

Poverty Level Determination Analysis: Case Study of South Sumatra Province

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Abstract

Poverty is a multidimensional problem related to economic, political, social, cultural, and community participation. This is evidenced by the increasing trend of the number of people living below the poverty line. The main trigger of poverty in Indonesia is the inequality of economic distribution or what is known as economic justice. Whereas all religions prohibit economic monopoly actions that cause injustice and order their people to give charity (zakat) and cooperate evenly. Intending to reduce the poverty rate of the community even though we still often hear of hunger and hardship for some humans. This means that the welfare that is expected and aspired to has not been realized for people's lives. According to BPS 2022 data, South Sumatra is included in the top 10 with high poverty rates. Therefore, this study aims to determine, explain and analyze the factors that affect the Percentage of the Poor Population (PPM) in South Sumatra for the period 2019-2022. This research method uses a panel data regression method with individual unit observations of as many as 17 districts and cities of South Sumatra province in four years from 2019 to 2022. This study uses one response variable, namely PPM, and four explanatory variables, namely the unemployment rate (TPT), average years of schooling (RLS), GRDP per capita, and human development index (HDI). The results of this study show that the fixed effect model with two-way specific effects is the best model of the panel data poverty rate. Variables that have a significant effect are GRDP, RLS, and HDI.

Keywords: *Poverty. TPT. HDI. RLS. GDRB*

Abstrak

Kemiskinan merupakan masalah multidimensi yang berkaitan dengan ketidakmampuan secara ekonomi, politik, sosial, budaya, dan partisipasi masyarakat. Hal ini terbukti dengan adanya kecenderungan peningkatan jumlah penduduk yang hidup dibawah garis kemiskinan. Pemicu utama kemiskinan di indonesia adalah ketidakmerataan distribusi ekonomi atau yang dikenal dengan keadilan ekonomi. Padahal semua agama melarang Tindakan monopoli ekonomi yang mneyebabkan ketidakadilan dan memerintahkan umatnya untuk berderma (zakat) dan bekerjasama secara merata. dengan tujuan mengurangi angka kemiskinan masyarakat meskipun pada kenyataanya masih sering kita dengar kelaparan dan kesusahan hidup bagi sebagian manusia. Ini berarti kesejahteraan yang diharapkan dan dicita-citakan belum terwujud bagi kehidupan masyarakat. Menurut data BPS 2022, Sumatera Selatan termasuk ke dalam 10 besar dengan tingkat kemiskinan yang tinggi. Oleh karena itu, penelitian ini bertujuan untuk mengetahui, menjelaskan dan menganalisis faktor-faktor yang berpengaruh terhadap Persentase Penduduk Miskin (PPM) di Sumatera Selatan periode tahun 2019-2022. Metode penelitian ini menggunakan metode regresi data panel dengan amatan unit individu sebanyak 17 kabupaten/kota Provinsi Sumatera Selatan dalam periode waktu empat tahun dari 2019 sampai 2022. Penelitian ini menggunakan satu peubah respon yaitu PPM dan empat peubah penjelas ialah tingkat pengangguran (TPT), rata-rata lama sekolah (RLS), PDRB per kapita, dan indeks pembangunan manusia (IPM). Hasil penelitian ini menunjukkan bahwa model fixed effect dengan pengaruh spesifik dua arah adalah adalah model terbaik dari tingkat kemiskinan data panel. Variabel yang berpengaruh signifikan yaitu PDRB, RLS, dan IPM.

Kata kunci: *Kemiskinan. TPT. IPM. RLS. PDRB*

INTRODUCTION

Poverty is a multidimensional problem because it is related to the inability to access economically, political, socio-cultural, and participation in the community, various existing policies and programs are felt to be less effective in efforts to reduce the number of people living below the poverty line. This is proven by the tendency of the number of poor people to increase from time to time in Indonesia. Poverty from an economic view is not only caused by human nature but also caused by external humans, for example, the life of the local community, political, national. Social and poverty in Education. Adam Smith said that poverty is caused by state factors that formulate labor welfare laws so that it can be seen that the state also contributes to the welfare of its people.

