

ANALYSIS OF MACROECONOMIC VARIABELS ON THE NUMBER OF POOR PEOPLE IN NORTH SUMATRA

Hastina Febriaty^{1*}, Sri Endang Rahayu²

^{*1,2}Universitas Muhammadiyah Sumatera Utara, Indonesia

^{*1}email: hastinafebriaty@umsu.ac.id

Abstract: This study discusses the effect of inflation, unemployment, fuel prices and GRDP on the number of poor people in North Sumatra. The purpose of this study is to determine the effect of inflation, unemployment, fuel prices and GRDP on the number of poor people in North Sumatra partially and simultaneously, as well as the variables that have a dominant effect on poverty in North Sumatra Province. The data sources used are secondary data taken from the Central Statistics Agency and Bank Indonesia from 2009 - 2023. The analysis technique used in this study is multiple linear regression analysis using the e-views 12 program and conducting classical assumption tests and using simultaneous (F) and partial (t) hypothesis testing. The results of the study indicate that partially unemployment and GRDP have a negative and significant effect on the number of poor people in North Sumatra, inflation has a positive and insignificant effect on the number of poor people in North Sumatra while fuel prices have a positive and insignificant effect on the number of poor people in North Sumatra. Simultaneously inflation, unemployment, fuel prices and GRDP have a significant effect on the number of poor people in North Sumatra and have an effect on poverty in North Sumatra Province.

Keywords: Number of poor people, inflation, unemployment, fuel prices, GRDP.

Introduction

Poverty reduction is a challenge for many countries around the world, including Indonesia, which is a developing country. Indonesia has set poverty reduction as one of its national development targets, in line with the Sustainable Development Goals (SDGs) which aim to “End Poverty in All Its Forms Everywhere”. The implementation of regional autonomy in Indonesia is expected to make local governments more sensitive to regional poverty issues.

The decline in people's welfare due to unemployment will certainly increase the chances of being trapped in poverty because they have no income ((Sukirno, 2010a).(Yacoub, 2013)) in his research also found that high unemployment rates lead to low incomes which then trigger poverty. Naslindo Sirait, Head of the Economic Bureau of the North Sumatra Provincial Secretariat, explained, "Nationally, North Sumatra's position is 18th and is below the national poverty rate of 9.71 percent," (Nationally, Poverty in North Sumatra is in 18th Position, nd). This indicates that people who are experiencing poverty now may not be in the same condition in the future, and it is increasingly recognized that in recent years, there has been a large movement of people into and out of the poverty category ((Jacobus et al., 2019)).

North Sumatra, which is one of 34 provinces in Indonesia, faces poverty issues and continues to strive to overcome poverty at the regional level. This is expected to make a positive contribution to poverty reduction at the national level. The problem of poverty in a region is a serious issue because the impact it causes is very large. People living in poverty often do not have enough resources to meet basic needs such as food, which can lead to malnutrition. In addition, they generally have limited access to good education, which makes it difficult for them to compete in the job market, which ultimately contributes to the problem of unemployment. This condition

shows that poverty reduction is very important. Although poverty cannot be completely eliminated, efforts can be made to reduce it through sustainable development programs.

The BPS of North Sumatra Province said that the Covid-19 pandemic had caused the poverty rate in North Sumatra to increase to 1.343 million as of March 2021. With this increase, the poverty rate in North Sumatra has reached 9.01 percent. The number of poor people increased by 60,570 people compared to the poor population in March 2020 which was 1,283.29 thousand people or 8.75 percent of the total population of North Sumatra. Based on the region, the number of poor people in March 2020, 695.75 thousand of whom lived in urban areas. While in rural areas the number of poor people was 587.54 thousand people(Andry Novelino, 2021)



