

Analysis of Determinants of Regional Economic Growth on the East Coast of North Sumatra

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ABSTRACT

The purpose of this research is to analyze the determinant of economic growth regional East Coast of North Sumatra in five years. The location of this research is 4 regencies and 4 cities which are in some area of the East Coast of North Sumatra. The independent variable in this The number of Working population and Human Development Index (HDI). The methods we use in this research is descriptive quantitative with applying for secondary data which is based on central of statistics (BPS) North Sumatra 2011-2015. To see the influence of the total inhabitant which work and human development index for economic growth use analysis Regression panel data. this data will be estimation with equalization model Random Effect Model (REM) use application tool of computer program E-Views. According to approximate estimation result.

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1. INTRODUCTION

Economic growth can be positive or negative this can be seen from the condition of equitable development in each region. If economic growth is high, but development is not carried out evenly, this will have a negative impact, resulting in disparities (inequalities) in each region which will have an impact on accelerating economic growth. If in a period the economy experiences positive growth, it means that economic activity in that period has increased. Meanwhile, if during the period the economy experiences negative growth, it means that economic activity in that period has decreased. Economic growth is the key to macroeconomic goals. This is based on three reasons. First, the population is always increasing. This increasing population means that the labor force is also always increasing. Economic growth must be able to provide employment for the workforce. If the economic growth created is smaller than the growth of the labor force, this will encourage unemployment which will affect the value of people's lives in terms of income, health, as well as affect the education received by the community so that regionally it has a negative effect on the value of the Human Development Index. (HDI). Second, as long as wants and needs are always unlimited, the economy must always be able to produce more goods and services to meet these wants and needs, namely by increasing the Gross Regional Domestic Product (GDP). Third,

North Sumatra Province as one of the provinces in Indonesia which has the largest archipelago, namely Sumatra Island. Sumatra Province has a total area of 72,981.23 km² or 3.73% of the total area of the Republic of Indonesia and the 4th largest province on Sumatra Island (BPS, 2016). Based on regional topography, North Sumatra Province is divided into 3 (three) groups of regions/regions, namely the West Coast, Highlands, and East Coast. The East Coast region is a lowland area which has an area of 24,921.99 km² or 34.77% of the total area of North Sumatra. There are 8 regencies/cities part of North Sumatra Province located in the East Coast region. The east coast region is a fertile area, has high humidity and relatively high rainfall so that this region has high economic potential. The rate of economic growth in the East Coast region has a different percentage level, the percentage of economic growth this time has increased and decreased, from 2011-2015. The east coast region consists of 4 districts and 4 cities, where economic development in each district cannot be separated from economic development in each region. The development of each district is certainly not the same, because the resources owned by each district are different.

Table 1
Percentage of Economic Growth Rate on the Basis of Constant Prices by Regency/City (Percent) 2011-2015

District / City / District	2011	2012	2013	2014	2015
Labuhan Batu	5.72	6.09	5.99	5.22	5.04
sharpen	5.37	5.51	5.79	5.88	5.57
Deli Serdang	6.01	4.99	9.22	7.67	5.25
Langkat	5.54	6.45	5.59	5,12	5.03
City					
Tanjung Balai	4.86	6.22	5.94	5.78	5.58
High cliff	6.67	3.75	6.01	5.44	4.86
Medan	7.69	7.66	5.36	6.05	5.74
Binjai	6.56	6.06	6.01	5.83	5.4
East Coast	6.05	6.09	6.23	5.87	8.3
West Coast	6.02	5.67	6.06	5.47	5.17
Plateau	5.41	5.6	5.42	5.36	5.2

From the table above, it is explained how the percentage of the acceleration of the rate of economic growth generated in the regencies/cities in the East Coast region is explained. When compared with the rate of economic growth in the other 2 regions in North Sumatra Province, the East Coast region is an area that has the highest percentage of economic growth when compared to the economic growth of the West Coast and Highlands regions. The difference in the percentage level of economic growth is largely influenced by the large number of people who work as a source of processing production and as a driving force in increasing the output produced in a district/city. The large number of people does not always increase economic growth.

