



Analysis of the Impact of Human Capital and Local Government Budget (Social Assistance) on Poverty Levels in Indonesia from 2013 to 2023

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Abstract: This study aims to analyze the effect of human capital and APBD (social assistance) on poverty levels in Indonesia during the period 2013–2023. Human capital is measured through three main variables: average years of schooling, life expectancy, and social assistance spending in the Regional Government Budget (APBD). This research uses a quantitative approach with panel data regression, analyzing 10 provinces with the highest poverty rates. The results show that average years of schooling and life expectancy have a negative and significant effect on poverty, indicating that improvements in education and health contribute to reducing poverty levels. Meanwhile, social assistance spending through APBD does not have a significant effect on poverty. This suggests that social spending

has not been effective in reducing poverty, possibly due to ineffective targeting. These findings emphasize the importance of improving human capital and evaluating the effectiveness of social assistance programs.

Keywords: Human Capital, Poverty Rate, Average Years of Schooling, Life Expectancy, APBD

Introduction

Poverty is one of the most complex development issues faced by almost all countries, especially developing countries such as Indonesia. This problem is not only about the inability to meet basic needs, but also reflects inequality in access to education, health, and economic opportunities. Ravallion (in Barika, 2013) describes poverty as a condition of isolation and powerlessness, characterized by hunger, inability to access health services, and the loss of basic rights such as education and decent work. Thus, poverty is a multidimensional problem that requires cross-sectoral and long-term handling.

Although Indonesia has experienced relatively stable economic growth and become the largest economy in Southeast Asia (World Bank, 2021), inequality and poverty remain serious challenges. Data from the Central Statistics Agency (2010–2023) show a downward trend in poverty nationwide, from 13.3% in 2010 to 9.4% in 2023. However, the data also indicates that this decline is not evenly distributed across regions. Eastern Indonesia consistently reports higher poverty rates compared to western regions. This disparity

highlights the need for strategic interventions to address the inequality in development outcomes between regions.

One approach that can be used to understand and overcome poverty is through human capital strengthening. The Human Capital Theory developed by Gary Becker emphasizes that investment in education and health will produce more productive individuals who are able to contribute to economic growth. In the Indonesian context, improving the quality of education through increasing the average length of schooling and expanding access to health services through increasing life expectancy are important indicators in poverty alleviation efforts. Additionally, the role of local governments in allocating social assistance budgets through the Regional Revenue and Expenditure Budget (APBD) is also a crucial supporting factor in accelerating the reduction of poverty rates.

Previous studies have mostly focused on the relationship between economic growth and poverty, but few have specifically examined the contribution of human capital factors to poverty using a regional approach that takes into account the differences in characteristics between provinces in western and eastern Indonesia. Therefore, this study aims to fill this gap by analyzing the impact of average years of schooling, life expectancy, and local social assistance spending on poverty levels in ten provinces representing the two major regions of Indonesia over the period 2013–2023.

This study is expected to provide theoretical contributions to the development of studies on human capital and poverty, while also offering practical insights for central and local governments in formulating more inclusive and equitable development policies. By considering inter-regional disparities and the potential contribution of human resources, the findings of this study are expected to support efforts to achieve the Sustainable Development Goals (SDGs), particularly the first goal: no poverty.

Research Method

This study uses a quantitative approach with secondary panel data combining time series and cross-sectional data. A quantitative approach was chosen to analyze the influence of independent variables on dependent variables in a systematic and measurable manner. The data used covers 10 provinces in Indonesia representing the western region (Aceh, Banten, West Kalimantan, Bangka Belitung, East Java) and the eastern region (Southeast Sulawesi, Maluku, NTT, North Maluku, West Sulawesi) during the period 2013–2023. The data source was obtained from the Central Statistics Agency (BPS).

The dependent variable in this study is the poverty rate, measured using the basic needs approach with the indicator of the percentage of the poor population according to the BPS. The independent variables consist of: (1) Average Years of Schooling (AYS) as an indicator of education, (2) Life Expectancy (LE) as an indicator of health, and (3) social

assistance expenditure in the Regional Budget (APBD) as an indicator of local government intervention. These three variables reflect elements of human capital and the role of fiscal policy in influencing poverty levels.

