

Analysis of the Impact of Investments on Economic Growth in North Sumatera Province, Indonesia

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Abstract — Economic growth is one of the benchmarks in determining the level of progress or development of a country or region. But there are different factors which have an impact on the rate of economic growth. In North Sumatera Province there are many determining factors in influencing the economic growth rate of the area. This study aims to analyze the impact of investment on economic growth in the Province of North Sumatera. The research method used is quantitative research using time series (2011-2015) and cross section (33 districts/cities in North Sumatera Province). The results of this study indicate that, simultaneously investment variables have a significant impact on economic growth in North Sumatera Province. Partially, found that investment variable has a positive and significant impact on economic growth in North Sumatera Province.

Keywords — *Investment; Number of Workers; Government Expenditure; Economic Growth.*

I. INTRODUCTION

The problem of inter-regional economic inequality invites economists to raise regional economic studies. Regional economics cannot be separated from the national economy. The inter-regional prosperity gap shows the failure of the government's national economic policy.

Regional development is part of national development implemented based on the principle of regional autonomy. The thorough and sustainable development of North Sumatera Province has increased the economy of the people.

The Neo Classical economic growth theory states that economic growth (in regions measured by GDP growth) depends on the development of production factors such as capital, labor and technology [1].

GDP growth as a benchmark of growth of a regional economy also cannot be separated from the role of government spending in the public service sector. Regional government expenditure is measured from total routine expenditure and development spending allocated in local budgets. The greater productive local government expenditure then the higher the economic level of an area [2]

Comparison of the value of Gross Regional Domestic Product (PDRB) at Constant Price (ADHK) in 2010 with oil and gas in 2015 districts/cities in North Sumatera Province indicates a high income gap where the GRDP reached 124,277.48 billion rupiahs in Medan City and the lowest GRDP of 677.18 billion rupiah in West Pakpak District.

In macroeconomic theory, in terms of expenditure, gross regional income is the sum of variables including investment.

Investments in the region consist of government investment and private investment. (domestic or foreign (foreign)). Government investment is made to provide public goods. The amount of government investment can be calculated from the difference between total government budget and routine expenditure. The development of investment realization of Foreign Investment (FDI) of North Sumatera Province in the last four years (2012-2015) tends to increase while the realization of Domestic Investment (PMDN) in the year 2013 increased 170% but in 2015 decreased by 18%.

Investment is the current consumption delays to be used in efficient production over a period of time [1]. According to reference [3], investment is a commitment of funds over a period to earn the expected revenue in the future as compensation for the units invested.

While Husnan in reference [4] defines investment as the use of money for the purpose of earning income. Investment is an investment within the company, with the aim that the wealth of a corporation or company increases. Investment is also defined as goods purchased by individuals or companies to supplement their capital stocks [5]

According to Sukirno in reference [1] investment activities allow a society to continuously improve economic activities and employment opportunities, increase national income and improve the level of community prosperity. And Suryana in [6] states that capital shortages in developing countries can be seen from several points of view:

- a. The small amount of absolute material capital;
- b. Limited capacity and expertise of the population;
- c. Low net investment.

As a result of these shortages, developing countries have undeveloped natural resources and potential human

resources. Therefore, to increase productivity, it is necessary to accelerate new investment in physical capital goods and human resource development through investment in education and training.

Harrod-Domar's theory suggests that the model of economic growth is the development of Keynesian theory. The theory focuses on the role of savings and industry, which is crucial in regional economic growth [7]

Research Question:

How is the impact of investment on economic growth in North Sumatera Province?

II. MATERIALS AND METHOD

The data used in this research is secondary data, realization of investment data of North Sumatera in 2011-2015 obtained from One Stop North Sumatera Province Investment and Licensing Board and data of relative changes of Gross Domestic Product (PDRB) value in North Sumatera Province the basis of constant prices in 2011 to 2015, obtained from the Central Statistics Agency of North Sumatera Province. There are also literature studies, research journals that are related and supportive of research, as well as other relevant sources. The collected data is then processed and analyzed quantitatively and correlation analysis.

Hypothesis

Investment variable has a positive impact to economic growth in North Sumatera Province.

