# THE EFFECT OF HUMAN DEVELOPMENT INDEX (HDI) GROSS REGIONAL DOMESTIC PRODUCT (GRDP) AND UNEMPLOYMENT ON POVERTY IN 4 PROVINCES IN SUMATRA ISLAND

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# **A R T I C L E I N F O R M A T I O N**

Keywords:

Poverty, HDI, GRDP and Unemployment..

This study aims to determine the effect of the Human Development Index (IPM), Gross Regional Domestic Product (GRDP) and Unemployment on Poverty in 4 Provinces on the Island of Sumatra. The data used in this study is secondary data for 2007-2021 obtained from the Central Statistics Agency (BPS). The data analysis method used is panel data regression using Eviews 9 software. The results of this study indicate that the HDI used in this study has no negative and insignificant effect on the poverty of the 4 provinces on the islands of Sumatra, Aceh, Bengkulu, South Sumatra and Lampung, the GRDP in use in this study has a negative and significant effect on poverty in 4 provinces in Aceh, Bengkulu, Lampung and South Sumatra Provinces and unemployment used in this research has a positive and significant effect on increasing poverty in 4 provinces on the islands of Sumatra, Aceh, Bengkulu, Lampung and South Sumatra. The suggestion from this research is that the governments in the provinces of Aceh, Lampung, Bengkulu and South Sumatra should improve public services so that people will prosper and reduce poverty.

# 1. INTRODUCTION

Indonesia is one of the countries that has a very wide area, from Sabang to Merauke, which consists of 34 provinces which of course are diverse, custom, culture, religion, social and language. Just like a country in general, Indonesia has the goal of prospering its people. This can be seen from the developments that have been carried out by the Government.

Poverty can be defined as the difficulty of a person or a group in fulfilling the necessities of life which include clothing, food, shelter. There are two types of poverty measures, 1). Absolute poverty, namely the difficulty of a person in exceeding or passing the poverty threshold that has been set. 2). Relative poverty is the difference in income of one group with another group. The Central Bureau of Statistics, (Pdrb, 2013) defines poverty as the inability to meet the minimum standards of basic needs which include food and non-food needs. This expenditure for food and nonfood needs is called the Poverty Line (GK).

Sumatra Island is the sixth largest island in Indonesia with an area of 443,065.8 km2, the population of the island of Sumatra is 57,940,351 people (census, 2018). With a population of that size, the island of Sumatra also has a fairly complicated problem of poverty. The provinces on the island of Sumatra that have high poverty rates are Aceh, Bengkulu, South Sumatra and Lampung. Poverty on the island of Sumatra has increased and decreased, in 4 provinces, Aceh, Bengkulu, South Sumatra and Lampung have experienced an increase in poverty.

Aceh is the poorest province on the island of Sumatra, Aceh's poverty in 2021 will reach 15.33%,



# ABSTRACT

this figure has decreased from 2020, the decrease is 0.10%. From 2007 to 2014 there has been a significant decrease, Aceh's poverty in 2007 was 26.65% and in 2014 it was 9.67%, in 2015 it has increased from the previous year by 0.13%, from 2016 Aceh's poverty has always experienced decline until 2020, this reduction in poverty is due to development and expansion of business fields, and also improving the quality of education (Aceh, n.d.).

Bengkulu is the 2nd poorest province after Aceh, seen in 2021, Bengkulu's poverty is 15.22, while the Province of South Sumatra occupies the 3rd position of the poorest province on Sumatra Island, Sumatra's poverty in 2021 is 12.84 and is followed by the Province Lampung is in 4th position, Lampung's poverty in 2021 is 12.62. From the table above, these 4 provinces have experienced an increase in poverty in 2020, due to Covid 19 which has resulted in the absence or reduction of people's income due to a lack of income.

In 2021 poverty in the 4 Provinces has experienced a decline again, because the covid 19 has reduced, the reduction in covid 19 has caused the economy to return smoothly.

