in promoting economic development. The new idea of Neo-Classical theory after the Solow (Beyond the Solow Model) model says that the importance of transformation in a good development process is not only limited to improving the efficiency of allocation and accumulation of physical capital, but rather that human quality through improved quality of education and health is an important factor.

Ricardo, Lewis, Ranis and Fei (Chyper, 2014) argue that labor affects the quality of economic development in an economy. A qualified workforce will determine the quality of existing development in the economy. Certainly with a qualified workforce will create better quality economic development.

In addition, infrastructure also contributes to the improvement of economic development. Infrastructure has the effect of overflow or externalities, especially seen in production activities. Infrastructure externalities affect production activities by providing accessibility, ease and possible production activities to be more productive (Barro, 2006: 53).

According to Rogers (Suryono, 2001: 132) development is a process of social change with broad participation in a society intended for social and material progress (including increased equity, freedom and other cherished qualities) for the majority of the people through greater control which they get to their environment.

Education and health of citizens strongly determines the ability to absorb and manage the sources of economic development both in relation to technology to institutions that are essential for economic development. With good education, the use of technology or technological innovation becomes possible to happen. As expressed by Meier and Rauch (Bachrul, 2002), education, or more broadly human capital, can contribute to development. This is because education is essentially a form of savings, leading to the accumulation of human capital and the growth of aggregate output if human capital is input in the aggregate production function.

According to Todaro (2015) population growth and labor force growth (AK) has traditionally been regarded as one of the positive factors that spur economic development. A larger number of workers mean increasing production levels, while greater population growth means greater domestic market size. Yet it is still questionable whether the true rate of rapid population growth will actually have a positive or negative impact on its economic development.

Some new growth theory literature tries to explain the importance of infrastructure in promoting economic development. This theory incorporates infrastructure as an input in influencing aggregate output and is also a possible source in increasing the technological advancements gained from the emergence of externalities in infrastructure development. In summary, the hypothesis of public capital in this case is that stocks of public capital increase output directly and indirectly in the private sector. According to Hulten and Schwab (Sinaga, 2005: 83) the direct effects are based on hypotheses because public capital provides intermediate services to the private sector in the production process or in other words the marginal product of public positive service. Indirect effects arise from the assumption that public capital and private capital are complementary in production

Based on the above conditions, to know the influence of each variable to the economic development of North Sumatra Province, the authors are interested in studying in the form of research entitled "Analysis of Economic Development of North Sumatra Province".

Methods

Data of all variables in this study started from 1982 - 2016 with the amount of data (n) of 35. The data used in this study comes from the Central Bureau of Statistics (BPS) of North Sumatra various editions and reports from the Regional Revenue and Finance Office of Sumatra North

The model of economic development in this study is influenced by investment in education, health investment, PMDN, PMA, labor quality and infrastructure spending. Form of functional equation in this study as follows:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \mu_t$$

Where:

Y_t = economic development in t periode,
X_{1t} = education investment in t periode,
X_{2t} = health investmentin t periode,
X_{3t} = physical domestic investment in t periode,
X_{4t} = physical foreign investment in t periode,
X_{5t} = labor quality in t periode, and
X_{6t} = infrastructure spending in t periode,
β_0 = constant,
β_1-β_6 = coefficient of variable estimation,
μ_t = error term.

Results

Before making estimation of regression model in this research, it is necessary to first test the classical assumption in order to get Best Linear Unbiased Estimator (BLUE) result.

The multicolinearity test with Variance Inflation Factor (VIF) method, VIF value of all variables <5. Therefore, in this model there is no multicolinearity problem or there is no correlation between independent variables.

From the test of Heterocedasticity with Breusch-Pagan-Godfrey Test can be known the probability of F-statistic in this research has value (0.4773)> 0,05, hence in this research there is no problem of heterokedasticity. Thus all the variables in this study have a linear relationship with the residual (variables outside the model).

From the autocorrelation test obtained F-statistic probability value of 0.2405. Because of the probability value of F-statistic> 0,05, the estimation model in this research does not have autocorrelation problem or there is no correlation between residual in one observation with other observation.

The normality test using the Jarque-Bera method (JB). The decision is normally distributed or not to the residual simply by comparing the JB probability value with the alpha level of 0.05 (5%). If Prob. JB count is greater than 0.05 it can be concluded that the residual is normally distributed and vice versa, if the value is smaller then there is not enough evidence to suggest that the residual is normally distributed. Prob value. JB calculate of 0.1162> 0.05 so it can be concluded that the residual is normally distributed which means the classical assumption about normality has been met.

