

Inequality, Poverty, and Human Capability in Sumatra's Inclusive Growth

Boby Satriawan, Arivina Ratih, Dedy Yuliawan

Faculty of Economics and Business, University of Lampung, Lampung, Indonesia

ABSTRACT

Inclusive economic growth involves poverty reduction, job creation, income distribution, and the development of agriculture, industry, and social sectors, ensuring equal participation and benefits. This study uses secondary panel data with the Ordinary Least Square (OLS) method and fixed effects across 10 provinces in Sumatra from 2019 to 2023. The analysis shows that development inequality, poverty, and open unemployment negatively impact inclusive growth, where a 1% increase in GINI and PPM reduces IPEI by 4.02% and 3.62%, while an additional Open Unemployment Rate (TPT) decreases IPEI by 2.08%. Conversely, labor force participation and human development positively influence growth, with a one-person increase in AK raising IPEI by 1.22% and a 1% rise in IPM increasing IPEI by 15.03%. Policies for fair economic redistribution are needed through enhanced access to education, healthcare, employment, and empowerment in labor-intensive industries across Sumatra.

Keywords: *Inclusive Economic Growth, Income Inequality, Human Development, Labor Force Participation*

Corresponding author

Name: *Boby Satriawan*

Email: *boby.satriawan2504@gmail.com*

INTRODUCTION

Inclusive economic growth comprises several key elements, including poverty reduction, job creation, improvement in job quality, agricultural development, industrial development, social sector development, reduction of regional disparities, environmental protection, and income distribution. Among these elements, poverty reduction, job creation, and income distribution have received the most attention in empirical studies, either explicitly or implicitly, regarding inclusive economic growth (Alesina & Rodrik, 1994; Barro, 2000). Inclusive growth enables all members of society to participate in and benefit from economic growth and development on an equitable basis, regardless of their diverse socioeconomic backgrounds (Hill, Khan, & Zhuang, 2012).

The pillars of inclusive growth outlined by BAPPENAS serve as essential references that must be analyzed based on regional characteristics, obstacles, and the factors that may hinder the three pillars of inclusive growth in each region of Indonesia. According to (BAPPENAS, 2020), Sumatra Island has a promising projection for inclusive growth and development, with continuously increasing economic productivity. However, from a macroeconomic perspective, issues such as inequality, poverty, unemployment, and job

opportunities present challenges. In terms of inclusive growth, Sumatra remains in a stagnant category, showing neither significant improvement nor decline. The development of inclusive economic growth across the 10 provinces of Sumatra is presented as follows:

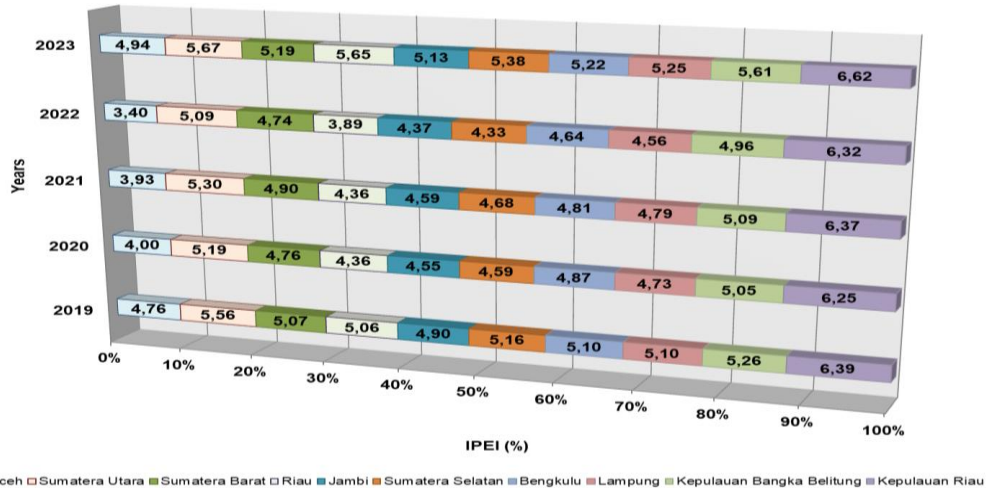


Figure 1. Average Inclusive Economic Growth of 10 Provinces in Sumatra Island (2016–2020)

Figure 1 illustrates the development of inclusive growth in the 10 provinces of Sumatra. According to BAPPENAS, the inclusive growth index is categorized as follows: a scale of 1–3 is considered unsatisfactory, a scale of 4–7 is satisfactory, and a scale of 8–10 is highly satisfactory. Overall, the Inclusive Economic Growth Index (IPEI) of the 10 provinces in Sumatra falls within the satisfactory category. However, in terms of progress, only three provinces have demonstrated an index movement capable of elevating their status toward the highly satisfactory category. These provinces, which have the highest index scores, are Riau Islands (6.10), North Sumatra (5.34), and Bangka Belitung Islands (5.17). These provinces can be considered as having superior economic growth, employment opportunities, and economic infrastructure compared to the other seven provinces. Meanwhile, the index scores of the remaining seven provinces range from 4.50 to 4.90, which is still significantly below the threshold required to reach the highly satisfactory category.

Birdsall (2007) argues that inclusive growth is a type of growth that fosters the expansion and economic capacity of the middle class. According to the Asian Development Bank (2011), there are several reasons why growth must be inclusive: (i) Equity and fairness considerations – Growth should be equitably distributed and inclusive across all levels of society and regions. (ii) The risks of persistent inequality – Growth with ongoing inequality can jeopardize social stability, as the poor and unemployed are more vulnerable to engaging in criminal activities, women are at a higher risk of being drawn into prostitution, and child labor becomes more prevalent, which is undesirable.