The human development index (IPM) is a measurement or comparison of life expectancy, education and standard of living. HDI is used as an indicator to assess the quality aspects of development and to classify whether a country is a developing, underdeveloped developed, or country and also to measure the effect of economic policies on quality of life in (B. P. Statistics, 2015). According to (Winarti, A., & Purwanti, 2014) HDI has 3 components in calculating the success of human development. (1) The health component is calculated in the average life expectancy of the community. There are 2 types of data that are used in calculating life expectancy, namely children born alive (ALH) and children still alive (AMH). Meanwhile, calculating the life expectancy index uses the maximum value (UNDP), where the highest figure is used for the upper figure, namely 85 years, while the lowest is 25 years. (2) Educational component The literacy rate (AMH) is used in the education component. The literacy rate is the ratio of those aged 15 and over who can read and write to the population aged 15 and over. The maximum literacy limit is 100 while the minimum is 0 (UNDP STANDARD). (3) Purchasing power component In the human development index, purchasing power is represented by real per capita income according to the per capita income of the population which has been standardized by deflation with a constant price index.

South Sumatra has the highest GRDP, in 2021 South Sumatra's GRDP is 326407.93, while Lampung is in 2nd position, Lampung's GRDP in 2021 is 247001.67, while Aceh is in 3rd position with a GRDP figure for 2021 of 135249.59 and Bengkulu is in third place. 4 with GRDP in 2021 is 47839.68.

In 2020, the GRDP in 4 provinces on the island of Sumatra has decreased due to Covid-19 so that the production factor has decreased and there have been fewer jobs, while in 2021 it has increased again due to the reduction in Covid-19 so that the commodities of oil palm, rubber and paddy are returning to normal production.

Unemployment can be interpreted as residents who do not have a job or do not produce, (BPS, 2009). Unemployment is a macroeconomic problem that affects human survival. For most people losing a job is a decrease in living standards (Mankiew, 2000) in (Permana et al., 2012). Unemployment has increased in 2020, as a result of covid 19, covid 19 has reduced the demand for goods so that production has decreased and many employees or workers have been laid off by companies, in 2021 unemployment has returned to decline due to reduced covid 19 so demand for goods increases and returns to absorb labor.

Aceh's unemployment in 2020 was 6.59% and decreased in 2021 by 5.30%, meaning that unemployment in Aceh from 2020 to 2020 was 0.29%, while in South Sumatra unemployment in 2020 was 5.51% and experienced decreased in 2021 by 0.34% and became 5.17%, in Lampung unemployment in 2020 was 4.69 and decreased in 2021 by 0.2% and became 4.69, while in Bengkulu unemployment in 2020 of 4.07 and decreased in 2021 by 0.35% and became 3.72 in 2021.

Based on the description and series of problems above, the researcher is interested in taking the title of the research, namely "Drifting Of Human Development Index (IPM) Gross Regional Domestic Product (GRDP) And Unemployment On Poverty In 4 Province In Sumatera Island".

# 2. THEORETICAL REVIEW

#### Poverty

Poverty is a condition of economic inability to meet the average standard of living of the people in an area. This condition of inability is characterized by the low ability of income to meet basic needs in the form of food, clothing, and shelter.

#### **Human Development Indeks**

The Human Development Index is an indicator to measure the level of physical and non-physical quality of the population (Human Development Index (IPM), which is a combination of several main components such as health, education, and income (purchasing power) as a composite index (Saputra, 2011).

#### Gross Regional Domestic Product (GRDP)

Gross Regional Domestic Product (GRDP) is the amount of added value for goods and services produced by various production units in a certain period of time and usually one year.(Sanusi & Yusuf 2018).

#### Unemployment

Unemployment is a person or a group that does not have a job or has no income and is unable to meet basic needs, while the unemployment rate is the percentage of workers in a certain period of time which is the ratio of the number of unemployed to the labor force (Lestari, 2017).

