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The Effect of Inflation and Unemployment Rate on Economic Growth Rate in North Sumatra (Period 2013-2022)

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Abstract

This research aims to determine the effect of changes in the inflation rate and unemployment rate on the rate of economic growth in the province of North Sumatra over a 10 year period. The technique for collecting data is secondary methods through the Indonesian Central Statistics Agency. The method used to test the relationship between the independent variable and the dependent variable is the classic SPSS assumption test with multiple linear regression measurements. This research resulted in 1) The inflation rate during the research period did not have a significant effect on changes in the rate of economic growth. 2) The changing unemployment rate also does not have a significant influence on changes in the level of economic growth in North Sumatra. The author hopes that further research can further increase assumptions and knowledge, especially variables that can explain the influence of inflation and unemployment rates on more recent levels of economic growth.

1. Introduction

Economic growth is one of many factors that can be an indicator of the welfare, development and progress of a country. This is because every country that experiences an economic surplus, the welfare of that country also increases. This factor is relevant to general economic purposes, namely fulfilling human needs with limited means of fulfillment. If economic figures rise, then economic activity is stable with a good circulation of economic activity in that country.

Economic growth can also be a benchmark for increasing a country's ability to produce products or services as well as distribution in that country. In increasing and maintaining a country's economic growth, the government also has a role to play in maintaining stability. Inflation and unemployment can be measuring factors to measure and maintain the stability of a country's economic growth. Therefore, inflation and unemployment figures become independent variables to measure their influence on the dependent variable, namely economic growth.

Table 1
North Sumatra Economic Growth Rate for the 2013-2022 period (10 Years)

YEAR	ECONOMIC GROWTH RATE
2013	5.56
2014	5.01
2015	4.88
2016	5.03
2017	5.07
2018	5.17
2019	5.02
2020	-2.07
2021	3.7
2022	5.31

Source: Data from the North Sumatra Central Statistics Agency

Based on data obtained through the Central Statistics Agency (BPS). Economic growth rates experience fluctuations that are not too constant. However, in one period the level of economic growth experienced a drastic decline and even distorted in 2020, reaching economic growth rates below the normal limit (mines). Meanwhile, in other periods, economic growth rates experienced fluctuating increases and decreases. With the highest

figure being in 2013 and the lowest in 2020. This percentage value was obtained from the cumulative calculation of GDP in North Sumatra.

Inflation is one of the factors that can be used as a benchmark for calculating economic growth. Inflation is a common phenomenon that definitely exists and occurs in all countries in the world. Both inflation fluctuates upwards and inflation falls. In general, inflation is defined as a continuous increase in prices, over a short or continuous period of time. Inflation can occur due to several factors such as increased demand and pressure to increase costs.

Table 2
North Sumatra Inflation Rate for the period 2013-2022 (10 years)

YEAR	INFLATION RATE (%)
2013	10.18
2014	8.17
2015	3.24
2016	3.02
2017	3.20
2018	1.23
2019	2.33
2020	1.96
2021	1.71
2022	6.12

Source: Data from the North Sumatra Central Statistics Agency

Based on Table 2 obtained through the Central Statistics Agency. It can be seen that the inflation rate in the last 10 years has experienced significant fluctuations. As a benchmark, the highest inflation was in 2013 with a value reaching 10.81%. And the lowest inflation was in 2018 with the inflation percentage touching 1.23%. For the North Sumatra region as a whole, apart from the highest year of inflation, the inflation percentage is relatively low with the average percentage figure being below 5%. However, for the periods 2013, 2014 and 2022, inflation figures experienced significant increases and decreases. The inflation percentage value is obtained through the cumulative inflation percentage obtained from BPS.

Apart from inflation, there are other factors that can be used as benchmarks for the government to measure economic growth rates in North Sumatra. This factor is unemployment which is the second dependent variable after the inflation rate. Unemployment is a problem that is difficult to eliminate in a country. Unemployment rates always exist in any country, both developing and developed countries. Unemployment is the inability of the workforce to obtain work and income even with the skilled workers they have. Unemployment can also be defined for the working force and non-working force who have not or found work.

Table 3
Unemployment Rate in North Sumatra for the period 2013-2022 (10 years)

YEAR	UNEMPLOYMENT RATE
2013	6.27
2014	6.09
2015	6.55
2016	6.16
2017	6.00
2018	5.58
2019	5.48
2020	5.81
2021	6.17
2022	5.81

Source: Data from the North Sumatra Central Statistics Agency

Based on Table 3 obtained from the Central Statistics Agency. It can be seen that the percentage of unemployment rate has not experienced changes or fluctuations that are too significant or dominant. In the 10 year research period, the highest unemployment rate was in 2013 with an unemployment rate of 6.27%. And the lowest unemployment rate was in the 2019 period with a percentage of 5.48%. The percentage value of this figure is

obtained from the quarterly cumulative percentage of unemployment at BPS.

