HOW ECONOMIC DYNAMICS INFLUENCE POVERTY: THE MODERATING POWER OF THE HUMAN DEVELOPMENT INDEX

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Abstract

This study explores how economic dynamics shape poverty levels in Indonesia, with a particular focus on the moderating influence of the Human Development Index. Utilizing a quantitative approach, data were gathered from 34 provinces across Indonesia over the period 2020–2024. Key variables examined include the open unemployment rate, Gross Regional Domestic Product (GRDP), population size, and regional minimum wage, while HDI functions as a moderating factor. The analysis employed multiple linear regression via the Generalized Least Square (GLS) method, followed by Moderated Regression Analysis (MRA) using EViews 12 software. By integrating panel data techniques and interaction effect assessments, the study reveals that both unemployment and population size significantly and negatively impact poverty reduction. In contrast, GRDP shows no statistically significant direct effect. The regional minimum wage demonstrates a significant influence, though its direction varies based on model specifications. Notably, HDI emerges as a powerful factor that not only significantly reduces poverty but also amplifies the negative impact of population size on poverty levels. However, its moderating role on other economic variables remains statistically insignificant. These insights underscore the intricate nature of poverty in Indonesia and emphasize the critical need for inclusive, human-centered development policies to drive meaningful and sustainable poverty alleviation.

Key words: *Economic Growth, Human Development Index,Open Unemployment Rate, Poverty, Regional Minimum Wage*

Abstract

Penelitian ini bertujuan untuk mengkaji pengaruh dinamika ekonomi terhadap tingkat kemiskinan di Indonesia, dengan penekanan khusus pada peran moderasi Indeks Pembangunan Manusia (IPM). Menggunakan pendekatan kuantitatif yang dikumpulkan dari 34 provinsi di seluruh Indonesia selama periode 2020–2024. Variabel utama yang diteliti meliputi tingkat pengangguran terbuka, Produk Domestik Regional Bruto (PDRB), jumlah penduduk, dan upah minimum regional, sedangkan IPM berperan sebagai variabel moderasi. Metode analisis yang digunakan adalah regresi linier berganda dengan model *Generalized Least Square* (GLS), kemudian dilanjutkan dengan Moderated Regression Analysis (MRA) yang diimplementasikan melalui perangkat lunak EViews 12. Proses analisis mencakup teknik data panel dan moderated regression untuk menilai efek interaksi. Hasil penelitian menunjukkan bahwa baik tingkat pengangguran terbuka maupun jumlah penduduk berpengaruh negatif secara signifikan terhadap kemiskinan. Sebaliknya, PDRB tidak menunjukkan pengaruh langsung yang signifikan secara statistik. Upah minimum regional berpengaruh signifikan, namun arah pengaruhnya bervariasi tergantung spesifikasi model. Menariknya, IPM terbukti secara signifikan menurunkan kemiskinan dan memperkuat pengaruh negatif jumlah penduduk terhadap kemiskinan; akan tetapi, efek moderasi IPM terhadap variabel ekonomi lainnya tidak signifikan secara statistik. Hasil ini menegaskan kompleksitas dinamika kemiskinan di Indonesia serta pentingnya penerapan kebijakan inklusif yang berorientasi pada pembangunan manusia untuk mencapai pengurangan kemiskinan yang efektif.

Kata kunci: Dinamika Ekonomi, Indeks Pembangunan Manusia, Kemiskinan

INTRODUCTION

Poverty is a condition in which individuals or groups are unable to meet the basic needs for a decent living. A lack of money and goods to sustain life is the main characteristic of this problem. In the modern era, poverty has become a global issue that must be addressed seriously and is considered a social disease requiring gradual solutions (Sumarsono et al., 2022). The complexity of this problem arises from many interrelated factors, such as income, unemployment, health, education, access to goods and services, and geographical conditions (Dinata et al., 2020a).

The poverty rate in Indonesia itself shows significant variation between provinces. Open Data Jawa Barat records Papua as the province with the highest poverty rate, reaching 27.55 percent, while the Riau Islands have the lowest rate at 2.21 percent. This disparity illustrates inequality in development, where the eastern regions of Indonesia, facing limited infrastructure and access to basic services, tend to have higher poverty rates compared to the more developed western and central regions.

As part of efforts to overcome poverty, economic development becomes a primary focus. Sustainable economic growth is believed to improve community welfare (Ayoo, 2022). However, this growth must be inclusive so that its benefits can be felt by all layers of society, including the poor. This is where the government's role becomes crucial in ensuring the fair distribution of development benefits (Van et al., 2021). Field data reinforces the importance of equitable economic growth. Statistics Indonesia (BPS) data from 2023–2024 shows that provinces with low Gross Regional Domestic Product (GRDP), such as Papua and East Nusa Tenggara, tend to have high poverty rates. Conversely, provinces with high GRDP, such as East Java, demonstrate better socio-economic conditions. Population growth also worsens the situation because the increase in population is often not matched by adequate employment opportunities and basic services (Fajriah, 2021a; Zaki et al., 2023).

Unemployment rate is also a major factor causing poverty. When many individuals lose steady income, their ability to meet basic needs declines, which results in worsening socio-economic conditions (Aderounmu et al., 2021; Tran, 2021). Research proves that high unemployment rates have a positive correlation with increasing poverty rates Purmiyati et al. (2023) and Sumarsono et al. (2022), emphasizing the importance of job creation in poverty alleviation strategies. In the employment context, the Regional Minimum Wage (UMR) is expected to be one of the poverty alleviation solutions. With increased worker income, quality

of life improves (Wiraja & Marwan, 2023). However, if the UMR increase is not managed properly, it can burden small and medium enterprises, ultimately increasing unemployment (Purmiyati et al., 2023a).

