

# International Journal for Advanced Research

Journal homepage: <https://journal.outlinepublisher.com/index.php/ijar>

Research Article

## Effect of Growth Rate Population and Poverty to Economic Growth in North Sumatra for the 2012-2023 Period

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Keywords:

Poverty,  
Growth,  
Economy.

Abstract

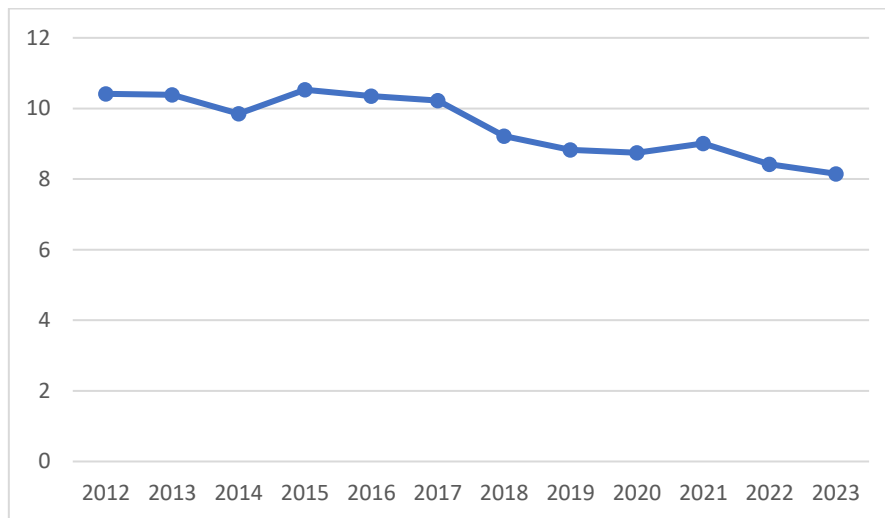
This research aims to analyze the influence of population growth rates and poverty on economic growth in North Sumatra Province for the 2012-2023 period. The research method used is a quantitative method. The regression analysis method is multiple linear regression using the Eviews 12 program and the data used is a time series from 2012-2023 sourced from the North Sumatra Central Bureau of Statistics (BPS SUMUT). The results of the analysis show that the variable values of population growth rate and poverty have a positive but not significant effect on economic growth in North Sumatra.

### Introduction

Growth economy is something reject measuring For success development in a country in particular in the field economy . Growth economy can be measured from level growth Product Gross Domestic (GDP) meanwhile For room scope National and Product Gross Regional Domestic (GRDP) for regional scope . Apart from being influenced internal factors , growth The economy in a country can also be influenced by factors external , esp after an increasingly economic era globalized . Internally there is three component main determinant growth economy the is government , business world , and society .

According to (Hasyim, 2016; in (Yunianto, 2021)), Growth economy can interpreted as a process of change condition economy a country as a whole sustainable going to better situation during period certain . Growth economy is a process of increasing output per capita in period long time or developmental process activity the economy is happening from year to years (Sri Budhi , 2013; in (Usman & Diramita, 2018)). According to definition offered by experts , growth economy is capacity a country for increase activity its economy , which is indicated by an increase production goods and services and improvements product domestic gross during period time certain .

North Sumatra as one of the 38 provinces in Indonesia, no free from problem poverty and always try do alleviation poverty regionally as expected impact on alleviation poverty in a way national (Indonesia). Poverty that occurs in a region always become serious problem Because the impact caused poverty so big . Poor people don't will capable from facet economy For fulfil need base foods that cause deficiencies nutrition as well as relatively get education intermediate down so that will difficult compete in the energy market work in the end will give rise to problem unemployment . Condition this is the basis that alleviation poverty That must . Poverty No can removed The same once , but can reduced through sustainable development programs .