Poverty directly affects inclusive growth by limiting individuals' access to education, healthcare, and financial services, thereby hindering skill development and

productivity (Demirgüç-Kunt et al., 2017). High inequality exacerbates this condition, preventing the equitable distribution of growth benefits (Cornia & Court, 2001). In Indonesia, poverty creates a cycle of economic helplessness due to limited physical and social capital (Dimas Resy Ramadhan, 2023). Low purchasing power restricts domestic demand, ultimately slowing inclusive economic growth (Nurul Fadillah, 2021). Furthermore, restricted access to financial services hampers economic inclusion and investment, making poverty a major obstacle to accelerating inclusive growth.

Economic development aims not only to achieve high growth but also to reduce poverty, unemployment, and income inequality. Quality economic growth leads to inclusive growth, ensuring that economic benefits are distributed across all societal levels (Ramos & Lammens, 2013). According to Bappenas, one pillar of inclusive growth is addressing regional development disparities and poverty issues (Silvi Dewi Purwanti & Farida Rahmawati, 2021). However, persistent poverty and inequality remain obstacles to achieving inclusive growth in Indonesia. Economic structure and sectoral composition play a crucial role in fostering inclusive growth, with a stronger agricultural sector believed to accelerate poverty reduction (Anis Rahmawati, 2021). While economic growth is essential for poverty reduction, it alone is insufficient. Without equitable income distribution, even high economic growth will have little impact on poverty alleviation.

Employment plays a crucial role in the relationship between economic growth and poverty alleviation. According to (Jonaidi, 2012) and (Awandari & Indrajaya, 2016), high economic growth should generate more job opportunities, as employment significantly contributes to poverty reduction (Yuniar Sri Hartati, 2021). Unemployment, a macroeconomic issue, directly affects human well-being and is closely linked to long-term economic development and inclusive growth. Consequently, unemployment remains a central topic in political debates. (The World Bank, 2009) emphasizes that inclusive growth can be achieved through labor-intensive industrial expansion and workforce quality improvement, both of which enhance employment and reduce poverty (Felipe, 2012). Research by Dinda (2014) and Qiu & Zhao (2019) highlights that inclusive economic growth is influenced by factors such as economic growth rates, the Gini ratio, years of schooling, and legal frameworks, particularly in developed countries. Other factors like income inequality, regional density, wages, and skills also impact migrant workers in urban inclusivity. However, a study by Lee & Sissons (2016) in the UK found that skilled labor does not significantly contribute to inclusive growth.

Pillar 3 of inclusive development emphasizes enhancing human capital and productive labor as key factors in supporting economic growth. An increase in productive labor must be accompanied by adequate infrastructure and policies (Ramadhan et al., 2019). One of the main indicators of inclusive economic growth is the Human Development Index (HDI) (Tambunan, 2016). Investment in human capital, including improvements in health and education, plays a crucial role in fostering economic growth and poverty alleviation (Raheem, 2018). Higher workforce quality directly impacts productivity and the overall quality of economic output (Mushkin, 1962).

This study focuses on the factors influencing inclusive economic growth in the 10 provinces of Sumatra. Although income inequality in the region is relatively low, there are still significant challenges, such as high poverty rates, an open unemployment rate that remains high compared to the labor force, and human development that is still categorized as moderate. Therefore, this research aims to analyze the impact of income inequality on inclusive economic growth in these provinces, as well as examine how poverty levels, open unemployment rates, and the size of the labor force affect inclusive economic growth in the region. Furthermore, this study will assess the extent to which human development contributes to achieving inclusive economic growth in the 10 provinces of Sumatra.

METHOD

Data Type and Data Source

This study uses combined Panel Data from a data between time series and regional observations, where the time series used in this study in the period 2019-2023, using regional observations or (cross section) 10 Provinces in Sumatra Island covering the regions of Aceh, North Sumatra, South Sumatra, West Sumatra, Riau, Jambi, Riau Islands, Bangka Belitung Islands and Lampung. In this study, secondary data was obtained from the Central Statistics Agency (BPS) in each publication of 10 Provinces in Sumatra and the National Development Planning Agency (BAPPENAS) and other publications. The variables used in this study are:

Table 1: Variable Name, Symbol, Unit, and Variable Description

NO	Variable	Symbol	Unit	Variable Description
1	Inclusive Growth	IPEI	Percent	The Inclusive Economic Growth Index is a tool to measure and monitor the level of inclusiveness of Indonesian development at the national, provincial, and district/city levels. IPEI measures the inclusiveness of development in Indonesia through aspects of economic growth, inequality and poverty, and access and opportunity. IPEI is measured in three groups. 1. Scale 1-3 less satisfactory 2. Scale 4-7 satisfactory 3. Scale 8-10 very satisfactory. Inclusive Growth in percent in 10 Provinces of Sumatra Island in 2019-2023.
Income and Poverty Reduction Indicators				
2	Income Inequality	GINI	Percent	Income inequality is the difference in economic development between one region and another vertically and horizontally which causes disparity or

				unequal distribution of development. The Gini ratio is used as a measure of aggregate income inequality whose numbers range from zero (perfect equality) to one (perfect inequality). Income inequality used in index units in 10 Provinces of Sumatra Island in 2019-2023.
3	Poverty Percentage	PPM	Persen	Percentage of poor people living below the poverty line. The Headcount Index simply measures the proportion categorized as poor. A high percentage of poor people indicates that the poverty rate in a region is also high. The percentage of poor people used in percent units in 10 Provinces of Sumatra Island 2019-2023.
Employment Opportunity Indicator				
4	Open Unemployment Rate	TPT	Percent	The open unemployment rate is the percentage of the number of unemployed to the number of the workforce. The workforce is the working age population (15 years and over) who work or have jobs but are temporarily unemployed, and the unemployed. The open unemployment rate used in percent units in 10 provinces of Sumatra Island in 2019-2023.
5	Labor force	AK	Thousands Souls	The Labor force is the population that has entered working age, whether working, not working, or looking for work. According to the provisions of the Indonesian government, the population that has entered working age is those who are at least 15 years old to 65 years old. The workforce used in units of thousands of people in 10 Provinces on the Island of Sumatra, 2019-2023.
Human Capability				
6	Human Development	IPM	Percent	HDI is a composite index that measures human development from three basic aspects, namely Longevity and healthy

living, knowledge, and decent living standards. The Human Development Index value uses index units in 10 provinces of Sumatra Island in 2019-2023.