There is inconsistency in previous research findings regarding the influence of unemployment rate on poverty. Purmiyati et al. (2023) and Sumarsono et al. (2022) found a significant positive effect, indicating that an increase in unemployment raises poverty due to insufficient income to meet basic needs. In contrast, Hanifah and Hanifa (2021) reported an insignificant negative effect, arguing that some trained unemployed individuals can still fulfill their needs through informal sectors or self-employment. A similar discrepancy is observed in the population variable, where Dinata et al. (2020) and Fajriah (2021) found a significant negative effect on poverty, reasoning that population growth expands labor potential and stimulates economic growth, while Ritonga and Wulantika (2020) argued that population increase lowers living standards and competitiveness in the labor market. Regarding the regional minimum wage (UMR), Fajriah, (2021) stated that raising UMR can help alleviate poverty by improving workers' access to education and social services; however, Purmiyati et al. (2023) cautioned that without adequate economic growth, higher UMR may worsen poverty as employers reduce labor demand. Although the effects of Gross Regional Domestic Product (GRDP) and the Human Development Index (HDI) on poverty tend to be consistent with previous studies, including these variables remains important to complete the analysis and strengthen the validity of the research findings.

This study is important because the varying results on key variables such as unemployment, population, and UMR call for a more comprehensive and contextual examination to better understand the factors influencing poverty in Indonesia. Moreover, this research addresses a gap by incorporating the Human Development Index (HDI) as a moderating variable, given that HDI reflects the quality of human resources which can either strengthen or weaken the impact of economic variables on poverty. Employing HDI as a moderating variable allows for a more holistic analysis of how education, health, and living standards affect the relationship between economic factors and poverty, thereby enabling the formulation of more targeted and effective policy recommendations. By understanding the interconnection between factors such as income, education, and unemployment, this study aims to provide a comprehensive overview of poverty in Indonesia. Furthermore, this research is expected to serve as a foundation for formulating more effective public policies and to

promote inclusive economic development so that the benefits of growth can be enjoyed by all layers of society.

LITERATURE REVIEW

Poverty

De Bruijn & Antonides (2022) state that poverty is a condition of resource scarcity that gives rise to a scarcity mindset, which is a way of thinking characterized by a focus on scarcity that leads to suboptimal economic decisions. Poverty is not only a lack of material resources but also affects thinking patterns and worsens economic conditions. Schilbach et al. (2016) found that poverty reduces mental capacity, causing individuals to focus on short-term problems and neglect the future. Hamilton et al. (2019) added that scarcity increases stress and weakens the ability to evaluate choices, reinforcing the cycle of poverty as both a psychological and material condition.

Open Unemployment Rate

The open unemployment rate is the percentage of the labor force that is jobless but actively seeking employment out of the total labor force (Praja et al., 2023). A high rate reflects an imbalance in the labor market and can potentially exacerbate poverty (Uddin & Rahman, 2022). Theoretically, open unemployment correlates positively with poverty, as job loss reduces household income (Purmiyati et al., 2023; Simbolon et al., 2023; Sumarsono et al., 2022). However, Hanifah and Hanifa (2021) found that in Lamongan Regency, unemployment had a negative but insignificant effect on poverty, indicating the complexity of the relationship between these two variables at the local level.

Gross Regional Domestic Product (GRDP)

Gross Regional Domestic Product (GRDP) measures the total value of goods and services produced in a region over one year (Anggraini & Pujiati, 2022). GRDP per capita reflects the average income of the population and serves as an indicator of welfare and economic growth. An increase in GRDP per capita usually correlates with a reduction in poverty, although uneven distribution can worsen social inequality (Kevin et al., 2022). Ritonga & Wulantika (2020) emphasize that economic growth through GRDP can reduce poverty by creating job opportunities. Therefore, development strategies must promote both growth and equity to achieve sustainable poverty reduction (Fajriah, 2021; Sumarsono et al., 2022).

Population Size

Population size refers to the total number of residents living in a region at a specific time (Obinna & Obiagwu, 2020). A large population can be a significant market potential and

human resource if managed properly. However, if not balanced with proper management, rapid population growth can increase pressure on natural resources, infrastructure, and employment opportunities. Population growth without adequate job opportunities can worsen poverty. Ritonga & Wulantika (2020) argued that rapid population growth increases poverty because uncontrolled population expansion can suppress living standards, while Dinata et al. (2020) and Fajriah (2021b) found that with increased productivity, population growth can reduce poverty.

Regional Minimum Wage (UMR)

The Regional Minimum Wage (UMR) is the minimum wage standard set by local governments to protect workers from low wages and improve their welfare (Purmiyati et al., 2023a). The UMR determination considers the cost of living, labor productivity, and regional economic conditions. An adequate UMR can increase purchasing power and reduce poverty, but if not accompanied by productivity improvements, it may cause unemployment (Fajriah, 2021). Theoretically, increasing UMR is expected to reduce poverty by providing higher income, which enhances workers' purchasing power. Fajriah (2021) shows that a higher UMR can reduce poverty by improving workers' access to education and social services. However, Purmiyati et al. (2023) found that raising UMR could worsen poverty if not supported by sufficient economic growth, as employers might reduce labor demand or offer lower wages. These differing findings highlight the importance of economic context in UMR policy.