Figure 1. Number and Percentage of Poor Population in Indonesia

In addition, according to BPS data, the poverty depth index and poverty severity index. In September 2019, the poverty depth index in North Sumatra was at 1.480 and increased to 1.513 in March 2020. The poverty severity index also increased. In September 2019, the poverty severity index was at 0.372 and increased to 0.388 in March 2020. This indicates that the average expenditure of the poor tends to decrease and is further away from the poverty line and the level of expenditure inequality among the poor is getting higher. BPS North Sumatra said that in general the number of poor people in North Sumatra decreased in the period 2007 to March 2020. The number of poor people had increased in September 2013, September 2014 to September 2015 due to the increase in the price of basic necessities(Andry Novelino, 2021). In line with research(Nur et al., 2022)that inflation affects the poverty rate in North Sumatra. After that, the number of poor people slowly decreased. However, the increase occurred again in March 2020 as a result of the Corona pandemic.

The fuel price increase factor also affects the increasing number of poor people in North Sumatra. The poverty rate in North Sumatra is predicted to increase after the fuel price increase. It is undeniable that the fuel price increase will affect poverty. Theoretically, the fuel price increase will have an impact known as the substitution effect and income effect. The price increase will cause economic actors to substitute commodities that have increased in price to substitute commodities that are cheaper. However, the amount of this substitution will depend greatly on the type of goods that can be replaced or necessity goods, so it can be assumed that the substitution

effect is not too large. The second impact that will be received by economic actors is the income effect. The price increase will cause real income to decrease. So it can be assumed that the consumption basket of economic actors will decrease (Ikhsan, 2005). The government is asked to update the data of social assistance recipients so that more people are not trapped below the poverty line.

According to North Sumatra Economist Gunawan Benjamin, there are several things related to the economy in the North Sumatra region that need to be considered seriously, so that the impact of the increase in fuel prices can be minimized on people's purchasing power. One of the efforts that must be made is updating data on recipients of social assistance (Sari, 2022). With the increase in fuel prices coupled with the increase in the price of basic necessities, it is feared that it will increase the poverty rate in North Sumatra. The potential for an increase in the number of poor people is likely to occur in this region. This is also supported by what has been studied by (Hasibuan, 2016) which shows that poor households on average spend more on food than on average on non-food. This is because the respondents' income is insufficient. The current increase in fuel prices will not necessarily increase the number of poverty in September, but in March 2023 the data on the increase in poverty will be very visible. The biggest factor triggering the increase in poverty is the rate of inflationary pressure. One of them is the increase in rice prices, coupled with the farmer's exchange rate which has the potential to fall. On the other hand, 40 percent of households included in the lowest class have the potential to experience an increase in spending. And government social assistance after starting from September to March 2023 is believed to experience a significant increase and this increase in fuel prices is inversely proportional to the Farmer's Exchange Rate which is predicted to continue to fall due to the increase in the price of many basic necessities.

Literature Review

The inability of a resident to fulfill the minimum living needs in this case cannot be separated from various supporting factors. causes of poverty, according to (Kuncoro, 2006)) as follows: In macro terms, poor people only have limited resources and low quality, due to the inequality of resource ownership patterns that cause unequal income distribution. Poverty arises with low quality human resources, namely low and low wages. Poverty arises because of variations in access and capital. The three main causes of this phenomenon are rooted in the theory of the circle of poverty, namely underdevelopment, market imperfections, and lack of capital which results in low productivity. (Deffrinica, 2017).

According to (Boediono, 2014) Inflation is a phenomenon where the general price level experiences a continuous increase. The increase in the price of one or two goods alone cannot be called inflation, unless the increase extends to (or causes an increase in) most of the prices of other goods. Inflation is often considered as an economic activity that describes the state of a country's economy. More deeply, inflation functions as an economic indicator that shows the average increase in the price of goods and services produced in an economy. (Nanga, 2001).

Viewed from an individual perspective, unemployment causes various economic and social problems to those who experience it. Income conditions cause the unemployed to have to reduce their consumption expenditure. If unemployment in a country is very bad, political and social chaos always occurs and causes bad effects on the welfare of society and the prospects for economic development in the long term. (Sukirno, 2004)

BPS defines PDRB as the total value added of goods and services or the final value of goods and services produced by all business units in a region. Meanwhile, Nanga (2005) states that PDRB is the total value or market place price of all final goods and services produced by an economy

during a certain period of time. Then, (Sukirno, 2010b) states that the rate of economic growth is the increase in GRDP without considering whether the increase is greater or smaller, the ranking of which is not only based on the total amount of GRDP, but also shows the distribution of income that has spread to all levels of society.