Overall, the percentage figures for the dependent and independent variables experience fluctuations in changes in percentage values. There are those that experience significant increases or significant decreases, and there are also those that do not experience significant increases or decreases. Several reasons that have relevance, especially economic growth data that has touched negative numbers, can occur due to several factors such as the Covid-19 health pandemic crisis which has attacked all parts of Indonesia and the world. Because there are factors that cause the numbers to fluctuate and each number in the dependent and independent variables changes, the researcher took the data as a sample to find out whether the inflation and unemployment rate factors have a significant influence on economic growth, and can accurately be used as a benchmark for determining stability. economic growth in North Sumatra.

2. Literature Review

2.1 Inflation

Suseno and Astiyah (2009) say that inflation is a tendency to continuously increase or increase the prices of goods and services without stopping in general and continuously. Iskandar Putong (2008) defines inflation as a condition where there is a general and continuous increase in product prices. Sukirno (2008) defines inflation as the process of increasing prices in the economy. Based on the definition of inflation above, we can conclude that inflation is a tendency to increase commodity prices in general and occurs continuously. Inflation, as explained by Boediono (1995), is a general and continuous increase in prices. Meanwhile, according to FW Paish, he explains inflation as a condition where national income increases much faster than the increase in goods and services produced in an economy.

2.2 Unemployment

According to Suarmoko (2007), the unemployment rate is the inability of the generation of people who are ready to work to get jobs according to their individual needs or desires. Therefore, we can conclude that the emergence of the unemployment rate is caused by a situation where someone has entered the job market but has not yet found a job and is trying to find work. Unemployment is a measure taken if someone does not have a job but they have made an active effort in the last four weeks to look for work (Kaufman and Hotchkiss, 1999).

According to Iskandar Putong (2008), unemployed or underemployed are people who do not have a job and are actively looking for work. The unemployed group usually includes people who are unemployed at working age and during their employment. According to Suparmoko (2007) unemployment is the inability of the workforce to obtain work according to what they need or want. According to Murni (2006) unemployment is a person who does not have a job or has no income.

According to Sukirno, unemployment is a calculation of the total workforce in the economy who are actively finding work but the unemployed have not yet found work According to Samuelson, unemployment is a big social problem because it causes great suffering for workers who have not found work who have to struggle with reduced income.

2.3 Economic Growth

According to Murni (2006: 173), the level of economic growth is a condition where there is an increase in potential GNP which reflects the growth of output per capita and an increase in people's living standards. Kuznets defines economic growth as an increase in a country's long-term ability to supply its population with various economic products. Economic growth is an effort to increase productive capacity to achieve additional output as measured by Gross Domestic Product (GDP) and Gross Regional Domestic Product

(GRDP) in a region (Ma'aruf, 2008). According to (Hasyim, 2016) economic growth can be interpreted as the process of continuously changing the economic conditions of a country towards a better condition over a certain period. Economic growth according to Untoro (2010:39) is the expansion of economic activities which over time increases the quantity of goods and services produced by society and its level of prosperity.

3. Research Methods

This research uses descriptive qualitative methods, namely by observing, analyzing and interpreting data. The data collection technique used in this research uses secondary methods obtained from the Central Statistics Agency (BPS) of North Sumatra Province. Apart from that, the analysis technique used in this research is to use a multiple linear regression test which includes a simultaneous test (f test), partial test (t test), and coefficient of determination as well as the classic assumption test, namely the normality test using the help of IBM SPSS 27 software. .

a. Multiple Linear Regression Test

Multiple regression analysis is a further development of the simple regression method in which there is more than one independent variable, for example X1. The basic difference between simple regression and multiple regression lies in the number of independent variables involved. If in simple regression only one independent variable is used to predict the dependent variable, then in multiple regression many independent variables are included for the purpose of predicting the dependent variable. Therefore, multiple regression provides a more comprehensive analytical framework by simultaneously considering the impact of several independent factors on the dependent variable studied (Wisudaningsi et al. 2019).