The results of estimation obtained the equation model of economic development as follows:

$$\text{Log } Y_t = 0.848127 + 0.360559 \text{ Log } X_{1t} + 0.280611 \text{ Log } X_{2t} + 0.502455 \text{ Log } X_{3t}$$
$$+ 0.521517 \text{ Log } X_{4t} + 0.111271 X_{5t} + 0.407042 \text{ Log } X_{6t} + \mu_t$$

The above estimation, it can be seen that if investment in education, investment in health, PMDN, PMA, quality of labor and infrastructure spending is zero then the value of economic development in North Sumatra is 0.848127 percent. The R-squared value of the economic development equation is 0.898501. This shows the contribution of investment variables in education, health investment, PMDN, PMA, labor quality and infrastructure expenditure on economic development in North Sumatera is 89.85 percent while the rest of 10.15 percent is influenced by other variables not included in equality of economic development in North Sumatra.

The direction of investment's investment in economic development is positive with the estimated coefficient of 0.360559. This means that if investment in education increased by 1 percent then economic development will increase by 0.360559 percent with the assumption that other variables are considered constant (ceteris paribus). The direction of the health investment influence on economic development is positive with the estimated coefficient of 0.280611. This means that if health investment increased by 1 percent then economic development will increase by 0.280611 percent (ceteris paribus). The direction of PMDN's influence on economic development is positive with the estimated coefficient of 0.502455. This means that PMDN increased by 1 percent then economic development will increase by 0.502455 percent (ceteris paribus). The direction of PMA's influence on economic development is positive with the estimated coefficient of 0.521517. This means that PMA increases by 1 percent then economic development will increase by 0.521517 percent (ceteris paribus). The direction of the influence of labor quality on economic development is positive with the estimated coefficient of 0.111271. This means that if the quality of labor increased by 1 percent then economic development will increase by 0.111271 percent (ceteris paribus). The direction of the effect of infrastructure spending on economic development is positive with the estimated coefficient of 0.407042. This means that if infrastructure spending increased by 1 percent then economic development will increase by 0.407042 percent (ceteris paribus).

a.   **Effect of Investment Field of Education Against Economic Development of North Sumatra.**

The results of this study are in accordance with the model theory developed by Rostow and Musgrave (Lincolin, 2006: 62) which links the development of government spending with the stages of economic development namely the early stages, the middle and the advanced stage. In the early stages of economic development, the percentage of investment in education to total large investments because at this stage the government must provide infrastructure such as education, health, transportation infrastructure. In the intermediate stage of economic development, investment in education is still needed to increase economic development in order to take off, but at this stage the role of health investment is getting bigger. The role of the government remains large in the intermediate stage, as the private sector's greater role will lead to much market failure and also leads the government to provide more public goods and services. The results of this study are in accordance with Hasten's (2010) study which concludes that investments comprising investment in education and investment in health have a significant effect on Dutch economic development. The results of this study are also in line with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study are also in line with research McGrattan (2004). This study concludes that investments made either in educational investment, health investment or physical investment and human investment have an impact on output growth in the 15 OECD member countries.

b.   **Influence of Investment in Health Sector on Economic Development of North Sumatra.**

The results of this study are in accordance with Hasten's (2010) study which concludes that investments comprising investment in education and investment in health have a significant effect on Dutch economic development. The results of this study are also in line with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study are also in accordance with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study also in accordance with previous research McGrattan (2004) which concluded that investments made either investment education, health investment or physical investment and human investment impact on output growth in 15 OECD member countries. The results of this study in accordance with the theory Todaro (2003) states that the resources to be used to increase income and consumption in the future referred to as investment. Thus investment can be interpreted as expenditure or shopping of

investors or companies to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy so that investment is also called the investment or capital formation.

c.   Influence of PMDN on Economic Development of North Sumatra.