Method

This study uses secondary data in the form of time series from 2009 to 2023 or around 15 years with a focus on time-scale data. Economic factors that affect the number of poor people include Inflation, Gross Regional Domestic Product (GRDP), Fuel Prices, and the Number of Unemployed in North Sumatra. Data sources come from BPS North Sumatra, in SUDA format (North Sumatra in Figures) and internet websites, other documents released by BPS North Sumatra for the period 2009 to 2023 which can be accessed online. This study uses a quantitative analysis approach, namely a statistical-based analysis method. To explore the relationship between the variables studied, multiple linear regression techniques are used. Data management is carried out using Eviews 12 software. Multiple linear regression analysis aims to test the hypothesis about the strength of the independent variable on the dependent variable with the following Model:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

$$JPM = \alpha + \beta_1 INF + \beta_2 UE + \beta_3 BBM + \beta_4 PDRB + \mu$$

Where :

JPM	= Number of Poor Population (in 000 people)
α	= <i>Intercept</i>
$\beta_1 \beta_2 \beta_3$	= Regression coefficient
INF	= Inflation (in percent)
EU	= Unemployment (in Soul)
fuel	= Price of Premium and Pertalite fuel (in Rp)
GRDP	= Gross Regional Domestic Product ADHK 2010 (Billion Rp)
μ	= Term of Error

Result and Discussion

Result

Classical Assumption Test

a. Normality Test

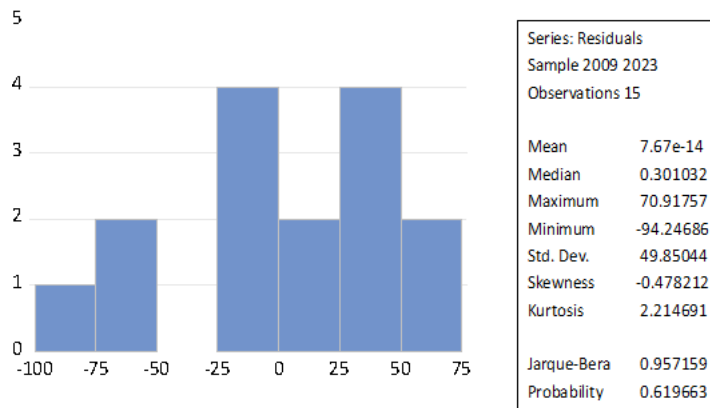


Figure 2. Normality Test

It is known that the Jarque-Bera probability value is 0.619 (>0.05), it can be concluded that the data is normally distributed (Passes Normality)

b. Autocorrelation Test

Table 1. Autocorrelation Test

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

F-statistic	0.301005	Prob. F(2,8)	0.7481
Obs*R-squared	1.049772	Chi-Square Prob.(2)	0.5916

It is known that the probability value of Obs*R-squared is 0.5916 (>0.05), so it can be concluded that the assumption of the autocorrelation test has been met or the data has passed the autocorrelation test.

c. Multicollinearity Test

Table 2. Multicollinearity Test

Sample: 2009 2023
Included observations: 15

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	26412.87	113.8783	NA
EU	0.112715	91.96307	1.283858
INF	37.89953	4.212732	1.156655
fuel	0.000356	82.74936	5.129985
GRDP	5.08E-08	43.73896	5.693509

It is known that the VIF value of the Independent Variable is <10.00 , so it can be concluded that the assumption of the multicollinearity test has been met or has passed the multicollinearity test.

d. Heteroscedasticity Test

Table 3. Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	2.760260	Prob. F(4,10)	0.0879
Obs*R-squared	7.871075	Chi-Square Prob.(4)	0.0964
Scaled explained SS	2.124651	Chi-Square Prob.(4)	0.7128

Known value Obs*R-squared 0.0964 (>0.05) then it can be concluded that the assumption of the heteroscedasticity test has been met or the data has passed the heteroscedasticity test.