The multiple linear regression model used in this research is as follows:

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

Information:

Y : Economic Growth
α : Constant
β : Independent variable regression coefficient
X_1 : Inflation Value
X_2 : Unemployment Value
e : Error

b. t Test (Partial)

According to Fadhil & Fachruddin (2016), partial hypothesis testing aims to show the influence of an independent variable, either individually or partially, in explaining the dependent variable. The partial test is also called the statistical t test. The basis for decision making used in the t test is as follows:

1. If the significance probability value is > 0.05, then the hypothesis is rejected, which means the independent variable does not have a significant effect on the dependent variable.
2. If the significance probability value is <0.05, then the hypothesis is accepted, which means that the independent variable has a significant effect on the dependent variable.

c. f Test (Simultaneous)

According to Fadhil & Fachruddin (2016), simultaneous hypothesis testing is carried out to simultaneously consider the influence of the independent variable on the dependent variable. Simultaneous hypothesis testing is also known as statistical F test. If the sig value. < 0.05 means that the independent variable (X) simultaneously influences the dependent variable (Y).

d. Coefficient of Determination Test (R Square)

According to Ghozali (2012: 97), the coefficient of determination (R^2) is used as a tool to measure the extent to which the model can explain variations in the dependent variable. The range of coefficient of determination values is between 0 and 1. If the R^2 value is low or close to 0, it indicates that the ability of the independent variable to explain variation is very limited. Conversely, if

the value is close to 1, it means that the independent variable provides almost all the information needed to predict the dependent variable.

e. Normality test

According to Sarjono and Julianita (2011:53), normality testing aims to determine whether the data distribution is normal or not. Basically, the normality test is a comparison between the data we have with normally distributed data that has the same mean and standard deviation as our data. The normality test can be calculated using the SPSS program. The results of the normality test in SPSS can be seen in the normality test output table in the sig kolmogorov-smirnov column. Guidelines for decision making in the normality test are:

1) Sig value or significance or probability value <0.05, distribution is not normal,
2) Sig value or significance or probability value >0.05, normal distribution.

4. Results And Discussion

4.1 Normality Test Results

Table 4. 1 Sample-KS Normality Test Results

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			10
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		1.67154762
Most Extreme Differences	Absolute		.235
	Positive		.157
	Negative		-.235
Test Statistic			.235
Asymp. Sig. (2-tailed)[c]			.123
Monte Carlo Sig. (2-tailed)[d]	Sig.		.123
	99% Confidence Interval	Lower Bound	.112
		Upper Bound	.129

[a] Test distribution is Normal.

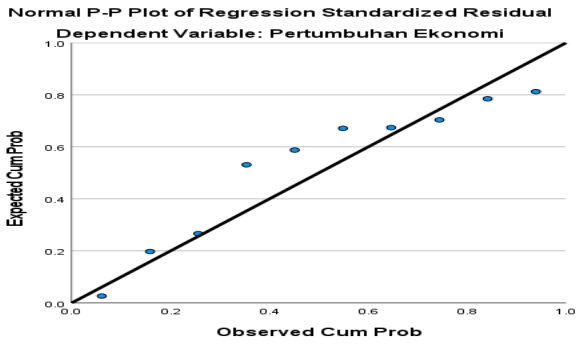
[b] Calculated from data.

[c] Lilliefors Significance Correction.

[d] Lilliefors' method based on 10000 Monte Carlo samples with starting seed 1314643744.

Based on table 4, it can be obtained that the value of Asymp. Sig. (2-tailed) is 0.123 and this value is greater than the α value, which is 0.05. So it can be concluded based on the results of the interpretation of Kolmogorov Smirnov's normality data above, that this research uses a regression model that has a normal distribution.

Figure 1. Probability Plot Normality Test



Results

Source: secondary data processed by SPSS 27

Apart from that, based on Figure 1 which can be seen above, interpreting the normality probability plot graph shows that the distribution of points has a clear and regular directional pattern. The distribution of these points is around the diagonal line or can be said to be close to the normal line. So it can be concluded that based on the probability plot normality test above, the regression model used in this research is also proven to have normally distributed values. Based on the results of the normality test, the regression model used in this research has passed the normality test because it does not violate the normality assumption.

4.2 Multiple Linear Regression Test Results

a. T-statistical test (Partial)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.072	12.124		.171	.869
	Inflasi	.292	.224	.461	1.307	.233
	Pengangguran	.360	2.070	.061	.174	.867

[a] Dependent Variable: Pertumbuhan Ekonomi

The basis for partial t test decision making (multiple linear regression) is based on the significance value. Where if the sig value. < 0.05 then it can be interpreted that the independent variable (X) partially influences

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the dependent variable (Y). However, if the sig value. >0.05 means that the independent variable (X) partially has no influence on the dependent variable (Y). Based on this explanation, it can be concluded that the partial t test in this study is:

1. Inflation in Medan City (X1) has no effect on Economic Growth in Medan City (Y).
2. Unemployment in Medan City (X2) has no effect on Economic Growth in Medan City (Y).