According to the Central Bureau of Statistics (BPS). The main trigger for poverty in Indonesia is the inequality of economic distribution or what is known as economic justice. Even though all religions prohibit economic monopolies that cause injustice and instruct their followers to donate (zakat) and cooperate equally to reduce the poverty rate in society. Although in reality we still often hear of hunger, and the hardships of life for some people. This means that the welfare expected and aspired to has not been realized for people's lives. This situation does not rule out the possibility of happening in Indonesia, especially in the province of South Sumatra. Based on September 2022 BPS data. South Sumatra Province is included in the top 10 as a province that has a fairly high poverty rate because it is above the national rate, as can be seen in Table 1.

Table 1. Percentage of poor people in South Sumatra Province as of September 2022

Province	Number of poor people	Percentage (%)
Papua	936,32	26,80
Papua Barat	222,36	21,43
Nusa Tenggara Timur	1149,17	20,23
Maluku	296,66	16,23

Gorontalo	187,35	15,51
Aceh	818,47	14,75
Bengkulu	292,93	14,34
Nusa Tenggara Barat	744,69	13,82
Sulawesi Tengah	389,71	12,30
Sumatera Selatan	1054,99	11,95
Indonesia	26363,27	9,57

Source: Central Bureau of Statistics 2022

Several indicators can affect poverty in an area such as education indicators, employment and the economy. According to Harlik et al. (2013) one of the factors that influence poverty is unemployment. Unemployment can be interpreted as someone who is included in the labor force because he has reached working age and is actively looking for work but has not yet found a job (Zakaria 2009). According to (Pujoalwanto, 2014) in general, unemployment occurs because of an imbalance between the number of job seekers and the number of jobs available. Unemployment will have the effect of reducing people's income and this will reduce the level of prosperity that has been achieved where the level of prosperity decreases. this will cause other problems, namely related to poverty (Sukirno. 2005).

According to BPS, the percentage rate of unemployment in South Sumatra Province by gender in 2019, was male (4.61%) and female (4.39%); in 2020, male (5.48%) and female (5.54%); in 2021, male-male (4.84%) and female (5.20%); 2022, male (4.53%) and female (4.80%). It can be seen from the data that the unemployment rate in South Sumatra has decreased. Another indicator that also influences poverty is the human development index. The human development index is a comparative measurement of life expectancy, literacy, Education and standard of living for all countries around the world (UNDP Central Bureau of Statistics 1997). One of the most important indicators that describe the successful use of the economy is the improvement in the quality of human

resources. that is why in today's development planning human development has always been the main focus. According to BPS, the level of human development index (IPM) has fluctuated and the value varies each year, namely in 2019 it was 70.02%; in 2020 it was 70.01%; In 2021 it is 70.24%; In 2022 it will be 70.90%.

Education is also a factor that can affect the poverty rate of a region. The progress of education in a region can be a form of future investment for each individual. with the higher education of an individual, the welfare of the individual will also increase and this can have a long-term impact on the welfare of a country (Mankiw 2012 in Pradipta 2020). The same result was also stated in Putri et al.'s research. (2021) influences poverty. This research uses the Average Length of School (RLS) indicator in education because according to BPS (2020), it can see the quality of the population in managing education in an area. Other factors are also influenced by aggregate economic growth which can be seen from the GRDP of a region. The higher the GRDP value of a region, it is assumed that the condition of the area is also good. but if the poverty rate is higher, it will be difficult for the economic growth of a region to increase (Irawan and Primandari 2022).

This is reinforced by the research results of Giovanni (2018) and Rusdarti and Sebayang (2013) stating that GRDP affects poverty because if the GRDP value increases every year and spreads to all economic groups, both above and above. medium. nor below. This will reduce the poverty rate in an area. Therefore. This study aims to determine. explain and analyze whether there is an influence between the Open Unemployment Rate (IPT). Human Development Index (HDI). Average Length of School (RLS). and GRDP to the Percentage of Poor Population (PPM) in South Sumatra for the 2019-2020 period.

Etymologically poor or poverty is a state of having no possessions or all deprivation or very low income. And there is also the term absolute poverty which means the situation of the population or part of the population who can only meet the food, clothing, and housing that is very necessary to maintain a minimum standard of living. Meanwhile, poverty is in English called poor or poverty where poverty is the condition of being poor or locked of money while poor is lacking riches or needy. Meanwhile, being in want.

In Arabic poverty is expressed by the word al-poor or al-faqir which means a state of need. And a faqir means a state of need. And a faqir is someone who has very little staple food. Meanwhile, the word al-poor is someone who does not have enough wealth to meet the needs of himself and those he is responsible for. In general, poverty means a point where life is not possible in maintaining physical efficiency, namely an economic condition characterized by the inability to buy goods and services that are needed for personal health.