## **RESEARCH METHODS**

#### Data analysis method

Data analysis is the activity of processing the data that has been collected and can then provide an interpretation of the results. The analytical method in this study uses Panel Data Regression analysis.

#### **Panel Data Analysis**

The combined analysis between the time series from 2007-2021 and cross section data which consists of data from 4 provinces on the island of Sumatra which is used to solve the problems in this study is multiple linear regression. there are 3 models in overcoming regression with panel data namely:

1. Common Effect Model (CEM)

The Common Effect Model (CEM) is an estimation that combines (pooled) all time series and cross section data and uses the OLS (ordinary broad square) approach to estimate its parameters.

2. Fixed Effect Model (FEM)

The fixed effect model (FEM) regression model is a technique that estimates panel data by using a dummy variable to explain intercept differences. This approach is based on the difference in intercept between cross sections but the same between times.

3. Random Effect Model (REM)

The random effect model (REM) regression model is a variation of the generalized least squares (GLS) estimation. REM takes into account the error from panel data using the least square method. This approach improves the efficiency of the least squares process by taking into account the error from the cross section and time series.

#### Panel Data Regression Analysis Model

To test the independent variables on the dependent variable, one can use ordinary least squares (OLS) regression analysis. This method is easy to estimate efficiency by using panel data that ignores the individual (firm) and time (year) dimensions, usually called pool OLS regression.

#### **Model Selection Techniques**

To choose which model is the best between CEM, FEM, and REM in this, the panel data regression model researchers are as follows:

#### Uji Chow (Chow Test)

Chow text is a test conducted to select the best model between the fixed effect model (FEM) and the common effect model (CEM). The chow test assumes that there is no structural change in the restricted residual sun square and unrestricted residual sum square equations.

#### Uji Hausman (Hausman Test)

To determine the best model between FEM or REM is to use the Husman test. The fixed effect model assumes that the independent variables are correlated with the error, while for the random effect model. The decision making technique on the Husman test is as follows:

a. If the significant value is <0.05, the best model is panel data regression with FEM.

b. If the significant value is > 0.05, the best model is panel data regression with REM.

#### Lagrange Multiplier Test (LM)

To test whether the regression model with the random effect model is better than the pooled least square regression model, use the LM test. If the random effect regression model is better than the pooled least square regression model, the chi square value will be higher than the chi square value table.

## Classic assumption test Normality test

In the classic assumption test there is what is called the normality test. The normality test is a test that aims to determine whether the independent variable and the dependent variable in this model have a nominal distribution or not. The way to detect it is to use a graphical analysis method with the Jarquebera test, namely if the probability is> 5%, then these variables are normally distributed.

#### **Heteroscedasticity Test**

The heteroscedasticity test aims to test whether the model has an inequality of variance from one residual to another observation or not. A good model is one that has homoscedasticity or does not have heteroscedasticity.

#### **Multicorrelation Test**

To find out the relationship between the independent variables in the study, a multicollinearity test was used. This test aims to test whether there is a correlation between the independent variables in the model.

#### Hypothesis testing

The hypothesis test conducted in this study was conducted to determine the effect of the independent variables (Human Development Index, Gross Regional Domestic Product and Unemployment) on the dependent variable (Poverty).

#### **Statistical Test t (Partial Test)**

The t statistical test will show how far the influence of one independent variable individually explains the variation of the dependent variable.

#### Statistical Test F (Simultaneous Test)

This test was conducted to determine whether the independent variables (Human Development Index, Gross Regional Domestic Product and Unemployment) simultaneously have a significant effect on the dependent variable (Poverty).

# RESEARCH RESULTS AND DISCUSSION

#### **ANALYSIS OF RESEARCH DATA DESCRIPTION**

In this thesis, panel data is used which is a mixture of time series data and cross section data. The time series data is 2015-2020. Meanwhile, the cross-sectional data are 33 regencies/cities in North Sumatra Province.