Graph 1. Poverty in North Sumatra Province 2012-2023

Based on the displayed graph is visible that level poverty in North Sumatra Province is experiencing trend decline during period 2012 to 2023. Graph This show that in 2012 , the level poverty is around 11 % . During four year next , up to 2016 , level poverty show A little fluctuation However tend stable . Starting in 2016 , there are more decline significant in level poverty , which continues until 2020. Decline This can indicated as results from various eradication policies and programs poverty run by the government regional and central , as well enhancement investment in sectors key like education and health . However , in 2021 and 2022, the graph show that level poverty A little increase or stagnant , which is a possibility big caused by impact COVID-19 pandemic . Pandemic This has bother Lots aspect life social and economic , which has an impact on increasing poverty while in many regions, including North Sumatra.

In 2023 , graph return show decline in level poverty , approaching figure 8%. This matter show recovery economy and effectiveness steps taken For overcome impact pandemic as well as effort sustainable in the alleviation program poverty . By overall , graph This indicated that North Sumatra Province has succeed reduce level poverty in a way significant during more from One decade final . Although there is a number of fluctuation small throughout travel , trends period long show enhancement well-being economy . Success This reflect results from effort collaborative between government , society and sectors private in overcome challenge poverty in the province the . Ongoing efforts still required For maintain and speed up trend decline poverty this is in the future .

Poverty defined as condition Where somebody or group of people, men men and women , no fulfilled right basically For maintain and develop decent life . Poverty is someone who doesn't capable in obtain source Power For sufficient need basic , whose lives are below the poverty line , ( Hambarsari , 2016; in (Usman & Diramita, 2018)). Poverty is because at a time consequence . more big or more small than level growth population , or is change in structure economy applies or no ( Sadono Sukirno, 2011; in (Lendentariang, Engka, & Tolosang, 2019) ). Problem poverty until moment This Still become long- term problem . Poverty is problem in development nature multidimensional .

Trigger increasing number Poverty is also caused by numbers resident . Resident is all over individuals domiciled in a geographic area Republic of Indonesia during six month or more and those who are domiciled not enough from six month but with objective settled , ( Silastri , 2017; in (Usman & Diramita, 2018)). Second

, market expansion , because wide market for goods and services determined by two factors important , that is income society and numbers resident . Whereas resident called factor inhibitor development Because will lower productivity , and will there is Lots unemployment . Amount resident in economy something area is problem fundamental , because growth residents who don't under control can result No achieved objective development economy that is people's welfare as well push number poverty .

In the journal this , writer research influence poverty and speed growth resident to growth economy in North Sumatra for the period 2012 – 2023 for see is rate growth population and poverty influential to growth economy in the period the .

## **Hypotheses Development**

Hypothesis According to Dantes (2012) is a presumption or assumption that must be tested through data or facts obtained through research. "Hypothesis According to Best, John W, Kahn, James V (2003: 11) is a formal affirmative statement that predicts the results of a single study, temporary explanation or relationship between two or more variables."

### **a. The Effect of Population Growth Rate on Economic Growth**

(Yenny and Anwar 2020) defines population as " a group of people who live and reside live in a country." If growth resident balanced with its height level income and capacity productive , then matter This will influence growth economy a country. The richer the population a country, increasingly strong growth economics. Adam Smith in study theorize that growth economy related with growth the next resident influence growth production and output. ( Handayani , Bendesa , and Yuliarni 2016) stated that amount resident No influential to growth economy because amount resident can reduce GDP per capita .

In his analysis, Kuznets (Todaro, 2004) put forward six characteristics or features of the economic growth process that are found in almost all countries, namely:

1. High levels of growth in output per capita and population growth.
2. High level of increase in total production factor productivity.
3. High level of economic structural transformation.
4. High level of social and ideological transformation

Solow (Neo Classical) theory states that the rate of population growth will ultimately result in a decrease in the steady level. This condition clearly affects the decline in income and output levels per worker. The Solow model further predicts that countries that have a population growth rate will experience smaller economic growth.