Selecting the Best Model for Panel Data

Pooled Least Square (PLS)

In this model it is assumed that all coefficients are constant across all places and time points. The general model form is as follows:

$$y_{it} = a + X_{it}\beta + U_{it} \quad i=1,\dots,N \quad t=1,\dots,T,$$

where i is country, company, etc. and t is time. The assumption of the model above is that the intercepts are all the same and the slope of the coefficient of the variable X is identical for all places. Pooling Cross Sections over Time This model is a pooled least squares model by adding dummy variables. The model form is as follows:

$$y_{it} = a + X_{it}\beta + D_{time}U_{it} \quad i=1,\dots,N \quad t=1,\dots,T,$$

D_{time} shows a time dummy variable which usually starts from the second time sequence, for example the second year and the first year as the basis (α).

Chow Test / Fixed Effect

The Chow test is used to find out whether the panel data regression technique with fixed effects (FE) is better than the common effect (CE) panel data regression model by looking at the residual sum squares. This approach is used to improve LSDV where a large unit cross section will not reduce the degrees of freedom. This fixed effects approach allows for different intercepts between individuals, but the intercept for each individual does not vary over time. This approach is written with the following equation:

$$Y_{it} = \beta_{0i} + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_n X_{nit} + \mu_{it}$$

Where β_{0i} is the intercept and β_1, β_2 are the slope. The difference in intercept in each cross section unit is carried out by adding subscript i . Even though the intercept differs between countries, the intercept for each country does not differ over time, which is called time invariant. To determine a better approach between Pooled Least Squared/PLS and Fixed Effect Model (FEM), the Chow Test is used with the following hypothesis:

- 1) H_0 : Pooled Least Square (PLS)
- 2) H_1 : Fixed Effect Model (FEM)

The basis for rejecting the hypothesis above is to compare the F-statistic calculation with the F-table. Comparison is used if the calculated F result is greater ($>$) than F table then H_0 is rejected, which means the most appropriate model to use is the Fixed Effect Model. Likewise, if the calculated F is smaller ($<$) than the F table then H_0 is accepted with the model used being Pooled Least Square (Widarjono, 2009). The calculation of F Statistics is obtained from the Chow Test with the formula (Baltagi, 2005):

$$F_{\text{count}} = \frac{\frac{SSE_1 - SSE_2}{(n-1)}}{\frac{SSE_2}{(nt-n-k)}} \sim F_{\alpha} (N-1, NT - N - K)$$

Where SSE_1 is the Sum Square Error of the Pooled Least Squared model, SSE_2 is the Sum Square Error of the Fixed Effect Model, n is the number of country cross sections, nt is the number of cross sections multiplied by the number of time series, k is the number of variables free. Meanwhile, the F table is obtained from:

$$F\text{-table} = \{ : df(n-1, nt-n-k) \}$$

Where α is the level of significance used (alpha), n is the number of countries (cross section), nt is the number of cross sections times the number of time series, k is the number of independent variables

Hausman Test / Random Effect

The Hausman test is based on the use of dummy variables in the Hausman method, following the chi-square statistical distribution with a df of k where k is the number of independent variables. If the Hausman statistical value is greater than the critical value then the correct model is the fixed effect model and vice versa. Mathematically, this test can be written as follows:

$$W = (\beta_{fe} - \beta_{re})' [V(\beta_{fe}) - V(\beta_{re})]^{-1} (\beta_{fe} - \beta_{re}) \sim \chi^2(k)$$

Estimate of the actual covariance matrix β_{fe} = estimator from FEM β_{re} = estimator from REM. The independent comparison is carried out within the following hypothesis framework: $H_0 : E(\tau_{xit}) = 0$; then the Random Effect Model (REM) is the right model, $H_1 : E(\tau_{xit}) \neq 0$; then the Fixed Effect Model (FEM) is the right model. The Hausman specification approach follows the Chi-Squared distribution.

Classical Assumption Testing

Multicollinearity Test

Detection of multicollinearity can be done by looking at the value of Variance – Inflating Factor (VIF) from the results of regression analysis. If the VIF value is > 10 then there are high multicollinearity symptoms (Widarjono, 2013). The speed of increasing variance or covariance can be seen by the Variance Inflation Factor (VIF), which is defined as:

$$VIF = \frac{1}{(1 - R^2)}$$

As R^2 approaches 1, VIF approaches infinity. This shows that as the range of collinearity increases, the variance of an estimator also increases and at a limit value can become infinity (Gujarati, 2010).

- 1) H_0 : $VIF > 10$, there is multicollinearity between independent variables
- 2) H_a : $VIF < 10$, there is no multicollinearity between independent variables

Heteroscedasticity Test

Widarjono (2013) A model that is free from heteroscedasticity means that the variance of the error is constant (fixed) or can be said to be homoscedastic. The way to detect the presence of heteroscedasticity is the White test. The model is said to contain heteroscedasticity if the white statistic ($n \times R^2$) is greater than 2 table. Another way is to use the GLS Weight Cross-section method available in the EViews program output estimation. The value of Sum Square Resid (SSR) Weighted compared to Sum Square Resid (SSR) Unweighted. If $SSR \text{ weighted} < SSR \text{ Unweighted}$, it can be said that the model is free from heteroscedasticity problems.

Autocorrelation Test

Widarjono (2013), one of the important assumptions in the OLS method related to the disturbance variable is that there is no relationship between one disturbance variable and another disturbance variable. While autocorrelation is a correlation between members of one observation with other observations at different times. In relation to the OLS method, autocorrelation is a correlation between one disturbance variable and another disturbance variable. So with autocorrelation, the OLS estimator does not produce the Best Linear Unbiased Estimator (BLUE) only Linear Unbiased Estimator (LUE). There are several methods used to detect autocorrelation problems, namely the Durbin-Watson method, the Breusch-Godfrey method.