#### Table 4.1 Chow test

Redundant Fixed Effects Tests Equation: Untitled Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	43.455025	(3,53)	0.0000
Cross-section Chi-square	74.471232	3	0.0000

Source: Processed data, (2022)

The results of the Chow test above have a probability value of cross-section F and cross-section Chi-square  $<\alpha$  5%, namely 0.0000 <0.05.

H0 : Common Effect Model is rejected

H1 : Fixed Effect Model accepted

Which means the Fixed Effect Model is better to use than the Common Effect Model based on the results of this test.

#### Hausman test

This is done to find out which model is selected between the Fixed Effect and Random Effect models.

# Table 4.2

Hausman test

Correlated Random Effects - Hausman Test Equation: Untitled Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	130.365076	3	0.0000

Source: Results of Data Processing, 2022

# Classic assumption test Multicollinearity Test

Multicollinearity test is carried out to determine whether there is a significant relationship between the independent variables and other independent variables. To detect whether there is a symptom of multicollinearity, it can be seen from the magnitude of the correlation coefficient of each independent variable.

 Table 4.3

 Multicollinearity test

Covariance Analysis: Ordinary Date: 12/02/22 Time: 01:07 Sample: 2007 2021 Included observations: 60

Correlation			
t-Statistic	IPM	LNPDRB	Pengangguran
IPM	1.000000		
LNPDRB	-0.049793	1.000000	
	-0.379680		
Pengangguran	0.146640	-0.758531	1.000000
0 00	1.128983	-8.865047	

Source: Results of Data Processing, 2022

Based on the results of table 4.7 above, it can be seen that the data in this study were seen from GRDP with a correlation HDI of -0.04 < 0.80, this indicates that there is no indication of multicollinearity. Unemployment with an HDI of 0.14 < 0.80, this indicates that there is no indication of multicollinearity. Furthermore, unemployment with a GRDP of -0.75 < 0.80, this indicates that there is no indication of multicollinearity.

#### **Heteroscedasticity Test**

Heteroscedasticity test is a condition where the variance of each disorder is not constant. Heteroscedasticity testing is done using the RESABS method on the Eviews-10 analysis tool, with the provision of a probability value. If the probability value of each variable is greater (> 0.05) with an alpha level of 5%, heteroscedasticity does not occur.

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	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	С	5.978182	4.911231	1.217247	0.2289
	IPM	0.012841	0.045285	0.283569	0.7778
	LNPDRB	-0.393027	0.179102	-2.194436	0.0326
	Pengangguran	0.079890	0.097389	0.820317	0.4157
1	a p 1	4.5	D		•

Source: Results of Data Processing, 2022

Based on the results in table 4.8 above, it can be seen that the probability of the HDI variable is 0.7778, the unemployment variable with a probability value of 0.4157 is above (> 0.05) then the HDI and unemployment variables are free from heteroscedasticity, while the GRDP variable has a probability of 0.0326 < 0.05, so the GRDP variable has heteroscedasticity.

#### **Panel Data Analysis**

Data processing in this study uses panel data regression, which is a combination of time series and cross-section data. There are several stages in using panel data regression including Common Effect Model, Fixed effect Model and Random Effect Model. The Fixed Effect model estimation results for this study are as follows:

# Tabel 4.5Fixed Effect Model

Dependent Variable: KM?

Method: Pooled Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	71.64691	8.877640	8.070490	0.0000
IPM?	-0.090963	0.081859	-1.111218	0.2715
LNPDRB?	-3.134804	0.323748	-9.682854	0.0000
TP?	0.539822	0.176042	3.066436	0.0034
Fixed Effects (Cross)				
_ACEH—C	-1.131119			
_BENGKULU—C	3.850267			
_LAMPUNG—C	-1.067787			
_SUMSEL—C	-1.651362			

