THE EFFECT OF POPULATION AND PMDN ON GRDP IN NORTH SUMATRA 2001-2020 PERIOD

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Abstract

The Gross Regional Domestic Product (GDP) is the main indicator of the economic condition of a region at all times, either based on current prices or constant prices. Total population and domestic investment have an impact on increasing and decreasing GRDP of a region. An increase in population is likely to increase the GRDP of a region, as will an increase in domestic investment, especially in the form of employment which will increase domestic productivity.

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Keywords: Gross Regional Domestic Product, Domestic Investment, Total Population.

INTRODUCTION

Gross Regional Domestic Product (GRDP) is defined as a factor that is relatively crucial in realizing the economic condition of a region within a certain period of time, according to current prices or from continuous prices. The GRDP of the current value describes the price of goods and services measured using moving annual prices, at the interim GRDP of the continuous value shows the addition of the value of services & goods measured in one year which becomes the base year. The classical economists pioneered by Adam Smith even suspected that population is a potential input that can be used as a factor of production to increase production based on a company's household. A growing population will result in more and more usable workforce. Capital investment is also the first step in development activities as a result, in essence, it is the beginning of activities based on economic development. In obtaining better economic progress, it is hoped that a good progress of capital investment will be given to business operators because the best initial source of capital is domestic savings.

RESEARCH METHODS

This research uses a multiple regression model. The research subjects in this research have two independent variables: Population and PMDN to the dependent variable, namely GRDP. This analysis was carried out using the Eviews program, to be precise, the eviews 10 program to analyze the effect on the related variables. This research includes secondary data in annual form for 20 years, from 2001 to 2020. This data comes from BPS.

RESULTS AND DISCUSSION
Multiple Regression Analysis

Dependent Variable: PDRB
Method: Least Squares
Date: 11/29/22 Time: 15:04
Sample: 2001 2020
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2341780	314430.6	-7.447686	0.0000
PENDUDUK	0.204927	0.025298	8.100514	0.0000
PMDN	0.009582	0.004338	2.209017	0.0412
R-squared	0.949958	Mean dependent var		381113.8
Adjusted R-squared	0.944071	S.D. dependent var		254810.9
S.E. of regression	60260.91	Akaike info criterion		24.98824
Sum squared resid	6.17E+10	Schwarz criterion		25.13760
Log likelihood	-248.8824	Hannan-Quinn criter.		25.01739
F-statistic	161.3589	Durbin-Watson stat		0.973546
Prob(F-statistic)	0.000000			

According to the table results in the estimation model, the regression equation is obtained as follows:

Based on the regression model formed, it can be interpreted as follows:

a) A constant of -2341780 means that if the variables Population (X1) and PMDN (X2) are considered constant, the GRDP variable (Y) will significantly decrease by -2341780.

b) It was found that the regression coefficient of Total Population (X1) has a positive and significant effect on GRDP in North Sumatra, thus GRDP has increased by 0.204927 significantly, assuming other independent variables are constant.

c) It was found that the PMDN regression coefficient (X2) has a positive and significant effect on GRDP in North Sumatra, thus GRDP has increased by 0.009582 significantly, assuming the other independent variables are constant.

Hypothesis Testing Analysis

a) Testing the Coefficient of Determination (R2)

This test was held to see the contribution or simultaneous influence of the independent variables on the dependent variable. Based on the regression results, the results show that the R-Squared or AdjustedR2 value means that the R-Squared result is 0.949958. It can be interpreted that 95% comes from the two independent variables while 5% is influenced by variables not included in this research.

b) Simultaneous Regression Coefficient Testing (Test F)

Based on the estimation results above, it is known that F-count (F-statistic) = 161.3589, while the level of confidence used and then, F-table = (4.414) and F-count = 161.3589. From the results of the test above, it can be seen that the F-count value (161.3589) > F-table value (4.964) with a significant probability p-value < 0.05 = 0.000084, so it can be concluded that HO is accepted, meaning population and PMDN together and simultaneously have a simultaneous effect on GRDP.

c) Partial Regression Coefficient Test (t test)

The t test is used to see the partial significance between the independent variable and the dependent variable.

a. Variable Number of Population to GRDP

From the results of the output above, it is obtained that the t-count on the independent variable Savings is 8.100514 with a t-table value of 1.73406, where the sum of n = 20 and k = 2, then df = n − k = 20 − 2 = 18, then t-table = 1.73406. So, the population variable with t count (8.100514) > t table (1.73406), means that partially the population has a significant enough influence on GRDP.

b. PMDN variable to GRDP

From the results of the output above, the t-count on the independent variable PMDN amount is 2.209017 with a t-table value of 1.73406, where the sum of n = 20 and k = 2, then df = n – k = 20 – 2 = 18, then t-table = 1.73406. So, the PMDN variable has a t count (2.209017) > t table (1.73406), meaning that partially PMDN has an influence on GRDP.