Linear Regression with Panel Data

The econometric model that will be used to analyze the influence of the Multiple Linear Regression (OLS) Model and Analysis Tools with panel data is used. The analysis method used is time series data from 2019-2023 and cross-section data consisting of 10 provinces in Sumatra Island. To determine the effect of the dependent variable on the independent variable, a panel data regression model is used with the following equation:

$$IPEI_{it} = \beta_0 + \beta_1 GINI_{it} + \beta_2 PPM_{it} + \beta_3 TPT_{it} + \beta_4 AK_{it} + \beta_5 IPM_{it} + \varepsilon_{it}$$

IPEI	=	Inclusive Economic Growth
GINI	=	Development Inequality
PPM	=	Poverty Percentage
TPT	=	Open Unemployment Rate
AK	=	Labor Force
IPM	=	Human Development
i	=	Observation of 10 Provinces (Cross section)
t	=	Research period 2019-2023 (time series)
β_0	=	Coefficient Intercept constant which is a scalar
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$	=	Regression coefficient or slope of each variable
ε_{it}	=	Standard error in the mathematical model, (Error Term)

FINDING AND DISCUSSION

Selection of Panel Data Regression Estimation Techniques

The Chow test is conducted to determine which model is better between common effect and fixed effect, the Hausman test is conducted to determine which model is better between random effect and fixed effect. Here are the test results:

Table 2: Testing of Fixed Effect and Random Effect

No	Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.	Conclusion
1	Fix Effect Model	66,200819	9	0,0000	H ₀ is rejected
2	Random Effect Model	59,200126	5	0,0000	H ₀ is rejected

Source: Eviews, Data processed 2025

Based on the Chow/Fixed Effect Test model shown in Table 4, the Chi-Square Statistic value (66.200819) > Chi Square table (16.919) at df = 9 with a probability level of $0.000 < 0.05$, causing H₀ to be rejected, Therefore rejecting H₀ and accepting H_a so that the fixed effect model is the right model to be used in panel data regression. Based on the Husman/Random Effect Test shown in Table 5, the Chi-Square Statistic value (59.200126) < Chi Square table (11.070) at df = 5 with a probability level of $0.0000 > 0.05$, causing H_a to be accepted, Therefore the model is not significant at 0.05, so the fixed effect model is the right model to be used in panel data regression.

Classical Assumption Testing

Multicollinearity Test

Multicollinearity Detection is used to determine whether there is a relationship between independent variables in a regression. The linear relationship between independent variables in multiple regression can occur in the form of a perfect linear relationship and an imperfect linear relationship. to determine whether or not there are symptoms of multicollinearity, among others, by looking at the Variance Inflation Factor (VIF) value, if the VIF value is less than 10 then it is stated that there is no multicollinearity (Widarjono, 2013), The following is a multicollinearity test for panel data regression:

Table 3: Multicollinearity Testing

NO	Variable	VIF	Conclusion
1	Development Inequality (GINI)	1,0147	In Tolerance Level
2	Poverty Percentage (PPM)	1,0264	In Tolerance Level
3	Open Unemployment Rate (TPT)	1,0663	In Tolerance Level
4	Labor Force (AK)	1,0000	In Tolerance Level
5	Human Development (HDI)	1,0314	In Tolerance Level

Source: Eviews, Data processed 2025

The results of the Multicollinearity level test show that the Variance Inflation Factor (VIF) values of all independent variables have values <10, this explains that all variables have values within the tolerance level.

Heteroscedasticity Test

Heteroscedasticity detection is used to see whether the regression model has a constant variance. The presence of heteroscedasticity in the model causes the estimator to no longer have a minimum variance. To detect heteroscedasticity in this study, the white method is used which is calculated manually by regressing the squared residual obtained from the research regression equation against the independent variables of the study to obtain the R² value which is then multiplied by the number of observations in the study.

Table 4: Heteroscedasticity Testing

Independent Variable	Chi Square Calculate	Chi Square Table	Conclusion
5	3,7675	11,070	Free from Heteroscedasticity

Source: Eviews, Data processed 2025

Heteroscedasticity Testing with the white method with the formula $n * R^2$, the total panel data observations are 50 and the R squared value is 0.075355 then $(50 * 0.075355)$. The calculated Chi-Square value $(3.7675) < Chi\text{-square table } (11.070)$. The conclusion of the final model in the regression is free from heteroscedasticity problems and the hypothesis rejects H_0 .

Autocorrelation Test

Autocorrelation indicates a correlation between one observation member and another observation at different times. In relation to the OLS method, autocorrelation is a correlation between one disturbance variable and another disturbance variable. The Breusch-Godfrey method which is carried out manually is carried out to detect the presence of autocorrelation problems by regressing the residuals obtained from the research equation against the independent variables and the lag of the residuals obtained from the research to obtain the R squared value which is then multiplied by the number of observations (Widarjono, 2013):

Table 5: Autocorrelation Testing

Independent Variable	Chi Square Calculate	Chi Square Table	Conclusion
5	11,604	11,070	Autocorrelation Free with White-Cross section

Source: Eviews, Data processed 2025

Autocorrelation Testing with humidity -1, So with the Breusch-Godfrey method with the formula $n * R^2$, the total panel data observations are 40 and the R squared value is 0.290171 then $(40 * 0.290171)$. The calculated Chi-Square value $(11.604) > Chi\text{-square table } (11.070)$ then the hypothesis results accept H_a . Steps to overcome

Autocorrelation in the final model are carried out using the white method to eliminate the autocorrelation problem by changing the Coef Covariance Method to White-Cross section in the panel option so that the regression equation is free from autocorrelation problems (Widarjono, 2013). The conclusion of the final model in the regression is that it is free from heteroscedasticity problems and the hypothesis has rejected Ho.

