JDEP
(Jurnal Dinamika Ekonomi Pembangunan)

ISSN (Online): 2614-2546
Volume 8 Nomor 1, Januari 2025
DOI: 10.33005/jdep.v8i1.663

Determination of Education, Poverty, and GDP per Capita on Economic Growth in Indonesia

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Diterima: 23 November, 2024 | Revisi: 16 Januari, 2025 | Diterbitkan: 30 Januari, 2025

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh pendidikan, kemiskinan, dan PDB per kapita terhadap pertumbuhan ekonomi di Indonesia melalui pendekatan analisis regresi data panel di tujuh provinsi selama periode 2017-2022 dengan menggunakan alat bantu Eviews. Hasil penelitian menunjukkan bahwa kemiskinan memiliki pengaruh negatif signifikan terhadap pertumbuhan ekonomi, di mana tingkat kemiskinan yang tinggi akan menghambat produktivitas dan pertumbuhan ekonomi. Sebaliknya, pendidikan memiliki pengaruh positif yang signifikan terhadap pertumbuhan ekonomi, yang memperkuat pentingnya investasi dalam meningkatkan kualitas sumber daya manusia untuk mendukung inovasi dan daya saing. Selain itu, PDB per kapita juga memiliki hubungan positif yang signifikan dengan pertumbuhan ekonomi, yang mencerminkan peran kapasitas produktif dan daya beli masyarakat dalam mendorong aktivitas ekonomi. Studi ini menegaskan pentingnya kebijakan yang terintegrasi, termasuk pengentasan kemiskinan, peningkatan kualitas pendidikan, dan optimalisasi pengelolaan sumber daya ekonomi untuk mencapai pertumbuhan ekonomi yang inklusif dan berkelanjutan.

Kata kunci: *Tingkat pendidikan, kemiskinan, PDB per kapita, pertumbuhan ekonomi*

ABSTRACT.

This study aims to analyze the effect of education, poverty, and GDP per capita on economic growth in Indonesia through a panel data regression analysis approach in seven provinces during the period 2017-2022 using the Eviews tool. The results show that poverty has a significant negative impact on economic growth, where high poverty rates hinder productivity and economic development. In contrast, education has a significant positive effect on economic growth, reinforcing the importance of investing in improving the quality of human resources to support innovation and competitiveness. In addition, GDP per capita also has a significant positive relationship with economic growth, reflecting the role of people's productive capacity and purchasing power in driving economic activity. This study confirms the importance of integrated policies, including poverty reduction, improving the quality of education, and optimizing the management of economic resources to achieve inclusive and sustainable economic growth.

Keywords: *Education level, poverty, GDP per capita, economic growth*

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1. INTRODUCTION

Poverty is a fundamental problem in life, which occurs in individuals and groups who struggle to fulfil basic needs due to limited access to education and employment opportunities (Ulya, 2018). Economic growth is the primary goal of the North Maluku provincial government, aimed at increasing per capita income and reducing poverty (Benu & Sondakh, 2018). From 2007 to 2021, the poverty rate in North Maluku showed a consistent downward trend, with a peak of 11.97% in 2007 due to inflation-induced increases in commodity prices. At the same time, the regional gross domestic product reached its highest level of 16.40% in 2021, driven by an increase in people's income from natural resource management (Harmanto, 2022). This phenomenon supports Romer (1990) view in endogenous growth theory, which emphasises the importance of investment in human capital and innovation to achieve sustainable growth, as well as Lewis (1954) idea that modernisation of traditional sectors through efficient resource management can increase productivity and reduce poverty.

As a person's level of education increases, the quality of human labor improves, thereby impacting the economic growth of the country positively (Barro, 2001). Accourding to (Sukirno, 2004) Education is an investment for a country economic development. Based on Solow (1956), besides the level of education, another factor influencing economic growth is technological advancement. Technological progress affects output changes periodically. Technological growth can lead to increased output per worker because technology appears effective from the capital (Sukirno, 2015).

A growth economy is a gradual increase in a country's output per person over a longer period of time (Tarigan, 2005). Every country has the same goal, which is to accelerate economic growth to create prosperity for its citizens. In the 1960s, economic growth did not reach these levels and did not significantly reduce poverty rates. However, it is important to remember that economic growth is not always associated with a significant reduction in the number of poor people. In efforts to address poverty through development programs, it is crucial to consider economic strategies that address reducing factors that trap families, regions, and the country as a whole in poverty cycles, where past poverty can perpetuate future poverty. (M P Todaro & Smith, 2011) What is commonly referred to as socialization through various channels of scientific development information. Accourding to (Sutarno & Kuncoro, 2003) An economy is deemed to have grown or developed when its economic activities exceed previous levels. By enhancing economic growth, a country can attain greater levels of prosperity and economic well-being.