TABLE 1 RESEARCH VARIABEL

Variabel	Operational Definition
Realization of investment (X)	the realization of foreign investment (PMA) plus the realization of domestic investment (PMDN) in the Province of North Sumatera, expressed in units of Rupiah
Economic growth (Y)	the relative change in the real value of Gross Domestic Product (GRDP) in the Province of North Sumatera on the basis of constant prices in 2011 to 2015 and expressed in unit of percent

III. RESULTS

TABLE 2 REALIZATION OF NORTH SUMATRA INVESTMENT YEAR 2011-2015

Sumatera Utara	Tahun (Rp. Juta)				
	2011	2012	2013	2014	2015
	7.495.756,24	9.171.034,10	13.588.420,56	11.621.593,01	19.863.619,80

Sumber : Badan Penanaman Modal dan Perijinan Terpadu Satu Pintu Provinsi Sumatera Utara (data diolah)

TABLE 3 PERTUMBUHAN EKONOMI KABUPATEN/KOTA DI SUMATERA UTARA

Kab./Kota	Pertumbuhan Ekonomi (%)				
	2011	2012	2013	2014	2015
Nias	6,81	6,27	6,35	5,47	5,43
Mandailing Natal	6,4	6,27	6,35	6,54	6,22
Tapanuli Selatan	5,3	9,09	17,43	4,41	5,02
Tapanuli Tengah	6,28	5,11	5,17	5,04	5,08
Tapanuli Utara	5,54	4,9	5,28	5,12	4,81
Toba Samosir	5,26	5,08	4,84	4,24	4,55
Labuhan Batu	5,72	6,09	5,99	5,22	5,04
Asahan	5,37	5,51	5,79	5,88	5,57
Simalungun	5,81	6,06	5,26	5,33	5,24
Dairi	5,28	5,03	5,05	5,03	5,04
Karo	6,59	5,09	4,98	5,18	5,01
Deli Serdang	6,01	4,99	9,22	7,67	5,25
Langkat	5,78	6,45	5,59	5,12	5,03
Nias Selatan	4,46	5,18	4,66	4,32	4,46
Humbang Hasundutan	5,94	5,59	5,79	5,3	5,24
Pak pak Bharat	5,98	6,01	5,91	5,91	5,93
Samosir	5,96	6,05	6,08	5,95	5,77
Serdang Bedagai	5,98	6,09	5,8	5,12	5,05
Batu Bara	5,11	5,72	4,23	4,2	4,11
Padang Lawas Utara	6,81	6,38	6,15	6,12	5,94
Padang Lawas	6,39	6,21	6,14	6,01	5,74
Labuhanbatu Selatan	6,13	6,33	6,05	5,33	5,13
Labuhanbatu utara	6,31	6,36	6,29	5,4	5,18
Nias Utara	6,68	6,21	6,34	5,27	5,49
Nias Barat	6,76	6,55	5,17	5,12	4,87
Sibolga	5,09	5,75	5,93	5,89	5,65
Tanjung Balai	4,86	6,22	5,94	5,78	5,58
Pematangsiantar	6,02	6,64	5,75	6,37	5,24
Tebing Tinggi	6,67	5,75	6,01	5,44	4,86
Medan	7,69	7,66	5,36	6,05	5,74
Binjai	6,28	6,06	6,01	5,83	5,4
Padangsidempuan	5,88	5,9	5,67	5,02	5,04
Gunungsitoli	6,46	6,18	6,22	6,11	5,39
Sumatera Utara	5,99	6,02	6,15	5,48	5,25

Source: Central Statistics Agency of North Sumatera Province (BPS) (data processed)

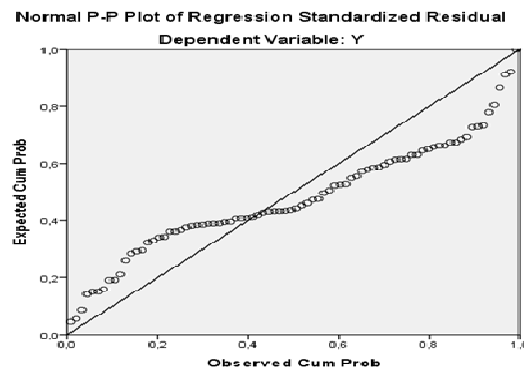


FIGURE 1 NORMALITY TEST

Based on the results of data processing, then obtained the result that all data are normally distributed and there is no deviation, so that the data collected can be processed by the next method. It can be seen that the data spreads around the diagonal line and follows the direction of the diagonal line, then the regression line model meets the assumption of normality and does not occur the problem of normality.