Human Development Index (HDI)

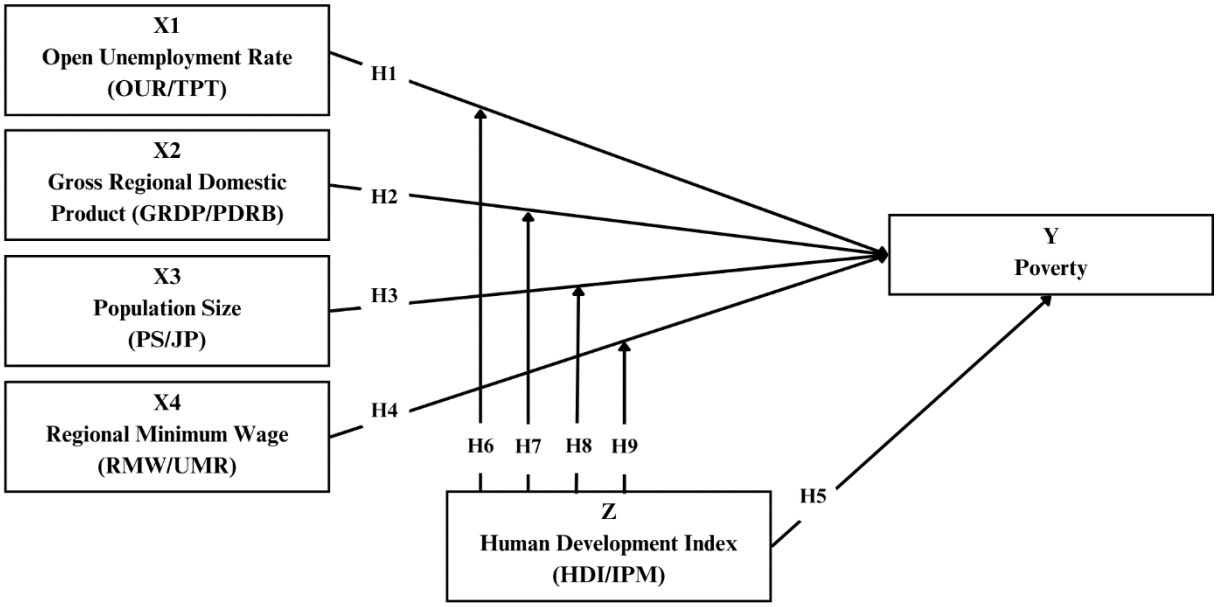
Resce (2021) explains that the Human Development Index (HDI) measures overall human quality of life through three main dimensions: health (life expectancy), education (years of schooling and expected years of schooling), and a decent standard of living (per capita income). HDI is used to assess the level of human development in a region, with high HDI values generally indicating good quality of life and correlating with low poverty rates. An increase in HDI reflects successful development focused on community welfare. In this study, HDI functions as a moderating variable that influences the relationship between other factors and poverty levels. As a moderating variable, HDI not only indicates quality of life but also determines the extent to which independent variables affect poverty. Research in Central Java Province shows that HDI strengthens the effect of economic growth in reducing poverty (Maulani et al., 2023). However, in some cases, HDI does not moderate the influence of other variables such as investment or public spending on poverty.

Research Framework

This study has one dependent variable (Y), namely poverty. The independent variables

(X) consist of five variables: open unemployment rate, gross regional domestic product, population size, and regional minimum wage. There is an additional moderating variable (Z), which is the human development index.

Figure 1. Research Framework



Source: Researcher, 2025

Research Hypotheses

Research hypotheses are provisional statements proposed as initial answers to the issues under study, which will later be tested through data analysis. The hypotheses of this study are as follows:

H1: The open unemployment rate (OUR) has a significant positive effect on poverty.

H2: Gross regional domestic product (GRDP) has a significant negative effect on poverty.

H3: Population size (PS) has a significant positive effect on poverty.

H4: Regional minimum wage (RMW) has a significant negative effect on poverty.

H5: Human development index (HDI) has a significant negative effect on poverty.

H6: HDI can moderate the effect of open unemployment rate on poverty.

H7: HDI can moderate the effect of gross regional domestic product on poverty.

H8: HDI can moderate the effect of population size on poverty.

H9: HDI can moderate the effect of regional minimum wage on poverty.

RESEARCH METHOD

Population and Sample

This study uses the entire population of provinces in Indonesia; however, it only involves 34 provinces. This is because data for the four newest provinces resulting from the recent administrative division in Papua are not yet fully available and valid. Therefore, the research sample consists of 34 provinces with complete and accessible data.

Data Collection Method

This quantitative study uses Panel Data Analysis and Moderated Regression Analysis (MRA) to examine relationships between variables over time and across groups. The dependent variable is poverty rate; independent variables include open unemployment rate, gross regional domestic product (GRDP), population size, and regional minimum wage. The moderating variable is the human development index (HDI). All data were sourced from the Central Bureau of Statistics (BPS), Ministry of Manpower, and the West Java Open Data Portal, ensuring reliability. This approach enables a thorough and valid analysis of poverty dynamics across 34 provinces, accounting for both direct effects and moderation.

