



Determinants of Poverty in Indonesia: Does Per Capita Income Matter?

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Abstract

Poverty in Indonesia has decreased significantly over the past 50 years, but per capita income does not yet indicate deprivation of basic needs. This study aims to identify the determinants of poverty in Indonesia through an economic and social aspect. Data sample used includes poverty rates and socio-economic aspects from 34 provinces in Indonesia for the period 2015-2022, which were analyzed using panel data regression with random effect model. The novelty of this study lies in the socio-economic variables representing financial capability and basic needs. This study found that per capita income, average years of schooling, life expectancy, access to clean water, and access to electricity have negative and significant effects, while unemployment, Gini coefficient, and poverty line have positive and significant effects on poverty in Indonesia. Poverty alleviation can be accelerated not only by increasing per capita income, but also by government policies that equalize income distribution and reduce deprivation of basic needs. Policymakers are expected to improve economic growth, education, healthcare, access to clean water and electricity, reduce income inequality and unemployment, and maintain purchasing power to alleviate poverty in Indonesia.

Keywords: Gini coefficient, Per capita income, Poverty, Poverty alleviation, Poverty line, Unemployment

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INTRODUCTION

Poverty is the inability of people to meet their basic needs due to deprivation of resources, choices, and capabilities (Lundahl et

al., 2021). World Bank has defined poverty based on a poverty line that reflects purchasing power parity. Poor people have incomes below the poverty line, which is defined as absolute

poverty at US\$ 2.15/day, lower-middle poverty at US\$ 3.65/day, and upper-middle poverty at US\$ 6.85 based on 2017 PPP. However, there are other poverty measurements to identify poverty rate accurately. Poverty should not only be measured by monetary aspect, but also by the ability to meet basic needs such as education, health, and a decent standard of living.

Poverty rate in Indonesia has decreased significantly from 60% in 1970 to 9.36% in 2023 (Statistics Indonesia, 2024). This poverty alleviation over the past 50 years is attributed to rapid economic growth (Hill, 2020). Indonesia has undergone a structural transformation from a predominantly agricultural economy to a manufacturing economy, which has led to an increase in per capita income.

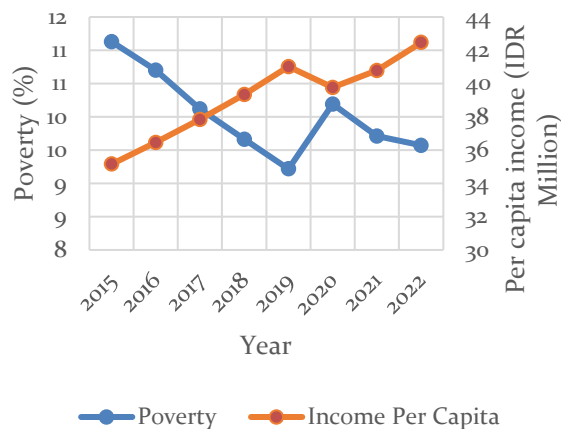


Figure 1. Poverty and Per capita income
Source: Statistics Indonesia, 2024

Based on Figure 1, increased per capita income is followed by decreased poverty. Increased per capita income promotes an increased purchasing power to meet basic needs. In 2020, Indonesia experienced COVID-19 pandemic, which had direct and indirect effects on the health of people and Indonesian economy (Gibson & Olivia, 2020). The economic recession

in 2020 has resulted in decreased per capita income to IDR 39.77 million and increased poverty to 10.19%. This further emphasizes that poverty rate in Indonesia is highly dependent on per capita income.

Poverty rate in Indonesia is measured based on purchasing power, which is set as poverty line in each region. People are considered to be poor if their per capita income falls below the poverty line. This absolute poverty measurement is adopted from World Bank. However, there has been a shift in measuring poverty from absolute poverty to relative poverty, as well income-based poverty to multidimensional poverty (Zou et al., 2023).

Alkire & Foster (2011) found that measuring poverty using an income-based approach leads to different results than multidimensional poverty. The differences in poverty measurement can lead to inaccurate government policies to poverty alleviation. Income poverty does not directly indicate the population's inability to access education, health, and a decent standard of living.