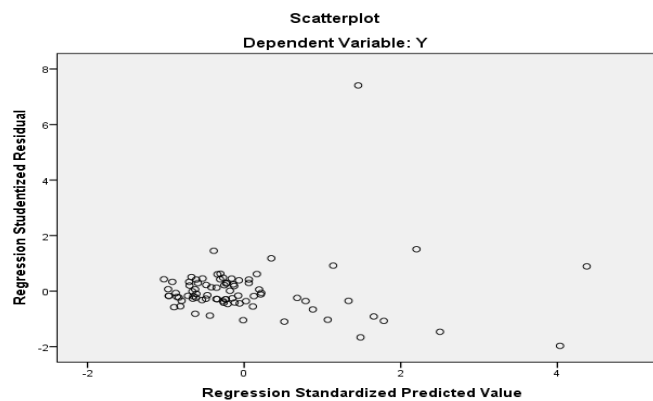


FIGURE 2 RESULTS OF HETEROSCEDASTICITY TEST

Based on Figure 2 it is seen that the points spread above and below the number 0 on the Y axis. Thus, it can be concluded that the hypothesis regression equation is free from the assumption of heteroscedasticity.

TABLE 4 MULTICOLLINEARITY TEST RESULTS

Variable	Coefficients ^a	
	Collinearity Statistics	
	Tolerance	VIF
X1 (Investasi)	,626	1,597

a. Dependent Variable: Y (Pertumbuhan Ekonomi)

Source: Research Result, 2017 (Data Processed)

Based on Table 4 above, we can know the results of calculation of tolerance and VIF values as follows: Variable X (Investment) has a tolerance value of 0.626 and VIF of 1.597. From the existing

provision that if the tolerance value is greater than 0.10 and the VIF value is less than 10, then there is no multicollinearity symptom and the values obtained from the calculation are in accordance with the provision of tolerance and VIF values, and from the analysis result can be known the tolerance value of the independent variable of investment is more than 0.10 and the VIF value is less than 10. Then it can be concluded that the independent variable does not occur multicollinearity so that the model has met the classical assumption in regression analysis.

TABLE 5 REGRESSION COEFFICIENT TEST RESULTS

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5,714	,280		20,383	,000		
	X1	,001	,000	,334	2,463	,016	,626	1,597

a. Dependent Variable: Y

Source: Research Result, 2017 (Data Processed)

Mathematically the result of multiple linear regression analysis can be written as follows:

$$\hat{Y} = 5,714 + 0,001 X1 + 0,002 X2 - 0,001 X3 + e$$

Based on Table 5 the following results are obtained: The value of t arithmetic for investment variable (X1) (2,463) is bigger than table value

(1,664), or sig value. t for investment variable (0.016) smaller than alpha (0.05). This means that investment has a significant impact on economic growth in North Sumatera Province.

TABLE 6 DETERMINATION TEST RESULTS

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,323 ^a	,104	,070	1,53201	1,932

a. Predictors: (Constant) X1

b. Dependent Variable: Y

Source: Research Result, 2017 (Data Processed).

Based on Table 6, the value of R is 0.323, it shows that there is a low correlation between the independent variable of investment to economic growth in North Sumatera Province. The value of R Square is 0.104, which indicates that 10.4% of the

independent variable of investment is able to explain the impact on economic growth in North Sumatera Province. While the rest of 89.6% is explained by other variables that are not included in this study.

TABLE 7 HASIL UJI F

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	21,322	3	7,107	3,028	,034 ^b
Residual	183,070	78	2,347		
Total	204,391	81			

a. Dependent Variable: Y

b. Predictors: (Constant) X1

Sumber: Hasil Penelitian, 2017 (Data Diolah)

The hypothesis is proposed:

Ho = F arithmetic < F table: There is no significant impact between independent variables of investment on economic growth in North Sumatera Province.

Ha = F arithmetic > F table: There is a significant impact between independent variables on economic growth in North Sumatera Province.

Using the 95% confidence level, $\alpha = 5\%$, df 1 (number of variables - 1) = 3, and df 2 (nk-1) or (82-3-1) = 78 (n is the amount of data, k is the sum independent variable), result obtained for F table equal to 2,72. Based on Table 7 it is found that the value of F arithmetic is 3.028 greater than the F table value of 2.72 and sig. $\alpha = 0.034$ is smaller than the alpha 5% (0.05). This means accepting Ha and reject Ho which means there is a significant

impact between the free variable investment on economic growth in the province of North Sumatera.