Operational Definitions

Table 1. Operational Definition of Variables

Variable	Name	Unit	Operational Definition	Sources
Y	Poverty	%	Percentage of poor population at provincial level, shows the proportion of the population below the poverty line.	West Java Open Data Portal
X1	Open Unemployment Rate (OUR/TPT)	%	The unemployment rate in a region, namely the percentage of the workforce who do not have jobs but are actively looking for work.	West Java Open Data Portal
X2	Gross Regional Domestic Product (GRDP/PDRB)	Billion Rupiah	Gross Regional Domestic Product, the total value of goods and services produced in a province in a given	Central Bureau of Statistics

Variable	Name	Unit	Operational Definition	Sources
			period, usually expressed as a percentage growth.	
X3	Population Number (PN/JP)	Thousand Souls	The total number of inhabitants in an area, measured in thousands of people.	Central Bureau of Statistics
X4	Regional Minimum Wage (RMW/UMR)	Thousand Rupiah	Regional Minimum Wage, namely the minimum wage standard set by the regional government in thousands of rupiah per month.	Ministry of Manpower
Z	Human Development Index (HDI/IPM)	%	Human Development Index, a composite indicator that measures quality of life based on education, health, and income, expressed as a percentage.	Central Bureau of Statistics

Data Analysis Method

The data analysis in this study employs a Panel Data Regression Model using the Generalized Least Square (GLS) approach, selected based on Chow, Hausman, and Lagrange Multiplier tests, followed by Moderated Regression Analysis (MRA) with EViews 12. GLS is chosen to address heteroscedasticity and autocorrelation common in panel data, ensuring efficient and unbiased estimates. MRA, as described by Ghozali (2018), tests the moderating effect of the Human Development Index (HDI) on the relationship between economic variables and poverty, preserving sample integrity while measuring interaction effects. This combined approach provides a robust and systematic analysis of poverty dynamics across 34 Indonesian provinces from 2020 to 2024.

RESULT AND DISCUSSION

Descriptive Analysis

To achieve research objectives, a panel data model is chosen using proper analysis. Key variables are unemployment, GRDP, population, minimum wage, and HDI. Descriptive statistics (mean, median, max, min, standard deviation) are used to analyze variable characteristics. Table 4.1 displays the resulting descriptive statistics.

Figure 2. Descriptive Analysis

	Y_KP	X1_TPT	X2_PDRB	X3_JP	X4_UMR	Z_IPM
Mean	10.21747	5.114235	347664.7	7424.421	2806.727	72.11859
Median	8.665000	4.755000	147926.6	4059.750	2805.245	72.16000
Maximum	26.86000	10.95000	2151041.	50345.20	5067.380	83.08000
Minimum	3.780000	1.790000	28031.44	149.2000	1704.600	60.44000
Std. Dev.	5.130987	1.734131	495306.4	10925.95	590.2921	3.865236
Skewness	1.140226	0.958258	2.238494	2.833017	0.677596	0.080722
Kurtosis	4.031195	4.245104	6.982640	10.10604	4.615702	4.376478
Jarque-Bera	44.36879	36.99847	254.3260	585.0816	31.49988	13.60536
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.001111
Sum	1736.970	869.4200	59102994	1262152.	477143.6	12260.16
Sum Sq. Dev.	4449.268	508.2188	4.15E+13	2.02E+10	58887164	2524.868
Observations	170	170	170	170	170	170

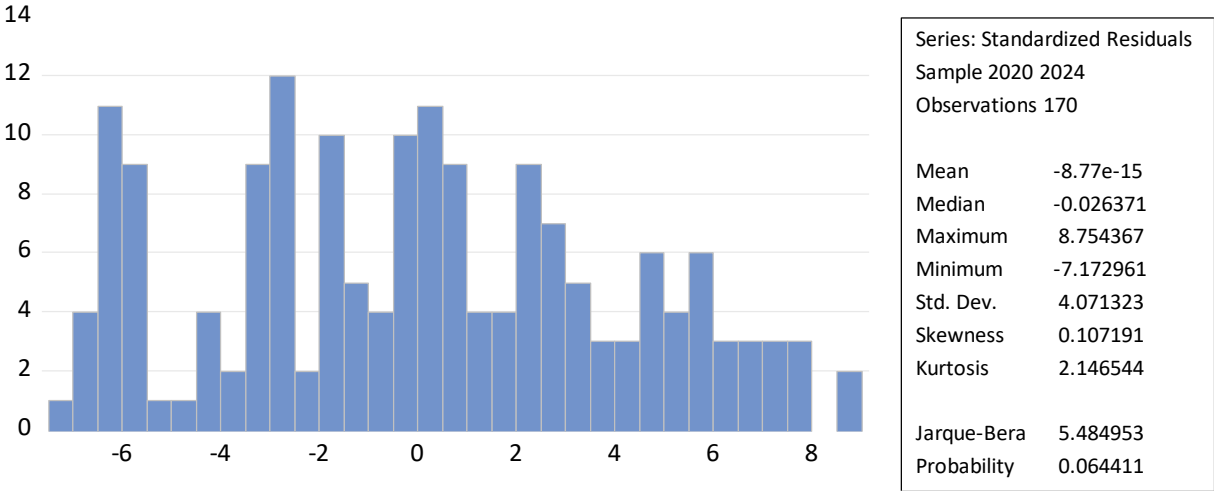
Source: Processed by Eviews 12

Descriptive analysis shows that the average poverty rate (Y_KP) is 10.22% (range: 3.78%–26.86%; standard deviation: 5.13), while the average open unemployment rate (X1_TPT) is 5.11% (range: 1.79%–10.95%; standard deviation: 1.73), indicating notable variation. The average regional GDP (X2_PDRB) is Rp34,764.7 billion (range: Rp28,031.44 billion–Rp215,104.1 billion; standard deviation: Rp49,530.64 billion), highlighting significant economic disparities. The average population (X3_JP) is 7,424,421 (range: 149,200–50,345,200; standard deviation: 10,929,525), reflecting major demographic variation. The average regional minimum wage (X4_UMR) is Rp2,806,727 (range: Rp1,704,600–Rp5,067,380; standard deviation: Rp590,292.1), indicating wage diversity. The Human Development Index (Z_IPM) averages 72.12 (range: 60.44–83.08; standard deviation: 3.87).