Table 2
Number of working population by district/city (people) 2011-2015

District / City / District	2011	2012	2013	2014	2015
Labuhan Batu	189438	152479	173564	175507	163324
sharpen	313021	267117	248052	279873	276998
Deli Serdang	787753	744133	754454	835162	810620
Langkat	473618	425892	469295	408682	417906
City					
Tanjung Balai	59509	55457	56671	62958	64659
High cliff	60845	57809	60787	65889	63001
Medan	902097	651642	904331	882514	875794

District / City / District	2011	2012	2013	2014	2015
Binjai	104658	97179	103682	111172	112661
East Coast	2890939	245178	2770836	282177	278493
West Coast	1109339	116209	1175429	116571	120199
Plateau	1157264	126197	1259467	125588	130980

The number of residents who work in districts / cities on the east coast of North Sumatra has quite a large number. However, not all residents are able to work and contribute to the acceleration of economic growth. Not only in regencies/cities on the East Coast, there are differences, but in three parts of the region in North Sumatra, the number of working people shows a difference. The cause of the difference in the percentage of economic growth can be seen from the economic activities that occur in the area that affect the amount of income per capita. Efforts to increase per capita income are usually influenced by the production factors found in the region, namely land, labor, capital and technology.

Table 3
Human Development Index (HDI) by Regency/City (years),
2011- 2015

District / City / District	2011	2012	2013	2014	2015
Labuhan Batu	67.88	68.63	69.44	70.05	70.23
sharpen	65.86	66.23	66.57	67.5	68.4
Deli	70.24	70.87	71.39	71.98	72.79
Serdang	65.77	66.17	67.17	67.99	68.53
City					
Tanjung Balai	64.13	64.89	65.4	66.04	66.74
High cliff	70.84	71.33	71.84	72.13	72.81
Medan	77.53	77.78	77.99	78.26	78.87
Binjai	70.85	71.54	72.01	72.55	73.81
East Coast	69.14	69.69	70.23	70.81	71.52
West Coast	62.36	62.94	63.54	64.17	64.88
Plateau	68.22	68.79	69.27	69.82	70.44

The Human Development Index in the districts/cities of the East Coast of North Sumatra experiences different levels. When viewed from the number of percentages that occur from year to year, the HDI continues to increase, this increase cannot guarantee the welfare of all people living in regencies/cities on the East Coast, this is seen because the increase in HDI is not carried out evenly. As a result of this difference, the ability of a region to encourage the development process of a region is also different.

The objectives to be achieved in this study are to determine the effect of the number of working population on economic growth in the East Coast region and to determine the effect of the Human Development Index on economic growth in the East Coast region. The conceptual model is a framework for thinking about the relationship between the independent variable and the dependent variable. To provide direction in this research, a hypothesis is proposed. The hypothesis in question is a temporary statement about the existence of a certain relationship between the variables used. The temporary nature of this hypothesis means that the hypothesis can be changed, replaced by another more appropriate hypothesis. This is possible because the hypothesis obtained depends on the problem under study and the concept used.

2. RESEARCH METHOD

The research method is an important step in writing a thesis, where the existence of a systematic and standard research concept will direct researchers to the goals to be achieved. This type of research is a quantitative descriptive research in which research aims to explain existing phenomena by using numbers. In writing this thesis, the research area is all regencies and cities in the East Coast of North Sumatra which consists of 4 regencies and 4 cities. The entire area is Labuhan Batu district, Asahan district, Deli Serdang district, Langkat district, Tanjung Balai city, Tebing Tinggi city, Medan city, Binjai city.