To obtain the regression results between independent variables (GRDP, Fuel Price, Inflation, and Unemployment) and dependent variables (number of poor people), secondary data collected from BPS starting from 2009 to 2023 and processed using computer software. The following are the results of data processing using the OLS (Ordinary Least Square) method.

Table 4. OLS Regression Results

Dependent Variable: JPM				
Method: Least Squares				
Date: 12/25/24 Time: 01:31				
Sample: 2009 2023				
Included observations: 15				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1917.162	162.5204	11.79644	0.0000
INF	-7.369132	6.156259	-1.197015	0.2589
EU	-0.798270	0.335730	-2.377710	0.0388
fuel	0.015827	0.018871	0.838656	0.4213
GRDP	-0.000629	0.000225	-2.792336	0.0190
R-squared	0.690740	Mean dependent variable		1390.689
Adjusted R-squared	0.567036	SD dependent var		89.64107
SE of regression	58.98383	Akaike information criterion		11.25361
Sum squared residual	34790.93	Black criterion		11.48962
Log likelihood	-79.40204	Hannan-Quinn critter.		11.25109
F-statistic	5.583811	Durbin-Watson stat		1.942115
Prob(F-statistic)	0.012599			

Source: processed data

From the regression results above, the following estimation result model can be formed: $Y = 1917.162 - 7.369 X_1 - 0.798 X_2 + 0.015 X_3 - 0.0006 X_4$

Model Interpretation

Based on the estimation model above, the influence of independent variables, namely inflation (X1), unemployment (X2), fuel prices (X3) and GRDP (X4) on the number of poor people in North Sumatra can be explained as follows:

- Inflation has a negative effect on the number of poor people in North Sumatra. This is indicated by the regression coefficient X1, which is 7.369. This means that for every 1% increase in inflation, the number of poor people will decrease by 7.369% (ceteris paribus).
- Unemployment has a negative effect on the number of poor people in North Sumatra. This is indicated by the value of the regression coefficient X2, which is 0.798. This means that for every 1% increase in unemployment, the number of poor people will decrease by 0.798% (ceteris paribus).
- Fuel prices have a positive effect on the number of poor people in North Sumatra. This is indicated by the value of the X3 regression coefficient of 0.015. This means that for every

1% increase in fuel prices, the number of poor people will increase by 0.015% (ceteris paribus).

- d. GRDP has a negative effect on the Number of Poor People in North Sumatra. This is indicated by the value of the X4 regression coefficient of 0.0006. This means that for every 1% increase in GRDP, the number of poor people will decrease by 0.0006 (ceteris paribus).

Individual Regression Coefficient Testing (Statistical t-Test)

1. Inflation

For the Inflation variable, the t-count value is -1.197015 with a probability value (significance) of 0.258. Thus, H_0 is accepted, because the probability value is greater than the significance value $\alpha 0.05$ ($0.258 > 0.05$) and $t\text{-count} < t\text{-table}$ ($-1.197 < 1.771$). This means that it can be concluded that the Inflation variable does not have a real (significant) effect on the variable number of poor people in North Sumatra with testing at a 95% confidence level ($\alpha = 5\%$).

2. Unemployment

For the unemployment variable, the t-count value is -2.377710 with a probability value (significance) of 0.0388. Thus, H_0 is rejected, because the probability value is smaller than the value $\alpha 0.05$ ($0.0388 < 0.05$) and $t\text{-count} < t\text{-table}$ ($-2.377 < 1.771$). This means that it can be concluded that the unemployment variable has a real (significant) effect on the variable number of poor people in North Sumatra with testing at a 95% confidence level ($\alpha = 5\%$).