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.877512	Mean dependent var	16.53433
Adjusted R-squared	0.863645	S.D. dependent var	3.194975
S.E. of regression	1.179785	Akaike info criterion	3.277821
Sum squared resid	73.77025	Schwarz criterion	3.522162

Log likelihood	-91.33464	Hannan-Quinn criter.	3.373396
F-statistic	63.28245	Durbin-Watson stat	0.911747
Prob(F-statistic)	0.000000		

Source: Results of Data Processing, 2022

Table 4.6Intercept Each of the 4 Provinces

No	Kabupaten/kota	Intersep	Total
1	Aceh	71.64+ (-1.13)	70.53
2	Bengkulu	71.64+ 3.85	75.49
3	Lampung	71.64+ (-1.06)	70.58
4	Sumsel	71.64+ (-1.65)	69.99

The regression equation shows a constant coefficient value of 71.64691, which means that if the HDI, GRDP and unemployment variables are constant, then the HDI is 71.64691.

The coefficient value of the HDI variable is -0.090963, meaning that if there is an increase in HDI by 1 percent, poverty will decrease by -0.090963 percent.

The coefficient value of the GRDP variable is -3.134804, meaning that if GRDP increases by 1 percent, poverty will decrease by - 3.134804 percent.

The coefficient value of the unemployment variable is 0.539822, meaning that if unemployment increases by 1 percent, poverty will also increase by 0.5.39822

#### a. Aceh

The constant/intercept value in Aceh Province is 70.53. This means that if the HDI, GRDP, and unemployment in Aceh are constant (zero), then poverty in Aceh will also be constant at 70.53.

#### b. Bengkulu

The constant/intercept value in Bengkulu Province is 75.49. This means that if the HDI, GRDP, and unemployment in Bengkulu are constant (zero), then poverty in Bengkulu will also be constant at 75.49.

## c. Lampung

The constant/intercept value in Lampung Province is 70.58. This means that if the HDI, GRDP, and unemployment in Lampung are constant (zero), then the HDI in Lampung will also be constant at 70.58.

#### d. Sumsel

The constant/intercept value in the Province of South Sumatra is 69.99. This means

that if the HDI, GRDP, and unemployment in South Sumatra are constant (zero), then poverty in South Sumatra will also be constant at 70.58.

## Hypothesis testing Partial Test (t test)

To see whether the independent variables in this study affect the dependent variable individually, it is necessary to do a t test by looking at the t count.

T test					
	t-				Hipotesi
Variabel	statisti	t-			s
bebas	с	tabel	Prob	Ket	
IDM	1 1 1 1	1 672	0.27	Tidak	Tolak
IFIVI	-1.111	1.072	15	Signifikan	
PDRB	-9.682	1.672	0.00 00	Signifikan	Terima
Penganggu ran	3.066	1.672	0.00 34	Signifikan	Terima

Table 4.7

Source: Results of Data Processing, 2022

Based on Table 4.11, it can be seen that the HDI has a tcount > ttable (-1,111 < 1672) or a probability value of 0.2715 < 0.05, which means that the HDI variable has no negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.

The coefficient value of the GRDP variable has a tcount > ttable (-9,682 > 1,672), or a probability value of 0.0000 < 0.05 so it can be concluded that GRDP has a negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.

Meanwhile, the unemployment variable has a tcount <ttable (3.066 > 1.672), or a probability value of 0.0034 <0.05 so it can be concluded that unemployment has a positive and significant effect on increasing poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.

#### **Concurrent Testing (Test f)**

Simultaneous test (f test) is carried out to find out whether the independent variables simultaneously or jointly affect the dependent variable by looking at the statistical F value.

Table 4.8 E test

	r test				
	F Statistic	F	Alpha	Probabilitas	Keterangan
		Tabel			-
	63.28245	2.53	0.05	0.000	Signifikan
_					

Source: Results of Data Processing, 2022

Based on table 4.12 above, it can be seen that the value of F-statistics > F-table (63.28245 > 2.53) with a probability of (0.000 < 0.05), which means that together with the HDI, GRDP and Unemployment variables have a positive and significant impact on Poverty in Aceh Province , Bengkulu, Lampung and South Sumatra.