Chambers explained that poverty is an integrated concept that has five dimensions. First, the problem of poverty, as in the initial view, is a condition of the inability of income to meet and suffice basic needs. This concept or view applies not only to groups that do not have income but can also apply to groups that already have income. The low ability to increase income will have an impact on the social strength of a person or group of people, especially in obtaining justice or equal rights to get a decent life for humanity.

Both vulnerabilities face an emergency. A person or group of people who are called poor do not have or have the ability to deal with unexpected situations. This situation requires an allocation of income to solve it. For example, vulnerable situations in the form of natural disasters, health conditions that require relatively expensive medical expenses,

and other emergencies that require sufficient income.

Third, is dependency. The limited income capability or social strength of a person or group of people who are called poor causes a very high level of dependence on other parties. The dimension of alienation as meant by Chambers is the location factor that causes a person or group of people to become poor. In general, the poor live in areas far from the centers of economic growth. According to Murni, (2006) unemployed are people who do not have a job or do not have income. Sukarno (2008) explains unemployment is a situation where a person belonging to the labor force wants to get a job but has not been able to get one. According to Putong, (2010), the unemployed are those who do not have a job and are looking for work. The category of unemployed people is usually those who do not have a job at working age and working time. Working age is usually the age that is not in school but above the age of children (relatively above 6-18 years, namely the period of primary school-graduation of high school). Total population of working age (15-64 years), and non-working age (non-productive age), namely those aged 0-14 years and elderly people (manually) aged more or less 65 years. Of the working-age population, those who enter the labor force are those looking for work or work. Some who do not work (for various reasons) do not enter the labor force. Not all of the labor force get their jobs, this is what is called unemployment (Putong, 2010).

The unemployment rate is the percentage of the labor force that is not/has not found a job. When discussing unemployment, what is always considered is not the number of unemployed, but the unemployment rate expressed as a percentage of the labor force. According to Sukirno (2012) comparing unemployment among various countries is of no use because it will not provide an accurate picture of the ratio

between the number of the unemployed workforce and the overall workforce, called the unemployment rate. To measure the level of unemployment in a region can be obtained from the percentage dividing the number of unemployed by the number of the labor force.
$$\text{Unemployment rate} = \frac{\text{number of unemployed}}{\text{number of labor force}} \times 100 \%$$

The human development index (IPM) is an index of achieving basic human development capabilities that are built through a basic three-dimensional approach, namely longevity and health, knowledge, and decent living. One of the main uses of HDI is to show that a country can perform much better even if the income level is low. Conversely, high levels of income are not always followed by high human development achievements. HDI also shows a greater difference in income than the difference in other income indicators, at least in the areas of health and education. Health and education are inputs for the function of national products in their role as components of human capital. Improving health and education is an important separate goal of development efforts (Todaro and Smith, 2011).

which describes the length (years) of schooling experienced by the population aged 25 years and over. The Central Bureau of Statistics suggests that RLS is defined as the number of years used by the population in undergoing formal education. RLS can be used to determine the level and quality of community education in an area. Besides that, there are still several factors that cause children to drop out of school such as environmental factors, understanding of the importance of education, culture, availability of educational facilities/infrastructure, and others. This is in line with Sabrina's opinion (2021) which states that children drop out of school generally because they are unable to pay education fees and do not receive information about scholarships, both regarding scholarship

sources and how to access them, so the answer is to build economic factors, factors that cause children to drop out. the order of schools is economic factors, parental attention factors, learning facilities factors, children's interest in going to school, cultural factors, and school location factors (Dewi et al. 2014)

Gross Regional Domestic Product (GDP) is the total added value of economic activity in a region as a whole, both in the form of the added value of goods and services. Gross Regional Domestic Population (GDP) at current prices is the total value of income, expenditure, or production assessed at prices in effect in the year concerned and can be used to see shifts and economic structure. The GRDP value is the aggregate added value generated by production units operating in the region. GRDP is influenced by human capital, labor, and infrastructure. Human capital is the influence of formal education taken by a person so that it will improve the quality of that person's work. The definition of the workforce is all residents aged 15 years or more who have the potential to produce statistical goods. Infrastructure is an important input for production activities and can affect economic activity in various ways, directly or indirectly.