3. Fuel Prices

For the fuel price variable, the t-count value is 0.838656 with a probability value (significance) of 0.421. Thus, H_0 is accepted, because the probability value is greater than the significance value $\alpha 0.05$ ($0.421 > 0.05$) and $t\text{-count} < t\text{-table}$ ($0.838 < 1.771$). This means that it can be concluded that the price of fuel has no real (significant) effect on the variable of the number of poor people in North Sumatra with testing at a 95% confidence level ($\alpha = 5\%$).

4. GRDP

For the GRDP variable, the t-count value is -2.792336 with a probability value (significance) of 0.019. Thus, H_0 is rejected, because the probability value is smaller than the value $\alpha 0.05$ ($0.019 < 0.05$) and $t\text{-count} < t\text{-table}$ ($-2.792 < 1.771$). This means that it can be concluded that the price of fuel has a real (significant) effect on the variable of the number of poor people in North Sumatra with testing at a 95% confidence level ($\alpha = 5\%$).

Simultaneous Testing of Regression Coefficients (F Statistic Test)

To prove the R-square value that has been mentioned, testing was carried out using the F test. The hypothesis proposed is as follows: $H_0: \beta_1 = \beta_2 = 0$ $H_a: \beta_1 \neq \beta_2 \neq 0$. This means that, based on the existing data, testing will be carried out on the value β_1 and β_2 simultaneously, to find out whether both are equal to zero, which indicates that there is no significant influence on the dependent variable, or if they are not equal to zero, which indicates that there is a significant influence on the dependent variable.

Table 5. F-Statistic Test and Determination Coefficient (R-Square)

R-squared	0.690740	Mean dependent variable	1390.689
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Adjusted R-squared	0.567036	SD dependent var	89.64107
SE of regression	58.98383	Akaike information criterion	11.25361
Sum squared residual	34790.93	Black criterion	11.48962
Log likelihood	-79.40204	Hannan-Quinn critter.	11.25109
F-statistic	5.583811	Durbin-Watson stat	1.942115
Prob(F-statistic)	0.012599		

Based on the output results of the e-viewa 12 program, the F-count value was obtained as 5,583 with a probability value (significance) of 0.012. Thus, H_0 is rejected and H_a is accepted because the probability value (significance) is smaller than the value $\alpha 0.05$ ($0.012 < 0.05$). This means that it can be concluded that variable X1 (inflation), variable X2 (unemployment), variable X3 (fuel prices), and variable X4 (PDRB) have a real (significant) effect on the number of poor people in North Sumatra (Y) at a confidence level of 95% ($\alpha = 5\%$).

Coefficient of Determination (R^2)

Based on the output results of the e-views 20 program, it can be seen that the R-square value is 0.690, which means that variable X1 (inflation), variable X2 (unemployment), variable X3 (fuel prices), and variable X4 (GDRP) together are able to provide an explanation of the variation in the number of poor people in North Sumatra by 69%, while the remaining 31% is explained by new variables that are not included in the model estimation.

Discussion

1. The Impact of Inflation on the Number of Poor People in North Sumatra

Based on the results of this study, inflation has a negative and insignificant effect on the number of poor people in North Sumatra because even with the increase in the inflation rate, the number of poor people in North Sumatra has not increased because in the last 5 years the government has made many efforts to ensure that the social protection program budget is received by those who are entitled - namely the poor and vulnerable groups. There are at least two main things that have been done in the last 5 years. First, since 2011, the Integrated Database of Beneficiaries (BDT) of the Social Protection Program has been built. This database contains the poorest 40 percent of the population which includes approximately 24.8 million households or 96.4 million individuals. This data is managed by the National Team for the Acceleration of Poverty Reduction (TNP2K) which is also mandated to ensure that the main national poverty reduction programs use beneficiary data from this BDT. Currently, major programs such as the Family Welfare Savings Program – formerly known as Direct Cash Assistance (BLT) and then Temporary Direct Assistance for the Community (BLSM) – Raskin, the Smart Indonesia Program, the Healthy Indonesia Program (National Health Insurance), and the Family Hope Program have used this data since 2012. (Inflation and Poverty Alleviation, 2015). In addition, regional programs have also used beneficiary data from the BDT, so that even though inflation is high, the poor are still helped by the assistance provided by the government. This is different from the research conducted by (Febriaty & Nurwani, 2017) the results of which are in accordance with the theory of inflation having a positive effect on poverty in North Sumatra Province. This means that if inflation rises, poverty will also increase because inflation which is marked by an increase in prices will cause poor people to reduce their consumption levels because the value of the money they hold (real income) is also getting smaller, thus reducing their consumption levels and causing the number of poor people to increase.