2.1 Dependent variable

Economic Growth (Y) is the process of increasing the product capacity of an economy which is manifested in the form of an increase in national income.

$$Gt = \frac{(PDRBt - PDRBt - 1)}{PDRBt - 1} \times 100\% \dots$$

Where:

GDP_t = Gross Regional Domestic Product in a given year (t)

GDP_{t-1} = Gross Regional Domestic Product in the previous year

2.2 Independent variable

The number of working population (X₁) is the number of those who are working, who reside or are domiciled in each district/city in the East Coast of North Sumatra.

$$P_t = P_o (1 + r)^t$$

Where :

P_t = Total population

P_o = Initial population

r = Population growth rate

t = Number of years

The Human Development Index (X₂) is an indicator used to measure success in efforts to build the quality of human life (community/population) (Khairunnisa and Hidayat, 2015).

$$HDI = 1/3 (X(1) + X(2) + X(3))$$

Where :

X(1) = Life expectancy index

X(2) = Education Index

X(3) = Decent standard of living index / per capita expenditure index

The operational limitation in this study is to analyze the determinants of economic growth in the East Coast of North Sumatra Province. Where the determinants of economic growth can be measured by looking at the influence of the number of working population, and the Human Development Index (HDI) as a supporter of the process of accelerating economic growth.

2.3 Analysis Method

To answer the problems to be studied, quantitative descriptive analysis is used. Quantitative analysis aims to calculate several things related to the research objectives. To see the determinants of economic growth in the East Coast of North Sumatra using the panel data analysis method, using the E-Views computer program. In this study, there are two independent variables (independent variables) that will be included in the regression model equation, namely the number of working people, the Human Development Index (IPM). While the dependent variable is economic growth. So that the panel data regression model formed in this study is:

$$Y_{it} = + 1 \ 1X1_{it} + 2X2_{it} + \mu_{it} \alpha$$

Where :

T = Year

Y = Eco Growth noun

α = Intercept/Constant

1 β ₂ = Regression Coefficient

X₁ = Number of working population

X₂ = Human Development Index (HDI)

□ = Error Term

2.4 Hypothesis Testing

a. Simultaneous Significant Test (F Test)

The formula for the hypothesis in this study is:

H₀ : There is no significant effect between the number of working population, the Human Development Index (HDI) on Economic Growth.

H_a : There is a significant influence between the number of working people, the Human Education Index on Economic Growth.

The results of the influence are seen based on the p-value (Sig), namely:

1. If the value of Sig. F-stat > 0.05 , then H₀ is accepted
2. If the value of Sig. F-stat 0.05 , then H₀ is rejected

In addition, the simultaneous significant test (F test) can also be seen through the following provisions:

1. If the Fcount > Ftable value, then H₀ is accepted
2. If the value of Fcount < value of Ftable, then H₀ is rejected

3. RESULTS AND DISCUSSION

3.1 East Coast Economic Growth Rate

The rate of economic growth of the East Coast of North Sumatra Province has experienced ups and downs from year to year. In 2011 the rate of economic growth seen from the amount of increase in Gross Regional Domestic Product at constant prices was quite high at 75575.68 then in 2012 the rate of economic growth decreased drastically to 39184.56 this is because in 2012 the region North Sumatra province underwent a transformation of the economic structure from a primary-based province (agriculture) to an industrial-based province. The contribution of the agricultural sector has been unable to compete in generating added value,

The rate of economic growth that occurs in the East Coast of North Sumatra Province is influenced by the rate of economic growth between regencies/cities which are included in the East Coast region. From the explanation of table 4.4 below, it can be seen that from 2011-2015 the district/city economic growth rate according to Gross Regional Domestic Product in the East Coast region was the highest from year to year, namely the city of Medan. This is because the economic mobility in the city of Medan is very fast which is supported by the economic activities that occur in the city. When viewed from the economic activities that occur, there are two potential sectors in the city of Medan, namely the trade and industry sectors, trade activities along with hotel activities. and restaurants become the driving force of the city's economy, while the Medan Industrial Estate (KIM) is close to the Belawan port which is the entry point for the supply of industrial raw materials so that the income per capita of the people in the city of Medan has increased which supports the acceleration of economic growth in the city. Meanwhile, the lowest economic rate in the East Coast region from 2011-2015 was the city of Tebing Tinggi. This is because the city of Tebing Tinggi is also a small city when compared to other cities in the East Coast region. Apart from that, the fastest economic activities in Tebing Tinggi City that support the acceleration of economic growth are only the trade, restaurant and hotel sectors. Here's table 4.