RESEARCH METHODOLOGY

This study uses secondary data obtained from BPS South Sumatra from 2019 to 2022. The research data is panel data with units of observation of 17 districts/cities of South Sumatra Province over four years. namely from 2019 to 2022. The research variables have one response variable, namely the percentage of poor people, and four explanatory variables, namely the unemployment rate, average length of schooling, HDI, and GRDP.

Panel Data Regression

Panel data regression is a method of a set of individual units observed over several periods (Hsiao 2014). There are several panel data model approaches as follows (Baltagi, 2011).

The Joint Influence Model

The combined effect model or commonly called the common effect model (CEM) assumes that the intercept and model coefficients are considered constant and the model error comes from estimation without individual or time effects. Estimation of combined model parameters using the Least Squares Method. The combined model equation is as follows:

$$y_{it} = \alpha + x_{it} \beta + u_{it}$$

y_{it} is the response variable of the i th individual unit in the t -time period, α is a constant, x_{it} is a $1 \times k$ explanatory variable vector for the i th individual unit and the t -th period with k denotes the number of explanatory variables, β is the coefficient vector of size $k \times 1$ and u_{it} is the error of the i th individual unit in the t th period.

Fixed Influence Model

The fixed effect model (FEM) assumes that there are differences in intercept between individual units but the slope of the coefficient is assumed to be constant for all individuals. Estimation of the parameters of the FEM model with the Least Square Dummy Variable (LSDV) method. The following is the equation for the FEM data panel model as follows:

$$y_{it} = \alpha_i + x_{it} \beta + u_{it}$$

y_{it} is the response variable of the i -th individual unit in the t -th period, α_i is the intercept coefficient of the i -th individual unit, β is the coefficient vector of size $k \times 1$, x_{it} is the vector of the explanatory variable size $1 \times k$ for the unit-the individual I and the t -th period, and u_{it} is the error of the i th individual unit at the t -th period.

Random Effects Model

The random effect model (REM) assumes that each unit has individual intercepts that are fixed and random. In other words, all individual units have the same average intercept value, and the individual differences in intercepts are reflected in the model error. The random effect model on the panel data model is stated as follows:

$$y_{it} = \alpha_0 + x_{it} \beta + u_{it}$$

$$u_{it} = \varepsilon_i + v_{it}$$

y_{it} is the response variable of the i th individual unit in the t -time period, α_0 is a constant, β is the coefficient vector of size $k \times 1$, x_{it} is the vector of the explanatory variable of size $1 \times k$ for the i th individual unit in the t -time period, w_{it} is the error component which consists of two components, namely ε_i is the error component of the specific influence of the i -th individual, and u_{it} is the error across the i -th individual in the t -time period.

Table 2. Research Variables

Code	Variable	Source
PPM	Percentage of Poor Population	-
TPT	Open Unemployment Rate	Fitria 2021
RLS	Average School Years	Ishak <i>et al.</i> 2020
IPM	Human Development Index	Leonita dan Sari 2019
PDRB	GRDP per Capita	Leonita dan Sari 2019

Source: Processed 2023

Data Analysis Procedures

Exploring the data on the characteristics and relationship patterns of response variables and explanatory variables. If there is a less linear relationship pattern, a natural logarithmic transformation can be performed.

Estimating the parameters of the common effect model and fixed effect model.

Performing the Chow Test:

1. If accept H_0 . means that the combined effect model (common effect model) is selected and goes to stage (5)
2. If reject H_0 . means that the fixed effect model is selected and goes to stage (4)
3. Estimating the parameters of the random effect model and the Hausman test:
4. If accept H_0 . means that the random effect model is selected and goes to stage (5)
5. If reject H_0 . means that the fixed effect model is selected and goes to stage (5)
6. Testing panel data regression assumptions. Handling assumptions if assumptions are not met. Interpret the final model obtained

RESULTS AND DISCUSSION

Data Exploration

Based on BPS (2022). the poverty rate in South Sumatra in September 2022 decreased by 0.84% from 12.79% to 11.95% compared to September 2021 last year. Although it has decreased. The poverty rate in South Sumatra Province is relatively high compared to other provinces in Indonesia. This makes South Sumatra Province one of the top 10 provinces with the highest percentage of poor people in Indonesia from 2019 to 2022. The percentage of poor people in South Sumatra Province can be seen in Figure 1.