The results of this study in accordance with research Dolvsky (2017) concluded that physical investment has a real impact on Russian economic development. The results of this study are also in accordance with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study in accordance with the theory Nanang (2004: 52) states that factors that indirectly affect productivity is investment. A good investment in education and health will affect productivity gains. The analysis of investment in health and education is integrated into the human capital approach. Human capital is a term often used by economists for education, health, and other human capacities that can increase productivity if things are improved. Once the initial investment is made, it can generate a future income stream from improved education and health. As a result, a rate of return can be obtained and compared with the return of other investments. This is done by estimating the present discount value of the increased revenue streams that may result from these investments and then comparing them with their direct costs and indirect costs.

d.   Influence of Foreign Investment (PMA) on Economic Development of North Sumatra.

The results of this study in accordance with research Dolvsky (2017) concluded that physical investment has a real impact on Russian economic development. The results of this study are also in accordance with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study in accordance with the theory Nanang (2004: 52) states that factors that indirectly affect productivity is investment. A good investment in education and health will affect productivity gains. The analysis of investment in health and education is integrated into the human capital approach. Human capital is a term often used by economists for education, health, and other human capacities that can increase productivity if things are improved. Once the initial investment is made, it can generate a future income stream from improved education and health. As a result, a rate of return can be obtained and compared with the return of other investments. This is done by estimating the present discount value of the increased revenue streams that may result from these investments and then comparing them with their direct costs and indirect costs.

e.   Effect of Labor Quality on Economic Development of North Sumatra.

The results of this study are in line with Hasten's (2010) study which concludes that investments comprising investment in education and investment in health have a significant effect on Dutch economic development. The results of this study are also in line with Marzukic (2011) study which found that physical investment and human investment have a significant impact on changes or output growth in some European countries. The results of this study are also in line with previous research McGrattan (2004) which concludes that investments made either in educational investment, health investment or physical investment and human investment have an impact on output growth in the 15 OECD member countries. The results of this study in accordance with the theory of investment in the field of human resources or Human Capital is intended to increase revenue. Education is an important factor in the development of human resources. Education not only increases knowledge, but also improves work skills so that it will increase work productivity (Simanjuntak, 2001: 69). In addition, according to Todaro (2003: 413) the level of education is seen as an investment in the field of human resources aimed at improving labor productivity. Therefore education and training is one of the important factors in the organization of the company. Then Gaspers (2000: 89) said for a company labor productivity should be a top priority because the high low productivity of labor will determine

the high low productivity of the company. To improve labor productivity is one way is to improve the labor education.

f.   Effect of Infrastructure Expenditure on Economic Development of North Sumatra.

The results of this study are in line with George's (2016) study which found that economic development is affected by infrastructure spending, infrastructure quality and infrastructure investment. The results of this study are in accordance with Herick's (2009) study which concludes that government spending in the form of regional expenditure and infrastructure quality has a significant impact on economic growth in Canada. The results of this study are consistent with new growth theory theories try to explain the importance of infrastructure in pushing the economy. This theory incorporates infrastructure as an input in influencing aggregate output and is also a possible source in increasing the technological advancements gained from the emergence of externalities in infrastructure development (Hulten and Schwab, 2001: 91).

Conclusions

The results of the study concluded that (1) Investment field of education has a significant and positive impact on the economic development of North Sumatra. With the meaning of words, an increase or increase in investment in education will encourage an increase in economic development performance in North Sumatra. (2) Investments in the health sector have a significant and positive impact on the economic development of North Sumatra. Thus, if the investment in health sector increased or increased then this will encourage the rise of economic development of North Sumatra. (3) PMDN affects North Sumatera economic development significantly and positively. This situation means that if PMDN continues to increase then in the future will have an impact on the increasing economic development of North Sumatra. (4) Foreign Direct Investment also affects North Sumatera economic development significantly and positively. This situation means that if the FDI continues to be boosted, the economic development of North Sumatra will continue to rise. (5) The quality of labor significantly and positively affect the economic development of North Sumatra. This means that when the quality of workforce in North Sumatra better then the performance in the wheels of the economy of North Sumatra will also be better so that it will be able to encourage economic development. (6) Infrastructure spending has been shown to significantly affect the economic development of North Sumatra. Increased government spending on infrastructure will encourage the mobilization of major sources of development and ultimately will have a good impact on the economic development itself.

Based on the results of the research, the suggested policies on government investment in education and health, the government needs to improve the quality of education and budget for public health. In the case of PMDN and PMA investments, local governments should be able to attract new investors by creating an investment climate which is conducive through the optimization of one-stop service with ease of permit. In terms of labor quality, the government should seek to improve the quality of the workforce in the form of scholarships to outstanding and underprivileged students.

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