b. F-statistical Test (Simultaneous)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.773	2	3.886	1.082	.390[b]
	Residual	25.147	7	3.592		
	Total	32.919	9			

[a] Dependent Variable: Pertumbuhan Ekonomi

[b] Predictors: (Constant), Pengangguran, Inflasi

The basis for decision making for the simultaneous f-test according to V. Wiratna Sujarweni (2014) is based on the calculated f value and f table. Where if the calculated f value > table f, then the independent variable (X) simultaneously has an influence on the dependent variable (Y). However, if the calculated f value < f table, then the independent variable (X) simultaneously has no influence on the dependent variable (Y). The formula for finding f table = f(k;n -k) = (2;10-2) = (2; 8) = 4.46. Based on the simultaneous f-test that has been carried out in this research, it can be concluded that the calculated f value is (1.082), < f table (4.46) which means that Inflation in Medan City (X1) and Unemployment in Medan City (X2) simultaneously has no effect on Economic Growth in Medan City (Y)

4.3 Hypothetical Formulation

1) H1 = There is an influence of Inflation (X1) on Economic Growth (Y)
2) H2 = There is an influence of Unemployment (X2) on Economic Growth (Y)
3) H3 = There is a simultaneous influence of Inglation (X1) and Unemployment (X2) on Economic Growth (Y0
4) 95% Confidence Level, α = 0.05.

a. Testing Hypotheses H1 and H2 Using the T Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.072	12.124		.171	.869
	Inflasi	.292	.224	.461	1.307	.233
	Pengangguran	.360	2.070	.061	.174	.867

[a] Dependent Variable: Pertumbuhan Ekonomi

- First Hypothesis Testing (H1)
  Known sig value. for the influence of
- Second Hypothesis Testing (H2)
  Known sig value. for the influence of

b. Testing the H3 Hypothesis Using the F Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.773	2	3.886	1.082	.390[b]
	Residual	25.147	7	3.592		
	Total	32.919	9			

[a] Dependent Variable: Pertumbuhan Ekonomi

[b] Predictors: (Constant), Pengangguran, Inflasi

c. Third Hypothesis Testing (H3)

Based on the output above, it can be seen that the significance value for the simultaneous influence of X1 and X2 on Y is 0.390 > 0.05 and the calculated F value is 1.082 < 4.46. so it can be concluded that H 3 is rejected , which means there is no effect

4.4 Coefficient of Determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.486[a]	.236	.018	1.89536

[a] Predictors: (Constant), Pengangguran, Inflasi

[b] Dependent Variable: Pertumbuhan Ekonomi

Based on the output results above, the Adjusted R Square (Coefficient of

Determination) value is 0.236, which means that the influence of the independent variable (X) on the dependent variable (Y) is 23.6%.

4.4 Interpretation and Implications

The research results show that neither inflation nor the unemployment rate had a significant influence on economic growth in North Sumatra during the research period. This indicates that there are other factors that are more dominant in determining the level of economic growth in this region. These factors can include investment, government policies, infrastructure, as well as external factors such as global economic conditions. Although inflation and unemployment are often considered important indicators in assessing economic health, this research shows that in the context of North Sumatra, these two variables are not strong enough to significantly influence economic growth.

Therefore, economic policies that focus only on controlling inflation and unemployment may not be effective enough to encourage economic growth in this region. Local governments and policy makers need to consider other factors that may be more relevant in driving economic growth. This could include increasing investment in infrastructure, education, and health, as well as creating a conducive business environment to attract domestic and foreign investment.

5. Closing

5.1 Conclusion

Based on the results of the SPSS regression test and the classical assumption test, this research concludes:

1. The independent variable inflation rate does not have a significant influence on the rate of economic growth, which means that every time the inflation value increases or decreases, economic growth moves on another scale.
2. The independent variable unemployment rate did not have a significant effect on the level of economic growth in the research period, which means that changes in the unemployment rate did not change the dominant level of economic growth.

5.2 Suggestion

Economic growth can be influenced by many things, the level of economic growth is an important thing that every country must pay attention to because the level of economic growth explains how much a country's ability to maintain economic stability. Economic growth can be maintained with several policies, both fiscal and monetary, which have a direct influence on changes in economic growth, therefore each country must be able to implement selected policies to maximize increased economic growth rates. And the author hopes for further research over a longer period of time and with increasingly developed knowledge to measure again and explain more fully the problems with the variables that have been generated.

5.3 Recommendations for Further Research

For further research, it is recommended to extend the research period and add other variables that may have an influence on economic growth. In addition, more comprehensive research methods such as panel data analysis or the use of more complex econometric models can provide more accurate and in-depth results. Further research could also consider specific regional factors that may influence economic dynamics in North Sumatra.

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