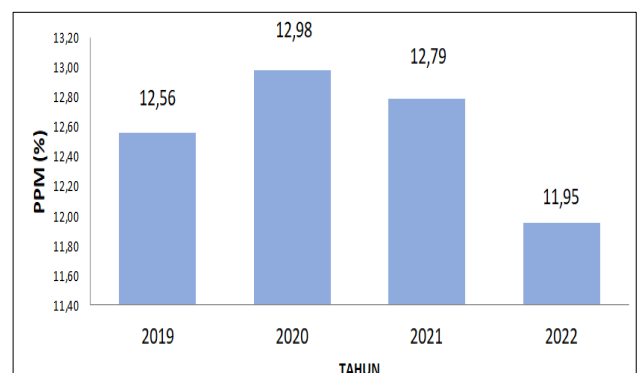


Figure 1 Bar chart of PPM in South Sumatra Province

Source: South Sumatra BPS data

Figure 1 shows that PPM in South Sumatra Province has fluctuating conditions. as in 2020 which experienced an increase from 2019 and in the following year decreased until 2022. In Figure 2 there is an average PPM value based on districts/cities in South Sumatra which shows a fairly diverse average value for each district/city. The difference in PPM values for each district/city in South Sumatra indicates that there is a specific influence from each district/city in South Sumatra.

Before modeling the regression model. Several conditions must be met, one of which is that there is a linear relationship between the explanatory variables. Figure 3 shows that the plots between PPM, TPT, and GRDP variables have non-linear data distribution patterns, so it is necessary to handle them by transforming the data using natural logarithmic transformations. Figure 4 shows the pattern of data distribution on the three PPM variables. TPT. and GRDP after data transformation.

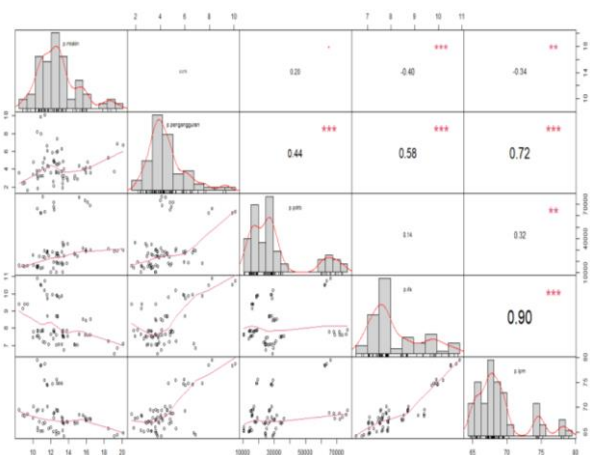


Figure 2. Scatter Plots Between PPM Variables Before Data Transformation

Source: Data Processed In 2022

The second requirement is that there is no multicollinearity between the independent variables. According to Gujarati and Porter (2010) if the VIF (Variance Inflation Factor) value is more than 10 then there is multicollinearity between the explanatory variables. The results of Table 3 show that there are no explanatory variables that have

VIF values > 10 either before or after the data transformation.

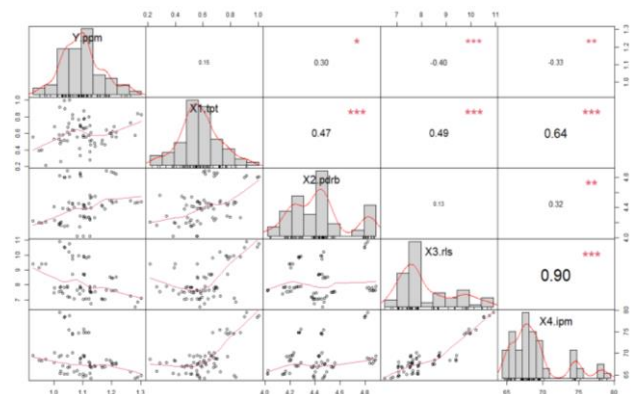


Figure 3. Scatter Plots Between PPM Variables After Data Transformation

Source: Data Processed In 2022

Panel Data Model Estimation

Estimation of the panel data model begins with the estimation of the CEM model and FEM model. The CEM model assumes that the intercept and coefficients are constant for each unit and time. The estimation of the CEM model is carried out by combining individual unit data and time without regard to the specific influence of individual units or time so that the same individual unit in different years will be counted as a new individual unit that is different from one another. Therefore, the number of individual units in the combined model is 68 individual units. The estimation of the combined influence model is seen in Table 3.