The average income of individuals in a country is known as per capita income (Dengah & Rumate, 2014). The sum of a country's national income divided by its population over a certain period to calculate per capita income. This

measure allows for comparisons of living standards across years within a country. Additionally, it acts as a gauge of the success of government development initiatives, their efficacy, and the ramifications of those developments. The total value of finished goods and services generated by the whole economic sector in a region, or the value added by all enterprises operating within that region, is represented by the gross regional product (Murib et al., 2018)

Education, poverty, and GDP per capita have a mutually influencing relationship on economic growth in Indonesia. Education plays an important role as an instrument of poverty alleviation and a driver of economic growth through improving the quality of human resources, in accordance with the human capital theory by Schultz (1961). Poverty, which is often an obstacle to growth, can be overcome by investing in education and infrastructure, as explained by Michael P Todaro & Smith (2020). GDP per capita, as an indicator of economic well-being, reflects higher productivity and consumption, which in Solow (1956) theory of economic growth is influenced by physical capital accumulation and increased labor productivity. Research by Hanushek & Woessmann (2008) confirms that improving education quality has a significant impact on innovation and competitiveness, while Ravallion, Chen, & Sangraula (2007) show that inclusive economic growth can reduce poverty. In Indonesia, government efforts such as the 20% state budget allocation for education, the Indonesia Smart Card program, and inclusiveness-based policies contribute to poverty reduction, increased GDP per capita, and sustainable economic growth.

Based on the description above, researchers have identified various issues affecting several provinces in Indonesia concerning education, poverty, and per capita GRDP, leading to inconsistencies in one of Indonesia's poorest provinces despite high levels of welfare. Consequently, researchers are keen to investigate the Determinants of Education, Poverty, and Per Capita GRDP on Economic Growth: A Comparative Study across Several Provinces in Indonesia from 2017 to 2022.

2. RESEARCH METOD

This study uses quantitative descriptive analysis with panel data to understand the effect of poverty rate, education, and GRDP per capita on economic growth in seven Indonesian provinces during the period 2017-2022. Data obtained from the Central Bureau of Statistics (BPS) were analyzed using panel data regression with Eviews software to identify the relationship and significance between variables. This approach was chosen because panel data allows a more comprehensive analysis through a combination of cross-section and time series dimensions, and is able to control for interprovincial heterogeneity. In panel data analysis, three methods are used to estimate the regression model: Pooled Least Squares (PLS) or Common Effect approach, Fixed Effects (FE) or Fixed Effects Model (FEM), and Random Effects or Random Effects Model (REM). using F,

Chow, Hausman, and Lagrange Multiplier (LM) statistical tests. This method refers to (Widarjono, 2007) which mentions the importance of selecting the right regression model to increase the validity of the analysis results in panel data. The use of data from official sources such as BPS also ensures reliability and consistency in hypothesis testing and interpretation of regression results.

This research employs the following:

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Y represents the economic growth rate of seven provinces in Indonesia, including North Maluku, Papua, East Nusa Tenggara, South Sumatra, Central Sulawesi, East Java, and Central Java. X1 stands for the poverty variable, X2 for the education variable, and X3 for the per capita GRDP variable.

The F-statistic test is used to choose between Pooled Least Squares (PLS) and Fixed Effects (FE) models. If the F-probability is smaller than α (0.05), then the more appropriate model is FE. Conversely, if the F-probability is larger than α, then the preferable model is PLS. The Hausman test is applied to decide between Fixed Effects and Random Effects models. If the test results indicate significance (Prob. Chi-Square < α), then the Fixed Effects model is chosen. If it is not significant (Prob. Chi-Square > α), then the more suitable model is Random Effects. If the model fits as Random Effects, then the LM test is performed as the third selection step. However, if the model fits as Fixed Effects, the interpretation of the regression model continues with hypothesis testing and determination coefficient.

3. RESULT AND DISCUSSION

3.1. Reserch Result

Description Statistic

Statistik deskriptif mengenai variabel yang digunakan yaitu Kemiskinan, Pendidikan dan Domestik Regional Bruto Per kapita terhadap Pertumbuhan Ekonomi di 7 provinsi di Indonesia pada periode tersebut 2017-2022 adalah sebagai berikut:

Variable	Obs	Mean	Std. Dev	Minimum	Maximum
Economic Growth	42	5.410714	5.825667	-15.72000	22.94000
Education	42	14.70333	6.534405	6.300000	27.69000
Poverty	42	42.06619	32.12032	9.080000	89.83000
GDP percapita	42	4.202143	7.269135	-20.13000	21.18000

Based on the descriptive statistics presented, the education variable has a mean of 4.202143 and a median of 4.535000, with a maximum value of 21.18000

and a minimum of 21.18000, highlighting the low average level of education in some regions, despite education playing an important role in increasing productivity and alleviating poverty as explained in Schultz (1961) human capital theory. Research by Hanushek & Woessmann (2019) confirms that education quality, measured through learning outcomes, has a direct impact on economic growth through increased innovation and global competitiveness. Meanwhile, the poverty variable has a mean value of 42.06619 and the median is 17.45000, with a maximum value of 89.83000 and a minimum of 9.080000, indicating significant inequality, in line with Lewis (1954) theory of economic dualism that explains the gap between the modern and traditional sectors. Research by Ravallion & Chen (2019) shows that poverty reduction is significantly dependent on inclusive economic growth, especially in regions with more equitable income distribution.