Normality Test

Normality test is an important step in statistical analysis to ensure that the data used meet the assumption of normal distribution, so that the results of analyses such as regression, t-test, and ANOVA are valid and unbiased.

Graph 1. Normality Test



Source: Processed by Eviews 12

Based on the residual histogram and the Jarque-Bera test probability value of 0.064411, it can be concluded that the residual data are normally distributed, since this probability value is greater than the significance level of 0.05. This indicates that the normality assumption in the model has been fulfilled, so further analysis can be carried out validly.

Model Selection Test

Next, to determine the best model among Common Effect, Fixed Effect, and Random Effect, several tests are conducted, namely the Chow test, Hausman test, and Lagrange Multiplier test. It was found that the best model is the Random Effect Model.

Table 2. Model Test

Model Test		Score	Best Model
Chow Test	*Prob.(F-statistic)*	0.0000	Fixed Effect
Hausman Test	*Prob.Chi-square*	0.5640	Random Effect
Lagrange Multiplier Test	*Prob.(Both) Breusch Pagan*	0.0000	Random Effect

Source: Processed by Eviews 12

From the model testing results, it was found that the Random Effect Model is the best. If the best model is the Random Effect Model (REM), classical assumption tests such as

normality, multicollinearity, heteroskedasticity, and autocorrelation are not required, as REM uses the Generalized Least Squares (GLS) estimation method, which automatically addresses these issues (Bai et al., 2021).

Multiple Linear Regression Analysis (Model I)

The previous test it was found that the best model was the Random Effect Model, so the following are the results of the analysis.

Table 3. Multiple Linear Regression (Random Effect Model for Model 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_TPT	-0.288073	0.046896	-6.142737	0.0000
X2_PDRB	-1.09E-06	7.16E-07	-1.517782	0.1310
X3_JP	-1.54E-05	6.92E-06	-2.223572	0.0275
X4_UMR	0.000861	0.000338	2.551478	0.0116
Z_IPM	-0.710206	0.035908	-19.77827	0.0000
C	60.98479	2.111655	28.88009	0.0000

Source: Processed by Eviews 12

Model equation form:

$$Y_{it} = 60.98479 - 0.288073TPT_{it} - 1.09x10^{-6}PDRB_{it} - 1.54x10^{-5}JP_{it} + 0.000861UMR_{it} - 0710206IPM_{it} + \varepsilon_{it}$$

Equation and T-test Description

The intercept value of 60.98479 indicates that when all independent variables such as the open unemployment rate (TPT), gross regional domestic product (PDRB), population (JP), regional minimum wage (UMR), and human development index (IPM) are zero or constant, the poverty rate is estimated to be 60.98%. The TPT variable has a coefficient of -0.288073 with a probability value of 0.0000, meaning that every 1% increase in the open unemployment rate will decrease the poverty rate by 0.29%, and this effect is statistically significant. In contrast, the PDRB variable, with a coefficient of -1.09E-06 and a probability value of 0.1310, shows that although the direction of the effect is negative, the influence of PDRB on poverty is not statistically significant. The population variable (JP) has a coefficient of -1.54E-05 and a probability of 0.0275, indicating that an increase in population has a significant negative effect on the poverty rate.

Furthermore, the regional minimum wage (UMR) shows a positive effect with a coefficient of 0.000861 and a probability of 0.0116, indicating that an increase in UMR will significantly raise the poverty rate. Lastly, the human development index (IPM) has a

coefficient of -0.710206 and a probability of 0.0000, meaning that an increase in IPM significantly reduces the poverty rate. Thus, the variables TPT, JP, UMR, and IPM have significant effects on poverty, while PDRB does not show a significant effect. Therefore, the variable that aligns with the hypothesis is the human development index's effect on poverty, whereas for the other variables, although they have significant effects, the direction of the relationship does not correspond, which is why the results do not fully support the hypothesis.

For the T-test, based on the table, each independent variable was tested individually, with significance values as follows: open unemployment rate 0.0000, GRDP 0.1310, population size 0.0275, regional minimum wage 0.0116, and human development index 0.0000. From these probability values, it can be concluded that the open unemployment rate, population size, minimum wage, and human development index have a significant effect on poverty, while GRDP does not have a significant effect because its significance value is greater than 0.05.

Moderated Regression Analysis (Model II)

The following are the results of the analysis with the HDI variable as a moderating variable.

Table 4. Results of Moderated Regression Analysis (Model II)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TPT_IPM	0.017232	0.010187	1.691588	0.0927
PDRB_IPM	-9.56E-08	8.50E-08	-1.125329	0.2621
JP_IPM	-4.19E-06	1.58E-06	-2.657273	0.0087
UMR_IPM	1.65E-05	3.65E-05	0.452073	0.6518
C	67.04895	10.79381	6.211796	0.0000

Source: Processed by Eviews 12

Model equation form:

$$Y_{it} = 67.04895 - 1.566497TPT_{it} + 7.21\times10^{-6}PDRB_{it} + 0.000307JP_{it} - 0.000339UMR_{it} - 0.7990124IPM_{it} + 0.017232TPT\_IPM_{it} - 9.56\times10^{-8}PDRB\_IPM_{it} - 4.19\times10^{-6}JP\_IPM_{it} + 1.65\times10^{-5}UMR\_IPM_{it} + \varepsilon_{it}$$

Equation and T-test Description

The intercept value of 67.04895 indicates that when all independent variables are constant, the dependent variable is estimated at 67.05. Among the variables, only population (JP_IPM) has a statistically significant effect, with a coefficient of -4.19E-06 and a p-value

of 0.0087, meaning an increase in population significantly reduces the dependent variable. Meanwhile, TPT_IPM, PDRB_IPM, and UMR_IPM do not have significant effects, as their p-values are above 0.05. Therefore, it is appropriate for the discussion of the t-test, the results that are in accordance with the hypothesis are the number of populations.