According to research conducted by Windy Ayu Astuti, Muhammad Hidayat, Ranti Darwin (2015) stated that population growth has a negative effect on economic growth. Where every decrease or increase in population growth will affect the amount of economic growth. The higher the population growth rate, the lower economic growth will be. The higher the population growth rate, the greater the consumption expenditure and this will have an impact on economic growth.

Meanwhile, other research states that the rate of population growth will affect per capita income, living standards, agricultural development, employment, labor force and capital formation. The population, when linked to the growth of a country's per capita income, can roughly reflect the country's economic progress. In this research, it is confirmed that population growth (X1) has a significant effect and is positively related to economic growth in Samarinda. (Dwi Yuniarto, 2021)

From the explanation of theory and research above, it can be concluded that the research hypothesis is as follows:

- a. H01: Population growth rate has no significant effect on economic growth
- b. Ha1: Population growth rate has a significant effect on economic growth

## The Effect of Poverty on Economic Growth

According to the SMERU Research Institute (2001) poor people perceive that poverty is something circumstances when somebody lost price self, hit by dependency, forced accept treatment rudeness and insults, as well No cared about when currently look for help. SMERU also revealed another definition of poverty ie as inability somebody in fulfil need consumption basic and improving quality his life. Poverty arise Because exists inequality in ownership tool production, poverty also related to attitude, culture life, and the environment certain in something public. Poverty is also interpreted as helplessness group public under something system government that causes it they are in a very weak and exploited position. Not far differently Peter Townsend (Robert Gordon University) stated that poverty is absence or lack food, comfort, service standards and activities required by the community.

According to Niemi (2011) in Maipita (2014), poverty is the inability to buy basic necessities such as food, clothing, shelter and medicine. Meanwhile, the Central Statistics Agency (2016) defines poverty as an economic inability to meet basic food and non-food needs as measured in terms of expenditure. According to Suharto, poverty is related to material shortages, low income and social needs. So the poor group is where someone cannot meet their needs because of low income (MAULANA 2020).

In previous research, it was stated that to increase economic growth, society must make efforts to reduce poverty. Because poverty greatly influences the rate of economic growth. (Angga, Iqbal, & Suharto 2022). In other research conducted by AA Gede Krisna Pratama, Ida Bagus Darsana (2015), shows that poverty has a negative and significant effect on economic growth. High economic growth will bring prosperity to society, where people with high incomes and low incomes can both enjoy the results of high economic growth.

From the explanation of theory and research above, it can be concluded that the research hypothesis is as follows:

- a. H01: Poverty has no significant effect on economic growth
- b. Ha1: Poverty has a significant effect on economic growth

## Method

Deep data collection methods A study is method or method researchers used For get inside data A study. In research This researcher use method data collection as stated by Indriantoro and Soepomo (2002, p. 152), namely library research or bibliography with quote a number of studies literature like a number of related articles with problem related with growth economy. Library research is series activity with method or method library data collection, reading as well as record and also manage material study. Subject research carried out focuses on how influence between two variable independent "Growth Rate Population" (X1), "Poverty (X2)", against variable dependent "Economic Growth" (Y).

Research methods used is method quantitative. Quantitative method focuses on numerical data, in it Lots use Lots number. This method used For analyze influence rate growth population and poverty to growth economy in North Sumatra. Writer do studies empirically in 2012-2023. This research using secondary data obtained from published data from the Central Statistics Agency (BPS), for growth variables economy is on base price constant 2010. Type of data used in analysis This is scaled (continuous) data time. Data processing is carried out with use application eviews 12 with carry out assumption tests classic moreover formerly. By systematic can formulated with equation  $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$  then carry out hypothesis testing.