The GDP per capita variable, with a mean of 14.70333 and a median of 12.62750, as well as a maximum value of 27.69000 and a minimum of 6.300000, indicates uneven economic potential, supporting Solow (1956) theory that economic growth is influenced by capital accumulation and labor productivity. The study by Dabla-Norris, Ji, Townsend, & Unsal (2017) highlights that increasing labor productivity through investment in education and infrastructure drives sustainable economic growth in developing countries. In addition, research by (Hilmawan et al., 2023) in Indonesia shows that an increase in GDP per capita is often followed by a decrease in poverty levels, although the role of education as a moderating variable is significant in accelerating this positive impact. Information on skewness and kurtosis in the data distribution reveals patterns of variation and the presence of outliers, which are relevant for further analysis. With these descriptive statistics, the study provides a strong basis for understanding the relationship between the variables of education, poverty, GDP per capita, and economic growth in Indonesia, and supports the importance of investing in education and poverty reduction to achieve inclusive economic growth.

Model Selection Test

Chow Test

effect test	statistic	d.f.	prob.
cross-section F	2.458.587	-6,31	0.0463
cross-section Chi-square	15.958.752	6	0.0140

The probability value is less than 0.5, thus rejecting H0, indicating that the Fixed Effect Model is the best model.

Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Cross-Section Random	7.968.949	3	0.0467

The probability value is less than alpha (0.05), indicating that the Fixed Effect model is the best model.

Classic Assumption Test

This testing phase is retrieved to verify that the research data adheres to classical assumptions and yields appropriate BLUE estimators. The tests encompass Normality Test, Multicollinearity Test, and Heteroskedasticity Test.

Normality Test

	Statistic	Prob.
Skewness	-0.5370536584479957	0.7043847250197261
Skewness 3/5	0.4411918353893661	0.3295370617428797
Kurtosis	2.00415905529981	0.02252612137493
Normality	3.608700852007288	0.1645813296144273

According to the test results, the probability value of JB is 0.1645813296144273, which exceeds the alpha threshold of 0.05, suggesting that the residuals follow a normal distribution.

Multikolinierity Test

	X1	X2	X3
X1	1.000000	-0.132840	0.054495
X2	-0.132840	1.000000	0.097013
X3	0.054495	0.097013	1.000000

After examining the relationships between variables, a multicollinearity test was conducted using pairwise correlation, revealing that the paired values for each independent variable are < 0.85. Thus, it can be concluded that there is no issue of multicollinearity.

Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12. 80462	17.38193	0.736663	0.4669
X1	-0.001342	0.004021	-0.333815	0.7408
X2	-0.263904	0.417275	-0.632445	0.5317
X3	0.459980	1.838782	0.250155	0.8041

All independent variables have values more than 0.05, according to the test results. Following this criterion, the data is deemed free from heteroskedasticity if the probability values are above 0.05, suggesting that heteroskedasticity is not a problem.

Penel data Regresion Of Fixed Effect Model

Dependent Variable: Y
Method: Panel Least Squares
Date: 06/13/24 Time: 17:43
Sample: 2017 2022
Periods included: 6
Cross-sections included: 7
Total panel (unbalanced) observations: 41

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	76.27738	19.64899	3.881999	0.0005
X1	0.001883	0.004545	0.414415	0.6814
X2	-1.244616	0.471699	-2.638581	0.0129
X3	-6.200363	2.078607	-2.982941	0.0055

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.564062	Mean dependent var	5.412195
Adjusted R-squared	0.437500	S.D. dependent var	5.898030
S.E. of regression	4.423524	Akaike info criterion	6.019971
Sum squared resid	606.5946	Schwarz criterion	6.437915
Log likelihood	-113.4094	Hannan-Quinn criter.	6.172163
F-statistic	4.456785	Durbin-Watson stat	2.424453
Prob(F-statistic)	0.000828		

Analisis hasil uji T(Uji Hipotesis)

- The t-Statistic for Variable X1 is 0.414415 with a probability of 0.6814 (>0.05), indicating that Variable X1 has a significantly negative effect on Variable Y.
- The t-Statistic for Variable X2 is -2.638581 with a probability of 0.0129 (<0.05), indicating that Variable X2 has a significantly positive effect on Variable Y.
- The t-Statistic for Variable X3 is -2.982941 with a probability of 0.0055 (<0.05), indicating that Variable X3 has a significantly positive effect on Variable Y.