Ordinary Least Square (OLS) Estimation Results of Panel Data with Fixed Effect Model

Based on the model tests that have been carried out and from the comparison of the best values, the panel data regression model used is the Fixed Effect Model (FEM). The results of this regression are to determine the direction of the relationship between the independent variables and the dependent variables and to see the real results of the coefficient values obtained. In the previous test, the model has passed the classical assumption test. The following table shows the results of data estimation with a total of 10 observations in the provinces during the 2019-2023 period on the island of Sumatra, so it can be concluded that the overall results of the panel data regression equation are as follows:

Table 6: Ordinary Least Square (OLS) Results in the Fixed Effect Model

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
IPM	15,030	3,7654	3,9915	0,0003
AK	1,2202	0,3918	3,1140	0,0037
TPT	-2,0806	0,6511	-3,1954	0,0030
PPM	-3,6821	1,1701	-3,1466	0,0034
GINI	-4,0216	1,9716	-2,0397	0,0490
C	-113,07	16,902	-6,6896	0,0000
R-squared	0,7770			
F-stat	2413,4			
Durbin-Watson stat	2,4959			

Source: Eviews, Data processed 2025

The Ordinary Least Square (OLS) Mathematical Model shows the results of the regression calculations which are then transformed into mathematical form, then the mathematical model by entering the equation values from the regression as follows:

$$IPEI_{it} = -113,073 - 4,0216GINI_{it} - 3,6821PPM_{it} - 2,0806TPT_{it} + 1,2202AK_{it} + 15,030IPM_{it}$$

(-6,689685) (-2,039747) (-3,146675) (-3,195462) (3,114022) (3,991581)

Based on the results of the Ordinary Least Square Model (OLS) Estimation, In this case, the R-squared is 0.777095, which indicates that the model explains about 77.70% of the variation in the data, R-square interprets the percentage of the influence of all independent variables on the dependent variable, meaning that in this study the independent variables 77% have an effect on Inclusive growth (IPEI), while the remaining 23% are influenced by other variables that are not included in the research model. The DW

value ranges between 0 and 4, Values close to 2 indicate that there is no significant autocorrelation in the residuals, The DW value is 2.495944, which indicates that there is a slight positive autocorrelation in the residuals of the model, but the value is still close enough to 2, which can be ignored, Prob (F-statistic) is the p-value associated with the F-statistic, It measures the global significance of the regression model, In this case, the F-statistic value is 8.715539, and the probability (Prob-F-statistic) is 0.000000, which indicates that the model as a whole is highly statistically significant.

Hypothesis Testing

Results of t-Test (Partial)

The t-statistic test in this study uses a 95% confidence level or $\alpha = 0.05$ and the degree of freedom is obtained from the calculation of $df = n - k - 1$, so the degree of freedom (df) is $50 - 5 - 1 = 44$. The following table shows the results of the partial t-comparison of each variable in the study:

Table 7: Hasil Uji t pada tingkat signifikansi 95% dan df = 44

NO	Independent variables	t-count	t-table	Prob	Conclusion
1	Development Inequality (GINI)	2,039	1,680	0,0490	H ₀ is rejected
2	Poverty Percentage (PPM)	3,146	1,680	0,0034	H ₀ is rejected
3	Open Unemployment Rate (TPT)	3,195	1,680	0,0030	H ₀ is rejected
4	Labor Force (AK)	3,114	1,680	0,0037	H ₀ is rejected
5	Human Development (HDI)	3,991	1,680	0,0003	H ₀ is rejected

Source: Eviews 9, Data processed 2025

Based on the table above, the calculated t value was obtained to carry out the t-statistic test so that the partial test results or t statistics were obtained, then the conclusion was obtained as follows: each variable has a calculated t value > than the t-table, so partially the independent variable has a significant influence on the dependent variable.

F-Statistic Test Results

This test is conducted to determine whether the independent variables together have a significant or insignificant influence on the dependent variable. This study was conducted at a 95% confidence level ($\alpha = 0.05$) with a numerator degree of freedom ($df_1 = k - 1$ or $df_1 = 5 - 1 = 4$) and a denominator degree of freedom ($df_2 = n - k$ or $df_2 = 50 - 5 = 45$).

Table 8: F-test results at 95 percent confidence level

Independent variables	F-count	F-table	Conclusion
5	8,71553	2,579	H ₀ is rejected

Source: Eviews 9, Data processed 2025

The table shows the results of the F test on the OLS regression model where the F-count is $8.715539 > 2.579$, the F-count is greater than the F-table with a confidence level of 95%, so the hypothesis concludes that H₀ is rejected and H_a is accepted, which means that statistically the independent variables in this study together with the variables of

Development Inequality (GINI), Percentage of Poor Population (PP), Open Unemployment Rate (TPT), Labor Force (AK) and Human Development (IPM) have a significant effect on the dependent variable, namely inclusive growth (IPEI).

DISCUSSION

The Influence of Development Inequality (GINI) on Inclusive Economic Growth (IPEI) in 10 Provinces on Sumatra Island

The inequality of development distribution in the Sumatra region is a major obstacle to achieving inclusive growth. This inequality can be related to differences in access to infrastructure, education, health, and economic opportunities between provinces in the region. More advanced provinces, such as North Sumatra and Riau, tend to dominate the regional economy, while provinces with lower levels of development, such as Aceh or Bengkulu, face challenges in catching up. The statistical results of Development Inequality (GINI) have a negative and significant effect at $\alpha: 0.05\%$ with a coefficient value of -4.021642 , if development inequality increases by 1%, inclusive growth (IPEI) will decrease by 4.02% in 10 provinces on the island of Sumatra, assuming other variables are constant. Income inequality has always been the focus of the economy because the problem is complex and caused by various social, economic, and cultural aspects.