2. The Impact of Unemployment on the Number of Poor People in North Sumatra

Based on the results of this study, unemployment has a negative and significant effect on the number of poor people in North Sumatra. This is in line with this study, (DeFina, 2002) based on research in the United States found that poverty does not have a strong correlation with unemployment. Defina further stated that the relationship between unemployment and poverty is greatly influenced by how poverty is measured. This is also in line with research (Yacoub, 2012) The influence of unemployment rate (X) on poverty rate (Y) of districts/cities in West Kalimantan Province is negative and significant because most of the workforce works in the agricultural sector involving almost all family members (low unemployment rate) but with low income so that it is not sufficient for family needs. So even with a low unemployment rate (because most of them work), they are still poor. Empirical facts show that districts/cities in West Kalimantan Province that have a pattern of relationships that are not always unidirectional between unemployment rate and poverty rate. Higher unemployment rate turns out to have lower poverty rate. So in this case, the relationship between unemployment and poverty is not always in accordance with the assumptions of existing economic theory, but has an inverse relationship. This phenomenon can be explained as follows, unemployed people in a household, but there are household members. Moreover, if there is a large number of hidden unemployment, it also means low real working hours, which will result in low productivity. Low labor productivity is determined not only by working hours but also by the quality of human resources which is reflected in the low level of education. Even though they work (not unemployed), the income received is relatively low and below the poverty line. So even with a low unemployment rate, the poverty rate is quite high.

3. The Impact of Fuel Prices on the Number of Poor People in North Sumatra

Based on the results of this study, the price of fuel has a positive and insignificant effect on the number of poor people in North Sumatra. This is also supported by research (Rozaini et al., 2023) that the increase in fuel prices has an impact on poverty in the Mabar Hilir Subdistrict, Environment IV. This is because the increase in fuel prices will trigger an increase in the prices of other goods (inflation) which will cause people's purchasing power to decrease, which will increase the poverty rate.

4. The Influence of GRDP on the Number of Poor People in North Sumatra

Based on the results of this study, GRDP has a negative and significant effect on the number of poor people in North Sumatra. This means that if GRDP increases, the number of poor people in North Sumatra will decrease. This is also in line with research (Damanik & Sidauruk, 2020) that GRDP has a negative and significant influence on the poverty variable in North Sumatra Province in 2008-2013. Growth and poverty have a very strong correlation, because in the early stages of the development process the poverty rate tends to increase and when approaching the final stage of development the number of poor people gradually decreases. (Tambunan, 2001) Economic growth is crucial because an increase in the economic sector will create more job opportunities for the community. A growing economy will be able to provide a better standard of living for the population while remaining a major focus in overall economic policy. An increase in Gross Regional Domestic Product can reduce poverty levels in a particular area due to an increase in disposable income.

Conclusion

Conclusion from this study is partially independent variables such as unemployment and GRDP have a negative and significant effect on the number of poor people in North Sumatra and inflation has a negative and insignificant effect on the number of poor people in North Sumatra. While the fuel price variable has a positive and significant effect on the number of poor people in North Sumatra. Simultaneously, each independent variable in this study has a significant effect on

the dependent variable. And the R-Square value (Coefficient of Determination ()) is 0.690, which means that the independent variables in this study are able to explain 69% providing an explanation of the variation in the number of poor people in North Sumatra by 69% while the remaining 31% is explained by new variables that are not included in the model estimation.

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