Analisis Persamaan Regresi

76.2773778294 + 0.00188347575841X1 - 1.24461633551X2 - 6.20036312757X3

- The constant value obtained is 76.2773778294, suggesting that if the independent variables increase by one unit on average, the dependent variable also rises by 76.2773778294.
- The regression coefficient for Variable X1 is 0.00188347575841, indicating a positive relationship where an increase in Variable X1 results in an increase of 0.00188347575841 in Variable Y.
- The regression coefficient for Variable X2 is 1.24461633551, meaning that an increase in Variable X2 leads to an increase of 1.24461633551 in Variable Y.
- The regression coefficient for Variable X3 is 6.20036312757, indicating that an increase in Variable X3 results in an increase of 6.20036312757 in Variable Y.

Analisis Hasil Uji F(Simultan)

The F-Statistic value is 4.456785 with a Prob. F-Statistic value of 0.000828 (<0.05). Therefore, it is concluded that the independent variables (Education, Poverty and GDP Percapita) have a significant simultaneous impact on the dependent variable (Economic Growth).

Koefisien Determinanc Test

With an Adjusted R Square of 0.437500, the independent variables collectively account for 43.7% of the variations in the dependent variable. A number of factors outside the purview of this study influence the remaining 56.3%.

3.2. Discussion

a) The connection between poverty and economic growth in Indonesia
Poverty is understood as the lack of ability to attain a basic standard of living (Hidayat & Woyanti, 2021). The economic challenges in Indonesia pose obstacles to its economic growth. These issues stem from high poverty rates, inadequate education levels, and a shortage of job opportunities that can generate sufficient income for its residents. Consequently, efforts to speed up economic growth become challenging(Sisnita & Prawoto, 2017). (Salsabella, Hidayat, & Kusuma, 2020) Unemployment is a multifaceted problem influenced

by complex and interconnected factors that are not always straightforward to grasp. Left unchecked, unemployment can lead to social instability and may potentially exacerbate poverty. According to theories on poverty, it can stem from individual factors like personal weaknesses and choices (as outlined in Neoliberalism theory by Shanon) or from a poverty culture characterized by traits such as apathy, lack of initiative, resignation to fate, an unstable financial system, inadequate education, a lack of ambition for future development, and high levels of welfare and violence (Marginali and Lewis theory) (M P Todaro & Smith, 2011).

H1: Poverty adversely affects economic growth.

b) The connection between education and economic growth

Based on the T-test result, with a statistic of -2.982941 and a probability with value 0.0055 (< 0.05), it is inferred that education has a statistically significant positive effect on economic growth. When the population of an area has higher levels of education, it enhances the quality of the population. These results are consistent with findings from mention the specific researcher or study (Yuhendri, 2013)(Didu & Fauzi, 2016) and (Nugroho, 2016) This suggests that literacy rates have a significant positive effect on economic growth. The positive regression coefficient indicates that for each additional year of average schooling per person annually, GDP increases by 50%, assuming other variables remain constant.

H2: Education has a significant positive impact on economic growth

c) The correlation between GDP per capita and economic growth

GDP Percapita is an indicator that shows how well the average population of a country can afford to buy goods and services they require (Sukirno, 2004), GDP per capita has a statistically significant positive impact on Economic Growth, with a probability value of 0.0055 (<0.05). The coefficient of 6.20036312757 indicates that an increase in GDP per capita by 1% leads to a 62% increase in Economic Growth. These findings align with research conducted by mention the specific researcher or study (Safitri, 2021)(Maulida & Sari, 2015) The per capita income in a region contributes to the economic growth within that region.

H3: Per capita income positively and significantly influences economic growth

4. CONCLUSION

Based on the previous discussion, this study aims to analyze the relationship between poverty, education, and GDP per capita on economic growth in Indonesia. Based on the statistical test method used, the results show several findings, namely:

1. poverty has a negative impact on economic growth.

Poverty in Indonesia, caused by factors such as low levels of education, high unemployment, and lack of employment, is a major obstacle to accelerating economic growth.

2. education has a significant positive effect on economic growth.
   Where population education is proven to increase GDP by 50%, which suggests that investment in education results in a more productive and innovative workforce due to the importance of literacy levels to support economic growth.
3. GDP per capita has a significant positive effect on economic growth
   GDP per capita not only illustrates economic prosperity, but an increase in GDP per capita reflects an increase in people's productive capacity and purchasing power, which in turn boosts overall economic activity.

Overall, the results confirm that poverty, education, and GDP per capita are key variables that interact with each other in determining economic growth in Indonesia. Poverty alleviation through investment in education and increasing GDP per capita are important strategies to promote inclusive and sustainable economic growth.

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