3.2 Estimation Model Selection

This study uses panel data so that the analysis technique used in this study is panel model regression. Unlike the usual regression model, the panel data regression model has to go through several stages as a determinant of the right estimation model, by conducting a test, namely the Hausman test (Hausman Test). Based on the needs of this study, there are two choices of estimation models for panel data model regression in this study, namely the Fixed Effect Model and the Random Effect Model.

3.3 Hausman Test (Hausman Test)

Hausman test was conducted to determine the best estimation model for panel data regression analysis, namely between the fixed effect model (Fixed Effect model) or the random effect model (Random Effect Model). The results of the Hausman test can be seen in table 4

Table 4
Hausman Test Estimation Results (Hausman Test)

Test Summary	Chi-Square Statistics	Chi-Square Table	Prob.
Cross-Section Random	3,852,302	2	0.1457

Based on table 4 above regarding the results of the Hausman test, it can be seen that the random cross-section probability value is greater than the 5% alpha tolerance ($0.1457 > 0.05$) and the Chi-square statistic value $>$ Chi-square table ($3.85 > 2$). So it can be concluded that the Random Effect Model (REM) model is the most suitable estimation model for panel data model regression in this study.

3.4 Hypothesis Test

Hypothesis testing is carried out to determine whether there is an effect of the independent variable on the dependent variable either simultaneously or partially, and to find out how big the value of the influence is.

a. Simultaneous Hypothesis Testing (F Test)

The F statistical test basically shows whether all the independent variables included in the model have a joint effect on the dependent variable. The results of the F test calculations can be seen in table 5 below:

Table 5
Simultaneous Hypothesis Test Results

Independent Variable	Dependent Variable	F Count	Sig, F	Information
JPK, HDI	Y	19.24	0.000002	Significant

In simultaneous testing, the Fcount value is 19.24 and a significant value is 0.000002. Because the value is significantly smaller than the 5% alpha tolerance ($0.000002 < 0.05$), then the hypothesis H_a is accepted. Which means that there is a significant simultaneous effect of the variable number of working population and the Human Development Index (HDI) on economic growth in the East Coast region with a margin of error of 0.05 (5%).

b. Partial Hypothesis Test (t Test)

The t-test is a partial test to determine whether there is an effect of each independent variable on the dependent variable. The partial test results are presented in the table below.

Table 5
Partial Hypothesis Results (t-test)

Independent Variable	Coefficient	t-Statistic	Prob.	Information
Constant	-244748.7	-3.416573	0.0016	Significant
JPK	0.044981	3.573803	0.001	Significant
HDI	3540,148	3.404588	0.0016	Significant

c. Coefficient of Determination Test (R2)

The coefficient of determination (R2) essentially measures how far the model's ability to explain the dependent variable is. The value of R2 that is close to one means that the independent variables provide almost all the information needed to predict the dependent variable. The results of the calculation of the coefficient of determination can be seen in table 6 below.

Table 6
Coefficient of Determination

Independent Variable	Dependent Variable	R-square
JPK, HDI	Y	0.639805

Based on the results of the coefficient of determination (R-squared) in table 4.9 above, it can be seen that the R-square value in this research model is 0.639805. This means that the variable ability of the working population and the Human Development Index (HDI) in providing information to

explain economic growth in the East Coast region is 63.9805% and the other 36.0195% comes from other factors outside of this study.

4. CONCLUSION

Based on the results of the research and discussion described in the previous chapter, it can be concluded:

1. The variable number of working population has a positive and significant impact on economic growth in the East Coast of North Sumatra. Whether it's seen from the test results partially or simultaneously. The t-statistic value in the partial test is 3.573803 with a probability value of 0.0010 and the Fcount value from the simultaneous test is 19.24 with a probability value of 0.000002 with a tolerance negligible ($\alpha = 5\%$).
2. The Human Development Index variable has a positive and significant effect on economic growth in the East Coast of North Sumatra. Whether it's seen from the test results partially or simultaneously. The value of t-statistics in the partial test is 3.404588 with a probability value of 0.0016 and the value of Fcount from the simultaneous test is 19.24 with a probability value of 0.000002 with a tolerance error ($\alpha = 5\%$).

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