Table 3. Parameter Estimation of the Combined Effect Model

Peubah	Koefisien	Nilai-p
Intersep	4.657	0.004*
TPT	0.0215	0.003*
PDRB	0.107	0.012*
RLS	-0.010	0.574
IPM	-2.120	0.022*
<i>R-Squared</i>	39.32%	
<i>Adjusted R-Square</i>	35.46%	

F-hitting	10.21
Nilai-p	$1.96 \times 10^{-6*}$

*significant at the 5% level of significance

Based on Table 4, shows that the results of the p-value of the F-count are smaller than the 5% significance level, which means that there is at least one explanatory variable that has a significant effect on the response variable. The results of the p-values on the TPT, GRDP, and HDI variables have a significant effect on PPM at the 5% significance level. The goodness-of-fit of the CEM model is 0.3546, which means that the diversity in the PPM variables that can be explained by the dependent variable in the model is 35.46%. The following is the model of the above model equation as follows.

$$PPM_{it} = 4.657 + 0.0215TPT_{it} + 0.107PDRB_{it} - 0.010RLS_{it} - 2120IPM_{it} + u_{it}$$

Where u_{it} is the i th individual unit error component and the time, $i = 1, 2, 3, \dots, 68$ and $t = 1, 2, 3, 4$. Next, the parameter estimation of the FEM model. The FEM model assumes that the intercept between individual units or time is different but the regression coefficient is the same for each unit or time. FEM model estimation takes into account the specific effect of individual units or time so that the same individual unit in different years will be counted as one individual unit only. The number of individual units of the FEM model is 17 individual units. The following is the estimation of the FEM model in Table 4.

Table 4. Estimation of Fixed Effect Model Parameters

Peubah	Koefisien	Nilai-p
TPT	-0.0014	0.498
PDRB	-0.158	0.045*

RLS	0.045	0.009*
IPM	-5.177	$4.31 \times 10^{-8*}$
<i>R-Squared</i>	65.22%	
<i>Adjusted R-Square</i>	50.42%	
F-hitting	22.034	
Nilai-p	$2.715 \times 10^{-10*}$	

*significant at the 5% level of significance

Based on Table 5, shows that the results of the p-value of the F-count are smaller than the 5% significance level, which means that there is at least one explanatory variable in the model that has a significant effect on the PPM variable at the 5% significance level. The results of the respective p-values of the explanatory variables show that there are three variables, namely GRDP, RLS, and HDI which have a significant effect on PPM. In addition, the goodness-of-fit of the model is 0.5042, which means that the diversity of the PPM variables explained by the explanatory variables in the model is 50.42%. The following is the form of the fixed influence model equation.

$$PPM_{it} = -0.0014TPT_{it} - 0.158PDRB_{it} + 0.045RLS_{it} - 5.177IPM_{it} + \gamma_i + \delta_t + u_{it}$$

γ_i is the specific effect of district/city, δ_t is the specific effect of time, u_{it} is the error component of the i th individual unit and the t th time, $i = 1, 2, 3, \dots, 17$, and $t = 1, 2, 3, 4$. Next, the parameter estimation of the REM model. The REM model assumes that each individual or time unit has a random effect which is reflected in the model error with a constant coefficient value for each individual and time. In addition, individual unit- or time-specific effects were not correlated with the explanatory variables in the model. The estimation of the random effect model can be seen in Table 5.

Table 5. Estimation of Random Effect Model Parameters

Peubah	Koefisien	Nilai-p
Intersep	7.913	2.484×10^{-8} *
TPT	0.0025	0.352
PDRB	0.088	0.128
RLS	0.033	0.067
IPM	-4.077	4.615×10^{-6} *
<i>R-Squared</i>	35.42%	
<i>Adjusted R-Square</i>	31.33%	
F-hitting	34.567	
Nilai-p	5.698×10^{-7} *	

*significant at the 5% level of significance

Table 5 shows that the results of the p-value of F-count are lower than the 5% significance level, which means that there is at least one explanatory variable in the model that has a significant effect on the PPM variable at the 5% significance level. The results of the respective p-values of the explanatory variables show that only the HDI variable has a significant effect on PPM. In addition, the goodness-of-fit of the model is 0.3133, which means that the diversity of the PPM variables explained by the explanatory variables in the model is 31.33%. The following is the form of the random effect model equation.

$$PPM_{it} = 7.913 + 0.0025TPT_{it} + 0.088PDRB_{it} + 0.033RLS_{it} - 4.077IPM_{it} + w_{it}$$

w_{it} is the combined error component of the specific effect of the i -th individual unit and the t -time, $i = 1, 2, 3, \dots, 17$, and $t = 1, 2, 3, 4$.