## Results And Discussion

### Results

#### Multiple Linear Regression Test

Table 1  
Multiple Linear Regression Test

Dependent Variable: Y  
 Method: Least Squares  
 Date: 05/13/24 Time: 07:02  
 Sample: 2012 2023  
 Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-28.07383	41.17252	-0.681858	0.5125
X1	1.13E-06	2.00E-06	0.563152	0.5871
X2	1.730681	1.422952	1.216261	0.2548
R-squared	0.227135	Mean dependent var		4.570000
Adjusted R-squared	0.055387	S.D. dependent var		1.997057
S.E. of regression	1.940964	Akaike info criterion		4.376564
Sum squared resid	33.90606	Schwarz criterion		4.497791
Log likelihood	-23.25939	Hannan-Quinn criter.		4.331682
F-statistic	1.322490	Durbin-Watson stat		1.671567
Prob(F-statistic)	0.313666			

From Table 1 above , it is obtained equality multiple linear regression as following :

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

$$Y = -28.07383 + 1.13E-06X_1 + 1.730681X_2$$

Equality regression the can explained as following

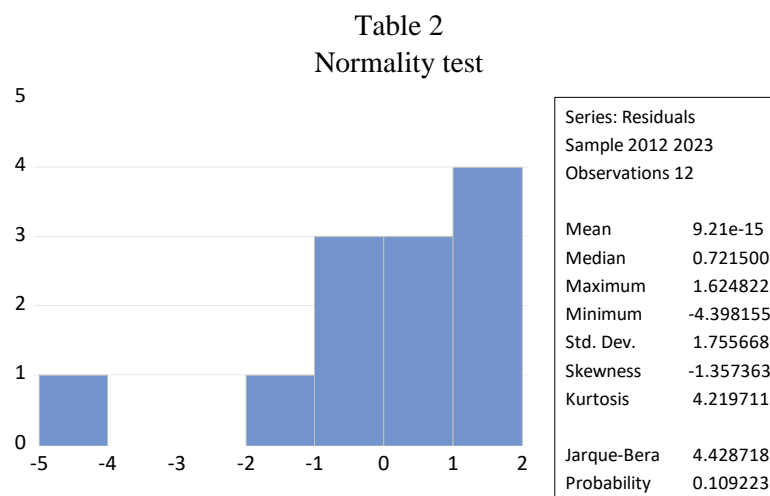
a : constant of -28.07383 means that if the variable is independent like rate growth population and poverty is constant , then level growth economy will still amounting to -28.07383.

X 1 : coefficient regression rate growth resident equal to 1.13E-06 meaning every enhancement rate growth resident One units , then level growth economy will increase equal to 1.13E-06 And this variable own connection positive to growth economy .Where every enhancement rate growth resident will followed with enhancement growth economy .

X 2 : coefficient regression poverty is equal to 1.730681 meaning every increase poverty One units , then level growth economy will increase amounting to 1.730681. And this variable own connection positive to growth economy . Where every enhancement poverty will followed with enhancement growth economy .

### Test Assumptions Classic

#### a) Normality test



Based on normality test output above , yes seen that mark the probability is > alpha level , ie equal to 0.109223 > 0.05. So that the conclusion that data on research This normally distributed (passes the test)

**b) Heteroscedasticity Test**

Table 3  
Heteroscedasticity Test

Heteroskedasticity Test: White  
Null hypothesis: Homoskedasticity

F-statistic	3.945893	Prob. F(5,6)	0.0624
Obs*R-squared	9.201652	Prob. Chi-Square(5)	0.1013
Scaled explained SS	8.332498	Prob. Chi-Square(5)	0.1388

The output results in table 3 were obtained mark prob.chi – square in obs \*R- square > alpha level , namely  $0.1388 > 0.05$ . So , the conclusion is obtained is research This free from symptom heteroscedasticity and declared to have passed the heteroscedasticity test .

**c) Autocorrelation Test**

Table 4  
Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:  
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.588352	Prob. F(2,7)	0.2699
Obs*R-squared	3.745854	Prob. Chi-Square(2)	0.1537

From the results on can seen chi\*quare prob value > alpha level , namely  $0.1537 > 0.05$ . So Can concluded research This No happen residual correlation between variable so that declared passed autocorrelation test .