The analysis was conducted using panel data regression with the help of EViews software. The estimation model used was determined through model selection tests, namely the Chow test to compare the Common Effect Model and Fixed Effect Model, the Hausman test to compare Fixed and Random Effects, and the Lagrange Multiplier test to determine between Common and Random Effects. The final model was analyzed using the Fully Modified Ordinary Least Squares (FMOLS) approach to obtain estimates of the long-term relationship between variables, with the prerequisites of co-integration and stationarity fulfilled.

Before testing the hypothesis, a series of classical assumption tests were conducted, including normality (Jarque-Bera), multicollinearity (VIF and Tolerance), heteroscedasticity (Glejser test), and autocorrelation (Breusch-Godfrey test). Statistical testing was performed using partial tests (*t* - *t* e s t s), simultaneous tests (*F* - *t* e s t s), and the coefficient of determination (R^2) to assess the contribution of independent variables to the variation in the dependent variable. The regression model used in this study is formulated as follows:

$$TK_{it} = \alpha + \beta RLS_{1it} + \beta AHH_{it} + \beta APBD_{it} + e_{it}$$

Description:

TK : Poverty Rate

α : Constant

β : Regression coefficient of the independent variable

It : Individual variable *I* and period *t*

RLS : Average Years of Schooling (X_1)

AHH : Life Expectancy (X_2)

APBD : APBD (Social Assistance) (X_3)

e_{it} : Error term

Results and Discussion

This study analyzes panel data from 10 provinces in Indonesia representing western and eastern regions during the period 2013 to 2023. Based on descriptive statistics, it was found that the average poverty rate was 15.45%, with a minimum value of 4.67% and a maximum of 30.16%. The average years of schooling recorded was 8.79 years, life expectancy reached 69.84 years, and social assistance spending (APBD) per year averaged Rp182.63 billion.

MODEL SELECTION

1. Chow Test

If the Chow test results yield a probability value less than the significance level of 0.05, then H_0 is rejected and H_1 is accepted, indicating that the appropriate model to use is the Fixed Effect Model (FEM). Conversely, if the probability value is greater than 0.05, then H_0 is accepted and H_1 is rejected, indicating that the more appropriate model to use is the Common Effect Model (CEM).

Effect Test	Statistic	d.f	Prob.
Cross-section F	172.643141	(9.97)	0
Cross-section Chi-Square	311.772694	9	0

Based on the results of the Chow Test regression, the probability value is 0.0000 or below 0.05. Therefore, H_0 is rejected and H_1 is accepted, so the appropriate model to use is the Fixed Effect Model (FEM).

2. Hausman Test

The Hausman test is used to select the best model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). With the hypothesis

- If the probability of < 0.05 , then H_1 is accepted and the appropriate model is FEM.
- If the probability of > 0.05 , then H_0 is accepted and the appropriate model is REM.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random	8.86405	3	0.031

The Hausman test results show a probability value of 0.0312. This indicates that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, so that the most appropriate model to use in panel data regression is the Fixed Effect Model (FEM). Therefore, based on the results of the Chow Test and the Hausman Test, it can be concluded that the best model used in this study is the Fixed Effect Model.

Classical Assumption Test

1. Multicollinearity Test

The multicollinearity test is a method in regression analysis used to test whether there is a strong linear relationship between independent variables (free variables) in the model.

	X1	X	X
X1	1	0.1075	-0.035964
X2	0.107505	1.00	0.044777
X3	-0.035964	0.044777	1

The results of the multicollinearity test indicate that all independent variables in the model—namely Average Length of Schooling, Life Expectancy, and APBD—have correlation values below 0.8. This indicates that there is no strong linear relationship between the independent variables, so there is no multicollinearity. Thus, the three variables can be used simultaneously in the regression model without affecting the validity of the estimation.

2. Heteroscedasticity Test

The heteroscedasticity test is used to identify whether there is a difference in the variance of the errors (residuals) in a regression model.

Variable	Prob.
C	0.022
X	0.450
X2	0.0995
X3	0.125

Based on the heteroscedasticity test, the independent variables X1, X2, and X3 have probability values above 0.05. This means that there is no indication of heteroscedasticity in the three independent variables, so the model is considered to meet the homoscedasticity assumption.

T-test (Partial Test)

The t-test aims to determine the partial effect of independent variables on the dependent variable by comparing the t-calculated value and the t-table value. If the t-calculated value exceeds the t-table value or the probability value is less than $\alpha = 0.05$, then the independent variable is considered to have a significant effect on the dependent variable.