An inclusive economic approach through strengthening inclusive growth can be the right approach to help overcome unemployment, poverty, and social and economic inequality. The development inclusiveness index is used to monitor and measure the degree of inclusiveness in Indonesian development, where several factors influence its value. The right factors in determining the value of the development inclusiveness index will help the Government in making decisions and policies to improve the Indonesian economy, (Hartati, YS, 2021). Economic growth is the main requirement for economic development, where the emphasis is on who will grow economic growth. For example, only a handful of people enjoy economic growth. In this situation, poverty and income inequality are getting worse because only a few people benefit from economic progress (Todaro, 2006). (Hapsari, 2019) states that high economic growth will not guarantee that someone will get the same privileges as others. The existence of income inequality can hinder the rate of poverty alleviation and also has the potential to reduce the rate of economic growth. The issue of inequality is not overlooked in the discussion of inclusive growth. (Ali, 2007) states that inclusive growth that focuses on accelerating the expansion of opportunities and access to economic resources for all economic actors, including disadvantaged groups, is an important but insufficient requirement to reduce income inequality.

Inequality has increased, but this does not mean that the rich are getting richer while the poor are getting poorer. Rather, the wealth of the rich is increasing much faster than that of the poor. (Veneri and Murdin, 2016), stated that inclusive growth can be explained as a situation where economic growth generates opportunities for all groups of society and leads to an overall increase in living standards not only in materialistic terms, but also in quality of life. When inclusive growth is achieved, various overall improvements in a country and its society will be seen. These include, for example, lower poverty rates,

extensive and significant improvements in health services, access to primary and higher education, increased skills development, increased opportunities for wage employment and improvements in basic services such as water, electricity, roads, sanitation and housing.

These results are in line with research, (Azizah, M, 2022). Based on the results and discussion (1) The Gini ratio variable has a negative and significant effect on the development inclusiveness index in Java, Economic development is a multidimensional process that includes fundamental changes in social structures, community attitudes, and traditional institutions with the aim of accelerating economic growth, reducing inequality, and eliminating absolute poverty. Economic development aims to develop human beings as a whole in order to improve people's welfare. (Nurlina, Safuridar, & Maula, Z, 2020), Gini Ratio has a direct and significant effect on inclusive economic growth in Aceh Province. The magnitude of the influence of the Gini Ratio Index on economic growth is -0.027 with a significant negative value, it can be concluded that the Gini Ratio Index does not directly have a significant effect on economic growth in Aceh Province. If there is an increase in the Gini Ratio Index by 1 percent, inclusive economic growth in Aceh Province will experience a significant decline of 0.027 percent, assuming other variables are constant. Economic growth without the availability of employment opportunities will not create income equality.

The Influence of the Percentage of Poor Population (PPM) on Inclusive Economic Growth (IPEI) in 10 Provinces on the Island of Sumatra

High poverty rates can limit people's access to basic services such as education, health, and productive employment opportunities, thus narrowing the contribution of the poor to the regional economy. This condition tends to worsen regional inequality, especially in provinces with higher poverty rates, such as Aceh and Bengkulu, compared to more developed provinces such as North Sumatra and Riau. The statistical results of the Poverty Percentage (PPM) have a negative and significant effect at $\alpha: 0.05\%$ with a coefficient value of -3.682148, if the poverty percentage increases by 1%, inclusive growth (IPEI) will decrease by 3.62% in 10 provinces on the island of Sumatra, assuming other variables are constant. Poverty, unemployment and income inequality have always been the focus of the economy, because these problems are very complex, caused by various aspects, both social, economic and cultural. The central and regional governments have implemented various programs to address these issues, including implementing comprehensive development in various fields with an emphasis on achieving highly competitive economic competitiveness based on superior natural resources and quality human resources. However, the implementation of these policies has not provided optimal contributions because the problems of poverty, unemployment and income inequality are still the main focus that must be resolved by the government in order to achieve the targeted inclusive economic development (Anand, Tulin, & Kumar, 2014).

Inclusive growth is often equated with pro-poor inclusiveness, thus growth that is not pro-poor is certainly not inclusive, meaning that higher levels of poverty can lead to less inclusive growth, (Kakwani, Khander, and Son, 2004; in Min Tang, 2008). Poverty is a major obstacle to socio-economic development. Poverty still occurs and various interventions

have failed to produce significant improvements in the Human Development Index. The policy that must be implemented is to design programs that favor the poor effectively and progressively. Poverty alleviation can be realized by empowering communities to develop their productivity, (Sherriffdeen & Olorunfemi, 2016). Identification of demographic, economic, social, and government policies is important for poverty. High poverty is caused by the large number of household members who work in the agricultural sector or work as laborers and have low levels of education and live in houses with dirt/bamboo floors. Economic growth must also be pro-poor; poverty reduction leads to improved income inequality and policies need to ensure access to economic and social opportunities. Human development is needed to improve GI; basic needs must be provided, including clean water, electricity, housing and transport; and finally, good governance with effective policy management and implementation, (Vellala et al., 2014).

This result is in line with the research, (Amponsah, M., Agbola, F. W., & Mahmood, A. , 2023), High poverty has a significant negative effect on reducing inclusive growth, also showing that income inequality has a negative impact on poverty and worsens inclusive growth. Inclusive growth can help reduce poverty, but its impact on income inequality depends on the type of inclusiveness. Inclusive growth moderates the negative impact of income inequality on poverty. From a policy perspective, our results highlight the importance of promoting inclusive growth, indicating that it is important to reduce the negative impacts of poverty and income inequality on livelihoods in Sub-Saharan Africa. Poverty significantly negatively affects inclusive growth in Indonesia The results also show that Indonesia's economic growth reduces economic inequality and increases poverty rates but does not reduce unemployment. Conversely, economic growth increases poverty. The trickle-down effect paradigm assumes that a country's economic growth directly affects people's welfare. Economic growth is necessary but not sufficient to reduce poverty, especially in rapid and sustainable poverty alleviation, (Ernawati, Tajuddin Tajuddin, and Syamsir Nur, 2021).