TABLE 8 TEST RESULT T (PARTIAL)

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	5,714	,280		20,383	,000		
X1	,001	,000	,334	2,463	,016	,626	1,597

a. Dependent Variable: Y

Source: Research Result, 2017 (Data Processed)

Impact of investment (X1) on economic growth (Y) in North Sumatera Province

The hypothesis is proposed:

$H_0 = t < t$: There is a significant difference between investments (X) on economic growth in the province of North Sumatera. $H_a = t > t$: There is a significant impact between Investment (X) on economic growth in North Sumatera Province. From the results of regresi obtained t value for investment variable (X) (2,463) bigger than t table value (1,664), or sig value. t for investment variable (0.016) smaller than alpha (0.05). Based on these criteria, then the decision is to reject H_0 and accept H_a which means that investment (X) significantly impact the economic growth in North Sumatera Province.

IV. DISCUSSION

Some tests have been done before it turns out that the regression model used is good, and free of negative classical assumptions. Based on multiple linear regression analysis that has been done systematically the equation of regression model can be written as follows:

$$\hat{Y} = 5,714 + 0,001 X_1 + 0,002 X_2 - 0,001 X_3 + e$$

The economic interpretation of the equation obtained is:

1. The constant value of 5.714 indicates that if the independent variable is considered constant, then the average economic growth of 5.714%. That number is influenced by other variables outside the model.
2. The coefficient of the investment variable (X1) is 0.001 and the value is positive, then the investment increase has a positive impact on the economic growth in North Sumatera Province significantly.

If other independent variables are fixed and investment variables increase by 1 percent billion or 10 million, the economic growth of North Sumatera Province will increase by 0.001 percent.

From the results of the study found that investment variables have a significant positive impact on economic growth of North Sumatera Province, which investment growth is increasing directly proportional to economic growth in North Sumatera.

This is because with the increasing level of investment, then one of the factors of production such as capital will also increase. Thus the production will also increase and will encourage economic growth of a region. And not only that, with the increase of investment, new businesses will also grow so that the level of people's welfare will increase. With the increasing level of people's welfare of a region, the economic growth of the region also increases.

V. CONCLUSIONS AND SUGGESTIONS

A. CONCLUSION

Based on the results of research, it can be concluded as follows:

1. Based on the results of simultaneous test it can be concluded that the independent variables of investment have a significant impact on economic growth in North Sumatera Province.
2. Partially can be seen that investment variable has a positive and significant impact to economic growth in North Sumatera Province.

B. SUGGESTION

Based on the conclusion of the research result, some efforts or suggestion that can be given by the researcher to drive the development through increasing the economic growth in North Sumatera is to increase the economic growth of North Sumatera Province then for the Local Government is considered necessary to increase the realization of investment districts/cities in North Sumatera to give a significant impact on the economic growth of North Sumatera Province.

REFERENCE

- [1] Sukirno, Sadono. 2013. Pengantar Teori Makroekonomi (Introduction to Macroeconomics Theory). Jakarta: PT.Raja Grafindo Persada.
- [2] Wibisono, Yusuf. 2005. Sumber-Sumber Pertumbuhan Ekonomi Regional: Studi Empiris Antar Provinsi di Indonesia, 1984-2000. Jurnal Ekonomi dan Bisnis Indonesia (Regional Economic Growth Resources: Empirical Study of Inter-Provinces in Indonesia, 1984-2000. Journal of Economics and Business Indonesia) Vol.02. Universitas Gajah Mada, 2005.
- [3] Sumanto, Edi, 2006, "Analisis Pengaruh Perkembangan Pasar Modal Terhadap Perekonomian Indonesia", (Analysis of Impact of Capital Market Development on Indonesian Economy) Skripsi S1 Fakultas Manajemen Institut Pertanian Bogor, Bogor (Tidak dipublikasikan/Unpublished).
- [4] Anoraga, Pandji dan Piji Pakarti, 2006. Pengantar Pasar Modal, Cetakan Kelima, (Introduction to Capital Market, Fifth Edition,) PT Asdi Mahasatya, Jakarta.
- [5] Mankiw, N. Gregory. 2000. Teori Makro Ekonomi Edisi keempat. (Macroeconomic Theory The fourth edition) Jakarta: Erlangga.
- [6] Suryana. 2000. Ekonomi Pembangunan: Problematika dan Pendekatan. Salemba Empat Edisi Pertama. (Development Economics: Problems and Approaches. Salemba Four First Edition).
- [7] Arsyad, Lincoln. 1999. Ekonomi Pembangunan. Edisi Keempat. (Economic development. Fourth Edition) STE YKPN. Yogyakarta.