Variable	Coefficient	Std. Error	t-statistic	Prob
C	40.21027	8.786858	4.576183	0.0000
RLS (X1)	-1.321670	0.2263	-5.839988	0.0000
AHH (X2)	-0.264435	0.132994	-1.988317	0.0496
APBD (X3)	0.002654	0.002897	0.91616	0.361

The t-test results indicate that the variables Average Length of Schooling (ALS) and Life Expectancy (LE) have a significant effect on poverty levels, with significance values of 0.0000 and 0.0496 (< 0.05), respectively. The negative coefficients of both variables indicate that an increase in RLS and HLE can reduce poverty levels. Meanwhile, the APBD variable has a significance value of 0.3619 (> 0.05), so it does not have a significant effect on poverty statistically.

F-test (Simultaneous Test)

The F-test results indicate that the variables Average Length of Schooling (X1), Life Expectancy (X2), and Social Assistance APBD (X3) simultaneously have a significant effect on poverty levels. This is indicated by the significance value of < 0.05 , thus rejecting the null hypothesis. Therefore, the three independent variables collectively influence the dependent variable.

f-Statistic	317.07
Probability of F-statistic	0

The F-test results indicate that the F-statistic value is 317.0707 with a probability of 0.000000 (< 0.05), thus rejecting H_0 . This means that the variables Average Length of Schooling, Life Expectancy, and APBD simultaneously have a significant effect on the poverty rate.

Coefficient of Determination Test (R^2)

The coefficient of determination (R^2) test shows how much the independent variables can explain the variation in the dependent variable. The higher the R^2 value (closer to 1), the stronger the model's ability to explain changes in the poverty rate. Conversely, a low R^2 value reflects the weak contribution of the independent variables to the dependent variable.

R-squared	0.975140
Adjusted R-squared	0.972065
Standard Error of Regression	0.879213

The results of the coefficient of determination test show an R-squared value of 0.9751, which means that 97.51% of the variation in poverty levels can be explained by the RLS, AHH, and APBD variables. The remaining 2.49% is influenced by other factors outside the model. The adjusted R-squared value of 0.9721 also confirms that the model has a high level of stability.

Discussion

The results of the analysis indicate that the variables of Average Length of Schooling (ALS), Life Expectancy (LE), and Social Assistance Budget (SAB) simultaneously have a significant effect on poverty levels in Indonesia. However, in part, only ALS and LE are proven to have a significant effect, while SAB does not show a statistically significant effect.

1. ALS has a negative and significant effect on poverty levels with a probability value of 0.0000 and a coefficient of -3.1275. This supports the Human Capital Theory, which states that increased education improves human capital quality and expands access to decent jobs, thereby reducing poverty. This study is also consistent with the research by Yusuf

& Hayati (2023), though results may vary in specific regions depending on labor market conditions.

2. AHH also shows a negative and marginally significant effect ($p = 0.0496$). These results indicate that the higher the level of public health, the lower the poverty rate. However, its effectiveness depends on adequate economic and social support systems. High AHH does not always guarantee increased productivity if it is not accompanied by economic protection and services for the elderly. This study aligns with the findings of Fauzan (2023), who found that AHH significantly influences poverty, although the direction of the influence may vary across regions.
3. The social assistance APBD has a probability value of 0.3619, which means that it has no significant effect on poverty. This indicates that social spending allocations through the APBD are not yet effective, possibly due to weak planning, data collection, and distribution. This finding reinforces the study by Lewis & Smoke (2017), which states that the effectiveness of social assistance is highly dependent on local government governance.

Conclusion

The results of the panel regression analysis show that education (RLS) and health (AHH) have a negative and significant effect on poverty levels in Indonesia during the period 2013–2023. This means that increases in average years of schooling and life expectancy contribute to poverty reduction. Conversely, social assistance spending through the local budget does not show a significant effect, indicating the need for evaluation in its implementation. This finding underscores the importance of human capital development as the primary strategy for poverty alleviation.

Researchers suggest that the central and regional governments need to strengthen investment in the education and health sectors through equal access and improved service quality. Social assistance programs also need to be optimized through improved data collection and monitoring. Further research should include other variables such as income inequality and unemployment to gain a more comprehensive understanding.

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