**d) Multicollinearity Test**

Table 5  
Multicollinearity Test

Variance Inflation Factors  
Date: 05/13/24 Time: 07:07  
Sample: 2012 2023  
Included observations: 12

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1695.176	5399.597	NA
X1	4.01E-12	2635.042	4.494174
X2	2.024791	587.8906	4.494174

Based on the output in table 5, it is known that rate VIF value growth population and poverty more small of 10 ie rate growth resident amounting to  $4.494174 < 10$ , and poverty  $4.494174 < 10$ . So conclusions obtained is third variable No happen symptom multicollinearity .

## Statistical Test Results

### a) Coefficient of Determination Test ( $R^2$ )

Table 6  
Coefficient test determination

DEPENDENT VARIABLE: ECONOMIC GROWTH	
Method: Least Squares	
R-squared	0.227135
Adjusted R-squared	0.055387
F- statistics	1.322490
Prob (F. Statistics )	0.313666

Viewed from table above , Model Feasibility Test ( $R^2$ ) is For see the ability of the independent variable and explaining the dependent variable . And the  $R^2$  value shows how much big proportion of the total variation of the dependent variable that can be explained by the dependent variable . Based on results estimation value ( $R^2$ ) obtained results estimation is 0.227135. This means the independent variable rate growth population and poverty influential However No significant on the dependent variable growth economy that is amounting to 22.71%, meaning the remaining 77.29% explained by variables outside the model.

### b) Test By Simultaneous (F Test)

Test this For estimate is variable X can describe the Y variable simultaneous . Statistical F Testing This done with compare mark  $F_{count}$  with  $F_{table}$  . From the results tests carried out , value  $F_{count} < F_{table}$  namely  $1.322490 < 4.256494729$  and the prob value (F- statistic ) that is  $0.313666 > \alpha$  level (0.05). Can concluded that in a way simultaneous rate growth population and poverty influential but No significant to growth economy in North Sumatra Province period 2013 – 2023.

### c) Test By Partial (T Test)

T test done For test hypothesis in a way Partial between variable Where For know influence between variable independent to variable dependent seen with method compare mark  $t_{table}$  with  $t_{count}$  . In terms of This  $t_{table}$  obtained with count mark df and  $t_{count}$  obtained from table results estimation regression multiple already done previously . After determined  $t_{table}$  and  $t_{count}$  continued with stage making hypothesis by researchers .

### Hypothesis testing :

$H_0$  : No effect

$H_1$  : Influential

Criteria taking decision can done with :

Calculated t value  $< t_{table}$  then  $H_0$  accepted and  $H_1$  rejected .

Calculated t value  $> t_{table}$  then  $H_0$  rejected and  $H_1$  accepted .

With amount  $n = 12$  and  $k = 3$ , we get mark  $t_{table} : 2.262157163$

The results of the statistical T test (test hypothesis in a way partial ) is as following :

Variable rate growth resident obtained from results estimation mark  $t_{count} 0.563152 < t_{table} 2.20098516$  so  $H_0$  accepted and  $H_1$  rejected . Then obtained prob value  $0.5871 > \alpha$  level , namely 0.05. The decision obtained from the results of this T test , namely in a way Partial variable rate growth resident influential but No significant to growth economy in North Sumatra Province period 2012-2023. Variable poverty obtained from results estimation mark  $t_{count} 1.216261 < t_{table} 2.20098516$  so  $H_0$  accepted and  $H_1$  rejected . Then obtained prob value  $0.25482 > \alpha$  level , namely 0.05. The decision obtained from the results of this T test , namely in a way Partial variable poverty influential but No significant to growth economy in North Sumatra for the 2012-2023 period .