#### **Correlation coefficient (R)**

The correlation coefficient is used for analysis or hypothesis testing if the researcher intends to determine the effect or relationship of the independent and dependent variables.

Table 4.8				
<b>Correlation Coefficient Test (R)</b>				
	0 0 <b></b> -			

R-Squared	0.8775
Adjusted R-squared	0.8636
Source: Results of Data Processing, 2022	

From Table 4.13 it can be seen that the value of the correlation in this study (R) =  $\sqrt{0.8775}$  = 0.936, which means that the relationship between HDI, GRDP and Unemployment Against Poverty is positively related very closely (strongly), because the correlation value of 0.936 is close to positive 1.

#### Discussion

The selected in this study is the Fixed effect model. Based on the results of partial and simultaneous testing. Then the relationship between the independent variable and the dependent variable can be explained as follows:

# The Influence of HDI on Poverty in the Provinces of Aceh, Bengkulu, Lampung and South Sumatra

Based on the partial test results, the HDI variable used in this study has no negative and insignificant effect on poverty. HDI has a tcount > ttable(-1.111>1.672) and a probability value of 0.2715 > 0.05. This can also be seen from the coefficient of determination and correlation. This means that if the HDI increases by 1 percent, poverty will decrease by -1,111 percent. Or conversely, if the HDI falls by 1 percent, poverty will increase by -1,111 percent.

# The Effect of GRDP on Poverty in the Provinces of Aceh, Bengkulu, Lampung and South Sumatra

Based on the partial test results, the GRDP variable used in this study has a negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra. GRDP has a tcount > ttable (-9,682 > 1,672), or a probability value of 0.0000 < 0.05 so that it can be concluded that GRDP has a negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.

# The Effect of Unemployment on Poverty in the Provinces of Aceh, Bengkulu, Lampung and South Sumatra

Based on the partial test results of the Unemployment variable, the Unemployment variable has a tcount <ttable (3.066 > 1.672), or a probability value of 0.0034 < 0.05 so it can be concluded that unemployment has a positive and significant effect on increasing poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.

The results of this study are in line with research conducted by Rapidah Azmi in 2019 with the title The Effect of Unemployment, HDI and GRDP on Poverty Levels in LabuhanBatu Regency, Rapidah Azmi's research results state that unemployment has a positive and significant effect on poverty in LabuhanBatu Regency.

#### Conclusion

Based on the results of research and discussion of the effect of HDI, GRDP and unemployment on poverty in 4 provinces on the island of Sumatra, the researchers draw the following conclusions:

- 1. The HDI variable used in this study is stated to have no negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.
- 2. The GRDP variable used in this study is stated to have a negative and significant effect on poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra.
- 3. The unemployment variable used in this study is stated to have a positive and significant effect on increasing poverty in the provinces of Aceh, Bengkulu, Lampung and South Sumatra

#### Suggestion

Based on the discussion and conclusions obtained from the results of this study, the authors can provide the following suggestions:

The governments of the 4 provinces on the islands of Sumatra, Aceh, Bengkulu, South Sumatra and Lampung must further improve service development and optimize community services and development or infrastructure that also covers rural areas so that rural communities can also access government services.

The governments of the 4 provinces on the islands of Sumatra, Aceh, Bengkulu, South Sumatra and Lampung, must be more consistent in increasing GRDP, meaning the governments of the 4 provinces on the islands of Sumatra, Aceh, Bengkulu, South Sumatra and Lampung must maintain stability and further improve programs that can support poverty reduction , namely the level of education, health, economy and employment.

The governments of the 4 provinces on the islands of Sumatra, Aceh, Bengkulu, South Sumatra and Lampung must increase business fields so that unemployment can be reduced. If unemployment decreases, poverty will also decrease.

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