The Influence of the Open Unemployment Rate (TPT) on Inclusive Economic Growth (IPEI) in 10 Provinces on the Island of Sumatra

The open unemployment rate is one of the main obstacles to achieving inclusive economic growth. Unemployment reflects the lack of involvement of the workforce in productive economic activities, which has a direct impact on decreasing household income and the economic contribution of the community. Provinces in Sumatra with high unemployment rates, such as Aceh and South Sumatra, tend to experience a larger gap in inclusive growth compared to provinces with lower unemployment rates. The statistical results of the Open Unemployment Rate (TPT) have a negative and significant effect at α : 0.05% with a coefficient value of -2.080613, if the open unemployment rate increases by 1 person, inclusive growth (IPEI) will decrease by 2.08% in 10 provinces on the island of Sumatra, assuming other variables are constant. Unemployment is also one of the main problems related to development and economic growth. One of the indicators used to see this is the Open Unemployment Rate and is often used in assessing government performance in the employment sector. Unemployment or often also called jobless is a

term for anyone who does not have a job at all, is looking for a job, works less than two days a week, or is an individual who is trying to get a decent job. The number of job seekers or the number of workers that is not comparable to the number of jobs is usually the cause of unemployment, this also shows the lack of inclusive growth of a region (Amalia, 2014).

According to (Whiteford & Van Seventer, 2000), said that 43% of the causes of inequality are increasing unemployment rates, so one way to reduce and minimize unemployment rates and income inequality is to provide wages that are considered decent and adequate, and prepare jobs for the poor. (Angzila, 2020) and (Latifah et al., 2017) even in one of the causes of the increasing number of unemployed is due to the increase in population that is not balanced by the expansion of employment opportunities, therefore the government is required to carry out a program that can overcome this problem, this will lead to unequal welfare so that income that is increasingly distant between groups will make it difficult to achieve inclusive economic growth.

The concept of inclusive development, employment opportunities in the formal sector are key to the ability of households to improve their welfare. Although there are significant employment opportunities, poverty alleviation does not necessarily occur without ensuring equal opportunities in employment opportunities. Unequal access to employment opportunities or open unemployment rates are often caused by differences in staff skills. Where poor people who lack skills and education cannot compete with wealthier groups. So you are faced with an unbalanced competitive situation. These two factors mean that unemployment and poverty greatly affect inclusive growth, (Hill, H., Khan and J. Khuang, 2012), (Azwar, 2016). The lower the unemployment rate, the higher the growth rate. And vice versa. Thus, this confirms that the government in its efforts to create new jobs seems to be able to minimize the unemployment rate that occurs, while contributing to increasing economic growth. Therefore, the government's program in terms of opening new jobs has two dimensions, namely reducing unemployment and at the same time accelerating inclusive economic growth. As mandated by the SDGs, every country or region must strive to improve welfare that is more distributive, one of which is by reducing the existing unemployment rate (Almutairi, (2020); (Cammeraat, 2020) and (Chu et al., 2020) that a low unemployment rate can accelerate and accelerate a country's inclusive economic growth.

This result is in line with research, (Hidayat, I., Mulatsih, S., & Rindayati, W., 2020), Analysis shows that factors that have a positive influence on inclusive economic growth are household consumption, exports of goods/services, foreign investment, domestic investment, per capita income, and average length of schooling. While the negative influence is the open unemployment rate (TPT) will reduce the inclusiveness of the regional economy and imports of goods/services. An increase in household consumption by 2% will increase the gross regional domestic product by 1.5%, reduce the open unemployment rate by 3.0%, reduce poverty by 10.7% and reduce income inequality by 5.5%. (Anita, R. D., & Udjiyanto, D. W, 2023), The negative impact is in accordance with Adam Smith's classical theory which states that every increase in economic growth will absorb labor so that it can reduce the number of unemployed. In line with this theory, the estimation results show that

when there is an increase in the open unemployment rate of 1 percent, the inclusive economic development index will decrease by 0.039. This also states that the open unemployment rate has decreased along with the increase in economic development.

The Influence of the Labor Force (AK) on Inclusive Economic Growth (IPEI) in 10 Provinces on the Island of Sumatra

The existence of a large workforce, if supported by access to decent and productive jobs, can expand the economic base and increase the distribution of development benefits. Provinces in Sumatra that have a high workforce, such as North Sumatra and Riau, tend to have a greater opportunity to accelerate inclusive growth compared to provinces that have a smaller workforce capacity. However, to ensure this positive impact, policies are needed that encourage inclusive and sustainable job creation. Statistically, the Labor Force (AK) has a positive and significant effect on α : 0.05% with a coefficient value of 1.220204, if the workforce increases by 1 person, inclusive growth (IPEI) will increase by 1.22% in 10 provinces on the island of Sumatra, assuming other variables are constant. If the TPAK is high, it means that the income for the workforce is high because it can produce goods and services, but if the TPAK is low, it means that the population is increasingly prosperous so that they choose to enter the workforce and not participate in the labor market (Faellassuffa & Yuliani, 2022). The greater the TPAK, the greater the workforce and the more people who go to school and take care of the household, the greater the non-workforce, (Indradewa & Natha, 2015).

The amount of labor absorption is reflected in the availability of jobs. The number of job opportunities illustrates the ability of business units to absorb labor. However, sometimes, the rise and fall of the number of industries is not accompanied by jobs. (Barthos & Mansoer, 2011) put forward the elements that influence the workforce, namely (i) market demand for production results is increasing, producers tend to expand their production capacity by adding workers, and (ii) if the capital outlay is not too large, production costs will not be too high so that the selling price of goods per unit is not high. Then, producers will increase production and add workers, but a workforce with high absorption is needed to build shared prosperity in building economic inclusiveness. (Yakubu et al, 2018) stated that the workforce is an asset for developing countries as measured by the level of labor force participation. In addition, this study found that labor force participation is an important driver of more inclusive economic growth and reaches the welfare of many people. (Cabeza-García et al, 2018) who stated that the contribution of the number of male and female labor force will have a positive and significant impact on economic growth. The increase in population, especially in the working age group, will produce a large workforce. The increasing workforce is expected to be able to spur increased economic activity which will ultimately improve people's welfare (Anggoro & Soesatyo, 2013).