Classical Assumption Test Results
Normality test
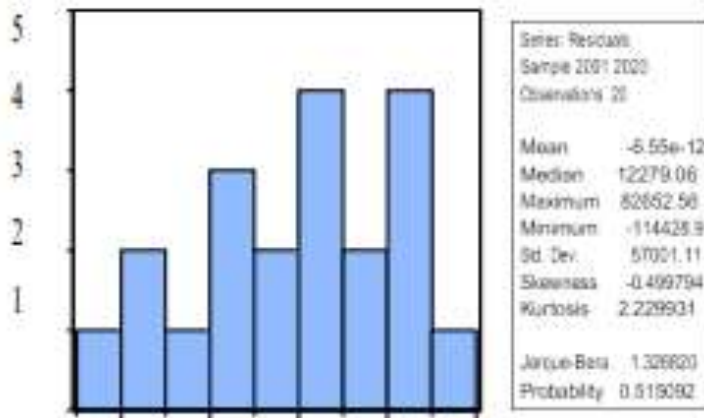
In this test, what we see is the probability value 0.515092 > 0.05. Thus there is no violation.

Multicollinearity Test

Variance Inflation Factors
Date: 11/29/22 Time: 15:09
Sample: 2001 2020
Included observations: 20

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	9.89E+10	544.5130	NA
PENDUDUK	0.000640	605.3607	3.220266
PMDN	1.88E-05	5.450551	3.220266

To see the results in this test, the Centered VIF value < 10, so that there are no violations of the multicollinearity test in this study, pass the multicollinearity test.

Autocorrelation Test

R-squared	0.440899	Mean dependent var	-3.22E-10
Adjusted R-squared	0.291806	S.D. dependent var	57001.11
S.E. of regression	47968.88	Akaike info criterion	24.60681
Sum squared resid	3.45E+10	Schwarz criterion	24.85574
Log likelihood	-241.0681	Hannan-Quinn criter.	24.65540
F-statistic	2.957199	Durbin-Watson stat	1.874687
Prob(F-statistic)	0.054995		

In this study, autocorrelation can be determined through the Durbin-Watson Test (DW Test). The results of the analysis at this stage obtained that Durbin Watson (DW) was 1.874687. So it can be concluded that the DW value in this study is at a value of 1.54 to 2.46, so it can be concluded that there are no autocorrelation symptoms.

Heteroscedasticity Test

Heteroskedasticity Test: Glejser

F-statistic	2.916676	Prob. F(2,17)	0.0815
Obs*R-squared	5.109502	Prob. Chi-Square(2)	0.0777
Scaled explained SS	3.242361	Prob. Chi-Square(2)	0.1977

In this test, it can be known through a comparison of Prob.F or Prob.Chi-Square to a. If the result of the prob <0.05 it will cause symptoms of heteroscedasticity in the model being studied, while if the result of the prob> 0.05 then it will not cause symptoms of heteroscedasticity. Based on the results of the heteroscedasticity test by applying the Glejser method, the Prob. Chi-Square (2) has a value of 0.0777 > 0.05 so it can be concluded that there is no violation of the Heteroscedasticity test when passing the Heteroscedasticity test.

CONCLUSIONS

From the results of the research conducted, it was found that the population regression coefficient (X1) had a positive and significant impact on North Sumatra's GRDP, namely when the population increased by 1% assuming the other independent variables remained, namely GRDP increased significantly by 0.204927, and the PMDN regression coefficient (X2) was also found to have a positive and significant impact on GRDP in North Sumatra, meaning that if PMDN increases by 1%, then the GRDP increase is significant. around 0.009582 assuming the other independent variables are constant, while 5% is explained by causes other than models not used in the study. Partially, total population and PMDN simultaneously and simultaneously have a simultaneous effect on GRDP. Simultaneously,

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