Moderation Test

According to Model I, the open unemployment rate has a significant negative coefficient (-0.288073, p = 0.0000). However, its interaction with HDI as a moderator shows a positive coefficient (0.017232, p = 0.0927 > 0.05), indicating HDI does not significantly moderate this relationship. Still, the effect of unemployment becomes less negative after moderation.

For GRDP, Model I show a negative coefficient (-1.09E-06) that is not significant (p = 0.1310). The interaction between GRDP and HDI as a moderator yields a coefficient of -9.56E-08 (p = 0.2621), which is also not significant. Thus, HDI does not significantly moderate the effect of GRDP on the dependent variable.

For the population variable, Model I show a significant negative coefficient (-1.54E-05, p = 0.0275). The interaction between population and HDI is also negative (-4.19E-06) and significant (p = 0.0087), meaning HDI significantly moderates the effect of population on the dependent variable, strengthening its negative influence.

Lastly, UMR has a significant positive coefficient (0.000861, p = 0.0116), but its interaction with HDI shows a coefficient of 1.65E-05 (p = 0.6518), which is not significant. Thus, HDI does not significantly moderate the effect of UMR on the dependent variable, so its influence remains unchanged after moderation.

F-Test Statistic for Both Models

Table 5. Results of F-Test Statistics of Models I and II

Model	F-statistic	Prob(F-statistic)
Model I	155.5181	0.0000
Model II	89.69371	0.0000

Source: Processed by Eviews 12

According to the table, Model I has an F-statistic of 155.5181 and a probability of 0.000 at the 5% significance level. This means that open unemployment, regional GDP, government education budget, population, regional minimum wage, and human development index together significantly affect poverty in 34 provinces from 2020 to 2024. Model II has

an F-statistic of 89.69371 and a probability of 0.0000 at the 5% significance level. Therefore, open unemployment, regional GDP, government education budget, population, and regional minimum wage with human development index as a moderator also jointly significantly influence poverty in these provinces from 2020 to 2024.

Coefficient of Determinant for Both Models

Table 6. Results of Determination Coefficient Test

Keterangan	Adjusted R-square
Model I	0.820516
Model II	0.825277

Source: Processed by Eviews 12

The table above shows that the coefficient of determination for Model I is 0.820, or 82%. This means that all the independent variables in the study contribute to explaining 82% of the variation in poverty, while the remaining 18% is influenced by other variables outside the model. For Model II, the coefficient of determination is 0.825, or 83%. This indicates that all independent and moderation variables together explain 83% of the variation in poverty, with the remaining 17% influenced by other variables not included in the study.

Discussion

The Impact of Open Unemployment Rate on Poverty

Analysis results indicate that unemployment has a significant negative influence on poverty. However, unemployment does not always directly cause poverty, as the characteristics of unemployed individuals can vary greatly. Some unemployed individuals, for example, are skilled workers who can still meet their living needs through various alternatives, such as participating in the informal sector, running independent businesses, or engaging in unregistered work. Therefore, not all unemployed individuals experience poverty. Although unemployment may reduce income and welfare, this effect is not absolute or universal. High unemployment can worsen social and political conditions, ultimately hindering long-term economic development.

Research by Suripto and Subayil (2020) support this view, demonstrating that not all jobless individuals are poor, and not all employed individuals are automatically prosperous. In urban areas, many people choose jobs that match their education level and refuse work perceived as less suitable, while managing their finances well. Thus, the relationship between

unemployment and poverty in Indonesia is highly complex and shaped by various socio-economic factors, including employment sector, education level, and access to economic opportunities. Empirical studies in Indonesia show that the effect of unemployment on poverty is often not significant or may even be negative, as some people working in the informal or agricultural sectors with low incomes remain in poverty. Therefore, a reduction in unemployment does not always lead to a proportional decrease in poverty. This finding is consistent with the study by Hanifah and Hanifa (2021), which found that unemployment had a negative but not significant effect on poverty in Lamongan Regency, emphasizing that the relationship between unemployment and poverty can vary depending on local context and socio-economic conditions.

The Impact of Gross Regional Domestic Product on Poverty

Gross Domestic Regional Product (GRDP) serves as the primary indicator of a region's economic growth, and analytical results indicate a negative influence on poverty, although this effect is not always statistically significant. An increase in GRDP reflects greater production of goods and services in a region, which can consequently raise community income and reduce poverty levels. However, the statistically insignificant negative effect suggests that, despite economic growth, reductions in poverty are not always proportional. This is due to income distribution inequalities, low quality of human resources, and unequal access to economic opportunities, resulting in the benefits of economic growth not being evenly distributed across all segments of society. Therefore, in addition to promoting economic growth, poverty reduction efforts must also be accompanied by income redistribution, improvements in human resource quality, and expanded access to economic opportunities (Anggraini & Pujiati, 2022).

These findings are consistent with previous studies in various regions of Indonesia, such as the research by (Putria et al., 2023), which demonstrated that GRDP has a negative and significant effect on poverty. Their study emphasizes that increases in GRDP can reduce poverty when economic growth is accompanied by equitable improvements in community welfare. Another study by Syaifullah and Malik (2017) in ASEAN-4 also supports the negative relationship between GRDP and poverty, although the level of significance may differ depending on regional context and research period. They indicate that while GRDP has the potential to reduce poverty, its effectiveness largely depends on structural factors and policies that ensure the equitable distribution of economic growth benefits across all societal layers.