This result is in line with research, (Soleh, A., & Suwarni, 2021). Inclusive growth creates economic opportunities for all segments and ensures equal access for the community. High economic growth is expected to have an impact on increasing the supply of jobs and encouraging productive workers to work. inclusive growth using the workforce

approach in provinces in Java, Indonesia, the workforce and workforce show positive results and significantly increase the inclusiveness of the economy. (Safrina, Y., & Ratna, 2023). The increase in the number of working age population which means an increase in the workforce, and balanced with high work productivity, will increase inclusive economic growth, the level of labor force participation is one of the factors that influences the amount of output produced from an economic activity carried out, because the more productive people there are, the more output will increase which will ultimately affect inclusive economic growth due to the availability of human resources.

The Influence of Human Development Index (HDI) on Inclusive Economic Growth (IPEI) in 10 Provinces on the Island of Sumatra

Provinces in Sumatra that have high HDI, such as Riau and North Sumatra, tend to show better inclusive growth performance compared to provinces with relatively low HDI, such as Bengkulu and Aceh. Increasing HDI strengthens the ability of people to participate productively in economic activities, increases household income, and encourages a more equitable distribution of development benefits. To maximize the positive impact of HDI on inclusive growth, policies are needed that focus on increasing access to quality education and health services, poverty alleviation, and social infrastructure development. With an integrated approach, improving the quality of human development in Sumatra Island can make a significant contribution to inclusive and sustainable economic growth. The statistical results of Human Development (HDI) have a positive and significant effect on α : 0.05% with a coefficient value of 15.03002, if the workforce increases by 1 percent, inclusive growth (IPEI) will increase by 15.03% in 10 provinces in Sumatra Island, assuming other variables are constant.

Human development consists of three main concepts, namely based on individual aspects (Rastogi, 2002), knowledge and skills possessed and becoming the main source of economic productivity (Frankel, 1999). Human development can be realized in two ways: humans are utilized as labor based on their quantity. This means that the greater the number of humans will increase labor productivity. The second way is through investment to obtain better human quality to fully support equitable and inclusive economic growth (Suripto, Firmansyah, & Sugiyanto, 2020). Economic growth will increase the provision of resources needed by human development. Increasing resources goes hand in hand with the allocation of human development resources. Increasing resources in the right allocation, for example employment opportunities will have a positive impact on better human development. Inclusive economic growth will be driven by human development. Increasing spending on human resource development and infrastructure is a very important investment in order to improve the quality of human life, (Baseri, B., & Kia, A.F, 2008). One of the elements related to inclusive economic development and growth is the Human Development Index (HDI), (Tambunan, 2015) said that quality economic growth is one of the key indicators included in the inclusive development index.

Increasing human capabilities in accordance with the pillars of inclusive growth through the utilization of human resources as an active role of government and society in improving the quality of human resources. Improving the quality of human resources as an

effective development agent has four components, namely productivity, equity, sustainability and empowerment. This can be achieved by the community having the opportunity to live long and healthy, adequate levels of education, and opportunities to realize the knowledge they have in productive activities. (Dira, A. F., Utomo, K. P., Bangun, M. F. A., Pramularso, E. Y., & Syarief, F. 2023), The opportunity to participate in the development process has three main values, namely survival, self-esteem, and freedom. HDI reflects a more nuanced understanding of human development while being simple enough to remain inclusive (unlike other more complex indices), HDI is based on data that has likely been collected in many countries over several years. HDI criteria are designed to be broad enough to encompass a country's social, political, and economic diversity while being an indication of a country's quality of life. The fulfillment of appropriate human resources greatly helps a country's process towards inclusive growth, (Nainggolan, Lie, Siregar, & Nainggoloan, 2022).

This result is in line with research, (Mohamed, E. S. E, 2020). These results suggest that the government has neglected to invest in building human capital needed for inclusive growth. Human capital has a positive and significant role in the inclusiveness of the economy. The long-run Granger causality test shows a unidirectional causal relationship running from resource rent to GDP growth and from development expenditure to GDP growth. School enrollment, life expectancy and financial development are found to have negative impacts on GDP growth. The government should manage natural resource rent with a policy framework that supports the creation of a virtuous circle between human development and economic growth. If pursued, this will promote sustainable, inclusive and equitable growth in Sudan. (Anita, R. D., & Udjiyanto, D. W, 2023), The human development index has a positive and significant relationship with inclusive economic development. An increase in the HDI by 1 percent will increase inclusive economic development by 0.199. The better the quality of human resources, the higher the efficiency and productivity of a country. Related to inclusiveness, human resource development through increasing knowledge, skills, health, and education can encourage the achievement of economic development. The HDI is one of the indicators to measure the quality of economic development with an index composition of health, education, and standard of living.

CONCLUSION

Inequality in development, poverty, and open unemployment have a negative impact on inclusive growth in Sumatra. A 1% increase in GINI and PPM reduces IPEI by 4.02% and 3.62%, while a 1-person increase in TPT reduces IPEI by 2.08%. To overcome this, a fair economic redistribution policy is needed, increasing access to education, health, and employment opportunities. Economic empowerment programs through skills training, access to business capital, and incentives for the private sector need to be strengthened. In addition, investment in labor-intensive industries, rural infrastructure development, and collaboration between the government, universities, and the private sector in creating jobs must be optimized.

On the other hand, the workforce and human development have a positive impact on inclusive growth, where a 1-person increase in AK increases IPEI by 1.22%, and a 1% increase in HDI increases IPEI by 15.03%. Therefore, the government needs to develop industry-based job training programs, increase women's participation in the workforce, and strengthen employment regulations. Access to quality education, health services, and digital literacy must also be expanded to improve workforce competitiveness. Integration of human development programs with poverty alleviation and cross-sector collaboration are essential to ensure policy sustainability and effectiveness.

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