## Discussion

### Effect of Growth Rate Resident To Economic Growth in North Sumatra

Growth rate resident in study This focuses on speed growth residents in North Sumatra Province . Based on results research conducted , obtained that rate growth resident influential but No significant to growth variables economy proven with the t test showing mark  $t_{count}$  more small from  $t_{table}$  ( $0.563152 < 2.20098516$ ) and value significance amounting to 0.5871. In research this , in the province of North Sumatra For period 2012 – 2023 pace growth resident influential positive to growth economics that can seen from mark coefficient regression rate growth resident that is equal to  $1.13E-06$  meaning every enhancement rate growth resident One units , then level growth economy will increase of  $1.13E-06$  Growth rate population in the study This own connection positive to growth economy Where every enhancement rate growth resident will followed with enhancement growth economy .

Variable rate growth resident own connection positive and not significant to growth economy in North Sumatra. This matter in line with research conducted by (Yenny and Anwar 2020) states that amount resident No influential to growth economy in Lhokseumawe because amount large population However No accompanied with productive contribution to the city so matter This influential in a way positive however No significant to city Lhokseumawe the .

Supported research ( Handayani et al., 2016) found that amount resident own positive influence to growth economy . With increasing amount resident an area, occurs enhancement growth economy in the region . Findings This indicated that factor amount resident hold role important in influence condition economy a region. Besides that research (Candra et al., 2022) states exists enhancement amount residents , will There is enhancement amount power available work . More manpower Lots can increase production and productivity , which in turn will push growth economy . The company will own more Lots source Power man For fulfil need production they . Amount large population create more market potential big . More market big give opportunity for company For expand business them and reach out more Lots consumer . This matter can push investment in infrastructure and industry , as well create field Work new .

### Influence Poverty To Economic growth

Poverty in study This focuses on poverty in North Sumatra Province period 2012-2023 . Based on results research conducted , obtained that poverty influential but No significant to growth economy proven with the t test showing  $t_{count}$  more small from  $t_{table}$  (  $1.216261 < 2.20098516$ ) and value significance of 0.25482. In research this period , in North Sumatra Province 2012 – 2023 poverty influential positive to growth economy . This is also proven from mark coefficient regression poverty that is as big as 1.730681 means every increase poverty One units , then level growth economy increase amounting to 1.730681. And this variable own connection positive to growth economy Where every enhancement poverty will followed with enhancement growth economy .

The results of this research are in accordance with previous research which is the theoretical basis for this research. In previous research, it was stated that to increase economic growth, society must make efforts to reduce poverty. Because poverty has a very negative effect on the rate of economic growth. (Angga, Iqbal, & Suharto 2022). In other research conducted by AA Gede Krisna Pratama, Ida Bagus Darsana (2015), shows that poverty has a negative and significant effect on economic growth. High economic growth will bring prosperity to society, where people with high incomes and low incomes can both enjoy the results of high economic growth.

The results of this research show that poverty has a positive effect on economic growth in accordance with the Trickle-Down Theory, which is an expert namely Friedrich Hayek and Milton Friedman. Second economist This known Because support free market policies and often linked with trickle-down theory . This theory opinion that policies that benefit the rich and ultimately businesses will profitable all layer public Because they will increase investment and creation field Work .



Things that influence economic growth according to Kuznets (Todaro, 2004) are the level of increase in productivity, high total production factors, high level of economic structural transformation and high level of social and ideological transformation. Maulana (2013) explains that there is a positive influence of investment and education level on economic growth. Because in this research the rate of population growth and poverty have an effect but are not significant on economic growth, factors that influence economic growth according to Kuznets and Maulana such as the rate of increase in productivity, high total production factors, level of education, high ideology, etc. could be possible factors. additions that influence economic growth in North Sumatra Province for the 2012 – 2023 period.

## Conclusion

On analysis influence rate growth population and poverty to growth economy in North Sumatra Province for the period 2012-2023, can concluded that results study show speed growth resident own influence positive and not significant to growth economy in North Sumatra. The more tall level rate growth population , growth economy tend increase . Poverty own influence positive and not significant to growth economy in North Sumatra Province . The more tall poverty growth economy tend increase However No significant .

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