The Effect of Population Size on Poverty

This study found that population size has a significant negative effect on the poverty

rate, meaning that an increase in population actually contributes to a decrease in poverty. This phenomenon can be explained from economic and social dynamics perspectives: controlled population growth stimulates higher demand for goods and services, opens new employment opportunities, and strengthens the domestic market base. Additionally, an increase in the productive population can enhance overall economic productivity, thereby positively impacting poverty reduction.

This finding is consistent with research in the Riau Islands Province, which demonstrated a significant negative effect of population size on poverty, where population growth contributed to poverty reduction through increased economic activity and job creation (Sembiring et al., 2023). Fajriah (2021) also supports this finding, stating that population size negatively affects poverty in Indonesia, in contrast to unemployment and inflation, which have positive effects on poverty. Therefore, an increase in population, when accompanied by improvements in human resource quality and appropriate development policies, can significantly reduce poverty levels.

The Impact of Regional Minimum Wages on Poverty

The issue of how Regional Minimum Wages (UMR) affect poverty rates is a central concern in development economics, as raising UMR is often seen as a way to improve worker welfare. This study shows that UMR has a significant positive effect on poverty, meaning that increases in the minimum wage can potentially raise poverty levels. This may occur because higher minimum wages often burden small and medium enterprises as well as the informal sector, which are dominant in some regions, particularly those reliant on low-wage labor. Rising labor costs may lead employers to reduce their workforce or halt new hiring, thereby reducing employment opportunities and workers' income.

However, the relationship between UMR and poverty is highly complex and influenced by other variables, such as the Human Development Index (HDI). This study also finds that through improvements in HDI which includes education, health, and living standards, increases in UMR can have an indirect positive effect on poverty reduction. This suggests that higher minimum wages, when supported by improvements in community quality of life, can sustainably strengthen purchasing power and welfare. Previous research, such as (Hanifah & Hanifa, 2021), also indicates that increasing UMR alone, without improvements in human resource quality and a robust labor market, is insufficient to significantly reduce poverty.

The Influence of Human Development Index on Poverty

The Human Development Index (HDI) has a significant negative impact on the poverty rate, indicating that every increase in HDI will reduce the level of poverty. This is because HDI reflects quality of life, encompassing education, health, and per capita income. An increase in HDI reflects improvements in access to quality education, adequate health services, and better job opportunities, thus enhancing the community's ability to meet basic needs and escape the poverty line. Research by (Gai et al., 2025) states that a significant increase in HDI can reduce poverty, as improvements in human resource quality strengthen purchasing power and community welfare. Similar findings were identified, the increase in the Human Development Index (HDI) significantly contributes to reducing the poverty rate in Central Java Province, as it reflects improvements in education, health, and living standards, which directly enhance the quality of human resources and expand opportunities for people to escape poverty through better access to employment, income, and social services (Arwani et al., 2023). Research in Riau Province also found a significant contribution of HDI in reducing poverty, with a negative coefficient of -0.172. The explanation for this finding is that an increase in HDI contributes to improvements in the quality of education and health, which in turn enhances community productivity and income (Putri, 2024).

The Moderating Role of the Gross Regional Domestic Product on the Relationship Between Open Unemployment Rate and Poverty

Analysis results indicate that the Human Development Index (HDI) does not significantly moderate the relationship between open unemployment rates and poverty. This suggests that while HDI which reflects education, health, and living standards plays a crucial role in enhancing community welfare, its influence is not strong enough to substantially alter the direct impact of unemployment on poverty. Scientifically, this can be explained by the fact that unemployment remains the dominant risk factor for poverty, whereas HDI provides only limited protection. Thus, although improved HDI can enhance individuals' capacity to face economic challenges, its effect does not fully counterbalance the influence of unemployment on poverty. In other words, better quality of life, as reflected by higher HDI, can offer social protection and prevent unemployment from always leading to poverty. This phenomenon aligns with research suggesting that unemployment does not inevitably cause poverty due to compensatory mechanisms such as family support, informal sector involvement, or unrecorded self-employment (Rivana & Gani, 2024).

The reversal of the open unemployment rate coefficient's direction regarding poverty after moderation by the Human Development Index (HDI) is conceptually meaningful, though

statistically insignificant. The initial negative coefficient reflected a counterintuitive phenomenon where rising unemployment appeared to correlate with reduced poverty, likely due to factors such as labor migration or unrecorded informal sector participation. However, upon introducing the interaction between open unemployment and HDI, the coefficient became positive, albeit not statistically significant. This suggests that, conceptually, HDI may counteract the negative impact of unemployment on poverty, communities with higher HDI benefit from better education, health, and social protection, compensating for unemployment's effect. Nevertheless, since this positive coefficient is not statistically significant, there is no empirical evidence that HDI truly moderates the unemployment-poverty relationship. The findings indicate that while HDI can reduce the magnitude of unemployment's negative influence and conceptually reverse its effect, its impact is insufficient to fully neutralize unemployment's role, suggesting that other variables outside the model also contribute to the complex relationship between unemployment and poverty (Derek et al., 2023).

The Moderating Role of the Gross Regional Domestic Product on the Relationship Between Gross Regional Domestic Product and Poverty

A high Gross Regional Domestic Product (GRDP) should correlate with a reduction in poverty, as it reflects economic growth that ideally increases income and creates job opportunities. However, in this case, the effect of GRDP on poverty becomes statistically insignificant after the Human Development Index (HDI) is included as a moderating variable. This indicates that economic growth alone is not sufficient to reduce poverty without an improvement in human resource quality. Increasing HDI, which encompasses education, health, and living standards, is crucial to ensure that the benefits of economic growth are felt by the poor (Mandey et al., 2023). In other words, even if GRDP increases, without an improvement in human resource quality, the benefits of economic growth cannot be fully realized by the poor, and thus, poverty reduction does not occur significantly.