Panel Model Specifications

The specification of the panel data model is carried out to select the best panel data estimation model. There are three tests used for model selection, namely, the Chow

test, the Hausman test, and the Lagrange Multiplier (LM) test. The results of the Chow test and Hausman test in Table 6 are as follows.

Table 6. Chow test results and Hausman test

Uji	Nilai-p	Selected Models
Chow	2.2×10^{-16} *	Fixed influence model
Hausman	8.043×10^{-10} *	Fixed influence model

*significant at the 5% level of significance

Based on Table 7, the results of the Chow test show that the p-value is smaller than the 5% significance level or rejects H_0 , which means that the selected model is a fixed effect model. The same thing also happened in the Hausman test. The p-value of the Hausman test also shows a value that is smaller than the 5% significance level or rejects H_0 so the chosen model is a fixed effect model. Next, an LM test will be carried out to test whether there is an individual unit-specific effect, a time-specific effect, or there are both individual and time-specific effects on the previously selected model. The following are the results of the LM test in Table 7.

Table 7. Lagrange Multiplier test results

Influence	LM	Nilai-p
Individual unit specific	79.82	2.2×10^{-16} *
Specific units of time	79.82	2.2×10^{-16} *

*significant at the 5% level of significance

Based on the results of Table 8, it shows a p-value of 2.2×10^{-16} for the specific effect of individual units or time which is less than the 5% significance level so it can be concluded that there is a two-way specific effect (individual and time). The fixed influence model (FEM) has individual and time-specific influences. This is following the exploration results in Figure 1 which shows the

difference in PPM each year. These results are also consistent with the results of the exploration in Figure 2 which shows that there are differences in PPM in each district/city in South Sumatra.

Panel Data Regression Assumption Testing

Assumption testing is carried out on the selected model at the model specification stage. The assumption tests carried out are the normality assumption of the residuals, the homogeneity of the variance of the residuals, and the autocorrelation. Meanwhile, multicollinearity has been carried out at the data exploration stage. The normality of the residuals using the Shapiro-Wilk test with a statistical test result of 0.9697 and a p-value of 0.0965 is greater than the 5% significance level, meaning that the residuals are normally distributed and it can be assumed that the normality of the residuals is fulfilled. The homogeneity of variance was tested using the Breusch-Pagan test. The statistical test result is 1.317 and the p-value is 0.858 which is greater than the 5% significance level, meaning that the variance of the residuals is homogeneous and it can be assumed that the variance of the residuals is fulfilled. Likewise, the results of the autocorrelation test used the Durbin-Watson test. The statistical test result is 2.351 and the p-value is 0.931 which is greater than the 5% significance level, meaning that there is no autocorrelation of the residuals in the model and it can be assumed that the autocorrelation of the residuals is fulfilled.

Model Interpretation

Based on the results of testing the assumptions, it appears that the assumptions of normality, homogeneity of variance, and autocorrelation have been met so that a good panel data regression model is used for the PPM case in South Sumatra, namely the fixed effect model with two-way specific effects

(individual and time). The form of the fixed influence model equation is as follows.

$$PPM_{it} = -0.0014TPT_{it} - 0.158PDRB_{it} + 0.045RLS_{it} - 5.177IPM_{it} + \gamma_i + \delta_t + u_{it}$$

Each district city in South Sumatra has the same coefficient for each district/city in various periods, while the intercept values are different. The values for γ_i (ϕ) and δ_t (δ) have different values for each unit and time are shown in Tables 9 and 10. The variables that have a significant effect on PPM are the GRDP, RLS, and HDI variables.

Table 8. Specific Effect of Time Fixed Effect Model

Year	The specific influence of time units
2019	1.5228
2020	1.4953
2021	1.5231
2022	1.4930

Source: Data Processed In 2022

Table 9. Specific Influence of Individual Fixed Influence Model

Regency/city	Individual Unit-Specific Effects
Banyuasin	3.6307
Empat Lawang	3.5713
Lahat	3.779
Muara Enim	3.788
Musi Banyuasin	3.888
Musi Rawas	3.737
Musi Rawas Utara	3.842
Ogan Ilir	3.767
OKI	3.774
OKU	3.719
OKU Selatan	3.509
OKU Timur	3.651
PALI	3.642
Kota Lubuk Linggau	3.835
Kota Pagar Alam	3.473

Kota Palembang	3.936
Kota Prabumulih	3.808

Source: Data Processed In 2022

The 'TPT' variable has a negative coefficient of 0.0014 and has no significant effect with a p-value of 0.582, meaning that if there is an increase in TPT by one percent it will reduce PPM by 0.0014%. This result is not in line with the theory put forward by Sukirno that the negative impact of unemployment is a lack of public income which can result in economic and social problems. The condition of low income or none at all will make the unemployed have to reduce spending on consumption. If this is allowed to continue, it will hurt the quality of long-term economic development and can increase the opportunities for the unemployed to be trapped in poverty for longer (Sianturi et al. 2021). The results of this study are in line with research conducted by Suropto and Subayil (2020). This is also reinforced by Lincoln Arsyad's opinion (1997) which states that it is wrong to assume that everyone who does not work is poor, while those who work full time are rich people. Because sometimes there are workers in urban areas who work according to their level of education. In contrast to the results of research by Ahmaddien Iskandar (2019) that 'TPT' is significant and has a negative effect.

GRDP has a negative coefficient, meaning that for every one billion rupiahs GRDP increase, PPM will decrease by 0.158% assuming other variables are considered constant. The results of this study are in line with those conducted by Hasibuan et al. (2022) which have significant and negative effects. Other research was also carried out by Leonita and Sari (2019) which is significant and has a positive effect because it allegedly indicates that the rate of growth in the production of goods and services in each sector may not necessarily reduce the poverty rate and it is suspected that only a few sectors are

productive but have limited income. The RLS variable has a coefficient that is positive and has a significant effect, meaning that every one percent increase in RLS will increase PPM by 0.045% assuming other variables are considered constant. This is not following Mankiw (2012) stating that education is a form of individual investment, the higher the education, the better the welfare of an individual. Meanwhile, this research is in line with the results of Rohmah and Prakoso (2022), which have a positive relationship and a significant effect on the poverty rate. This is because the mindset of the head of the family is influenced by his education, the more school years completed, the more likely the family will struggle to meet certain living standards. So more and more education may be completed, so it does not make the poverty rate decrease because someone sometimes thinks of completing his education simply to make his parents or those closest to him proud of his achievements without thinking about how that person can fulfill his needs.

The HDI variable has a negative coefficient and has a significant effect on PPM, meaning that every HDI increases by one percent, it will reduce PPM by 5.177% assuming other variables are considered constant. The results of this study are in line with the new growth theory which states that the government plays an important role in increasing the development of human capital to increase human productivity. This can be sustainable in the education sector which will improve the quality of human resources so that it can encourage work productivity so that companies will provide higher salaries and of course will improve people's welfare so that in the end it can reduce poverty (Sianturi et al. 2021). The results of this study are following research conducted by Rohmi et al. (2021) that HDI has a negative and significant influence. The good parameter estimation of the fixed effect model with a two-way specific effect of 0.2483 means that the diversity of PPM

variables that can be explained by the explanatory variables in the model is 24.83%, while the rest is explained by other explanatory variables that are not included in the model.

CONCLUSIONS

The fixed effect model or FEM with the specific influence of individual units and time is the best model selected in the panel data regression model so that it can describe the level of poverty in South Sumatra Province with a goodness-of-fit model of 50.42%. Based on the FEM model, several independent variables have a significant effect on the 5% real level, namely GRDP, RLS, and HDI. The GRDP variable hurts the poverty rate, RLS has a positive effect on the poverty level, and HDI hurts the poverty level. While TPT does not affect the level of poverty in South Sumatra. This research has drawbacks due to the limitations of the authors. The drawback is that the data used is only 4 years and the variables still do not represent all areas that affect poverty levels. So it is hoped that future researchers can use a longer period and use other variables such as health, wages, and community welfare variables so that it is expected to increase the number of variables that are significant to poverty.

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