Conceptually, if the absolute magnitude of the coefficient between GRDP and poverty increases after including HDI as a moderating variable—even though it is not statistically significant, this suggests that, in theory, an improvement in human resource quality (HDI) can strengthen the negative effect of GRDP on poverty, so that economic growth accompanied by good human resource quality is expected to reduce poverty more effectively. However, since this result is not statistically significant, the empirical role of HDI as a moderator has not been confirmed, so this logic only holds conceptually and cannot be used as a firm basis for policy conclusions.

The Moderating Role of the Gross Regional Domestic Product on the Relationship Between Population Size and Poverty

The population variable shows a negative and significant effect on poverty, indicating that an increase in population tends to decrease poverty rates. This can be interpreted as, in certain contexts, population growth serves as a source of productive labor, thereby increasing income and community welfare. However, when the effect of population is moderated by the Human Development Index (HDI), this negative impact becomes even stronger and more significant. HDI moderation demonstrates that the quality of human development encompassing education, health, and living standards can strengthen the effect of population growth in reducing poverty. In other words, an increase in HDI enhances society's ability to utilize the potential of a large population to address poverty more effectively.

The strengthening of the negative effect of population on poverty through HDI moderation underscores the importance of human resource quality in poverty alleviation mechanisms. A higher HDI reflects better socio-economic conditions, so a growing population is not just a burden but also a productive asset capable of driving economic growth and poverty reduction. Therefore, development policies that focus on improving HDI will maximize the benefits of population growth, ensuring that an increase in population is accompanied by improved quality of life and significant poverty reduction. This approach emphasizes the synergy between population quantity and human development quality as a key element in poverty reduction strategies.

The Moderating Role of the Gross Regional Domestic Product on the Relationship Between Regional Minimum Wages and Poverty

The analysis results indicate that the Human Development Index (HDI) does not have a significant effect in moderating the relationship between Regional Minimum Wage (UMR) and poverty levels. Statistically, this moderation variable does not reach the required level of significance, so it can be concluded that improving human resource quality through HDI has not yet been able to change the dynamic of UMR's effect on poverty. This condition is caused by other, more dominant socio-economic factors such as inequality in access to education or disparities in health infrastructure which are not fully accommodated in this moderation model.

Research findings regarding the effect of Regional Minimum Wage (UMR) on poverty moderated by the Human Development Index (HDI) indicate that, conceptually, HDI has the potential to strengthen the positive effect of UMR on poverty reduction, even though the moderation result is not statistically significant. This suggests that, under certain conditions,

improvements in human resource quality (reflected in a higher HDI) can maximize the benefits of minimum wage policies in driving poverty reduction, as better-educated and healthier populations are more capable of utilizing improved job opportunities and income. However, since the moderation effect of HDI is not statistically significant, it cannot be empirically confirmed that HDI truly strengthens the positive effect of UMR on poverty reduction; these findings still emphasize the importance of human development as a complement to minimum wage policies so that their impact on poverty reduction can be more optimal.

CONCLUSION

This study highlights the complex dynamics between economic variables, human development, and poverty in Indonesia. Main findings reveal that open unemployment has a significant negative effect on poverty, though this relationship is neither linear nor universal, as not all unemployed automatically fall into poverty due to diverse characteristics like informal sector involvement or family support. The Human Development Index (HDI) does not significantly moderate the unemployment-poverty relationship, yet the positive direction of the interaction coefficient suggests HDI's potential to shift unemployment's impact through enhanced adaptive capacity via education and health.

Gross Regional Domestic Product (GRDP) as an economic growth indicator also negatively affects poverty, but the effect is not always significant, indicating incomplete economic inclusivity due to unequal benefit distribution. While HDI moderation of GRDP is not statistically significant, the consistently negative coefficient direction implies that human development could strengthen positive growth impacts if paired with equitable access and improved human resource quality. Population size has a significant negative effect on poverty, showing that population growth with improved human resource quality can drive economic activity and reduce poverty. HDI moderation strengthens this effect, demonstrating the synergy between population quantity and quality as key to demographic-based poverty reduction. Meanwhile, the regional minimum wage (UMR) has a significant positive effect on poverty, as wage increases may burden small businesses and reduce informal sector jobs. HDI does not significantly moderate this relationship, but improving human resource quality remains vital to mitigate negative effects through productivity gains.

Directly, HDI has a significant negative effect on poverty, confirming the critical roles of education, health, and living standards in boosting welfare. However, HDI's moderating role

for other economic variables is limited statistically. Thus, poverty alleviation in Indonesia requires a multidisciplinary approach integrating economic growth, quality job creation, human resource development, and social protection. HDI should be the development foundation, with implementation strengthened through effective education funding, industry-needs-based skills training, and minimum wage regulations that consider productivity and business capacity. Only comprehensive policy synergy can achieve sustainable poverty reduction.

Based on the findings of this study, future researchers are advised to further investigate the role of the informal sector, social support, and the distribution of economic growth benefits, as well as evaluate the impact of minimum wage policies on small businesses and the informal sector. Research can also focus on improving HDI components such as education and health to strengthen communities' adaptive capacity to economic changes. For the government, it is important to enhance investment in education and health, design minimum wage policies that consider the capacity of small businesses, and promote inclusive economic growth alongside strengthening social protection. The synergy of human development and economic policies, as well as skills training based on industry needs, is essential for effective and sustainable poverty reduction.

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