Furthermore, poverty can also be categorized according to age, gender, body weight, and physical activity to provide more accurate calculations of individual consumption needs. Productive elderly people and head of households working in the agricultural sector are the poorest groups in Indonesia compared to others (Priebe, 2016).

Previous studies have been conducted to identify the determinants of poverty in Indonesia. Miranti (2017) found that distance from capital city has a significant positive effect, while per capita income and access to clean water have a negative effect. Budi Setiawan & Adzim (2018) found that investment has a significant positive effect, while average

expenditure per capita has a significant negative effect on poverty. Amaluddin (2020) found that education and economic growth have a significant negative effect on poverty.

Dartanto et al., (2020) found that poverty alleviation through education, healthcare, formal job, access to clean water and sanitation, as well as land ownership can increase the middle class in Indonesia. Febriandika et al. (2022) found that health expenditure and regional minimum wages have a significant negative effect on poverty. 'Iffah et al. (2023) found that poverty has a spillover effect, where average years of schooling has a significant positive effect, while economic growth, access to sanitation and electricity have a significant negative effect on poverty.

Kurniasari & Oktavilia (2023) found that economic growth, social protection expenditure, and education expenditure have a significant positive effect on poverty, while life expectancy, average years of schooling, domestic investment, foreign direct investment, and health spending have a significant negative effect on poverty. Meanwhile, Sugiharti et al. (2023) found that two-thirds of poverty in Indonesia is chronic poverty, with factors such as gender, age, and household size having a significant positive effect, while education, health, cash transfers, as well as access to financial, transportation, and communication access have a significant negative effect on poverty in Indonesia.

Previous studies have also been conducted to identify poverty determinants in other countries that have experienced high poverty rates. Islam et al. (2017) found that household size, rural-urban distribution, disability, male gender, and rural areas have a significant positive effect, while education, employment, marriage, remittances, and age have a significant

negative effect on poverty in Bangladesh. Fransman & Yu (2019) found that unemployment and disability have a significant positive effect, while average years of schooling have a significant negative effect on poverty in South Africa. Zou et al. (2023) found that poverty alleviation in China is achieved by improving the quality of education, health, employment, and a decent standard of living. Erumban & de Vries (2024) found that poverty alleviation in Asia and Sub-Saharan Africa is achieved through structural changes in manufacturing productivity and increased productivity in agricultural sector.

The concept of poverty was initially limited to income poverty based on the people's purchasing power, measured by the poverty line. People are classified as poor if their per capita income falls below the poverty line, as they are considered unable to meet basic needs (Sen, 1976). Income poverty approach has been adopted by World Bank to identify poverty rate. However, income poverty is not considered a representation of deprivation in terms of resources, choices, and opportunities, leading to the development of alternative poverty measurement.

Hagenaars (1987) argues that poverty should not only be measured by income, but also by a leisure-based approach. Meanwhile, Alkire & Foster (2011) argue that poverty should be measured based on economic and social dimensions, known as multidimensional poverty. The concept of multidimensional poverty has been widely adopted because it can identify people's limitations in obtaining income and basic needs including education, health, and a decent standard of living. United Nations Development Programme (UNDP) has adopted it in the form of Multidimensional Poverty Index

(MPI) to measure and compare poverty rate in countries around the world.

Poverty in Indonesia is measured by Statistics Indonesia, namely Badan Pusat Statistik (BPS), in the form of income poverty. Poverty rate is determined based on purchasing power which is set each year at district level by poverty lines. However, there is a debate about measuring poverty rate that does not directly consider social aspects such as education, health, subnational development, wage levels, gender, environment, and nutrition (Hill, 2020). On the other hand, poverty rate determined by interrelated multidimensional factors has begun to be applied in many countries (Gweshengwe & Hassan, 2020).

This study is motivated by a significant income poverty alleviation in Indonesia despite previous studies highlighting the benefits of multidimensional poverty, as well as UNDP has also adopted the Multidimensional Poverty Index. In addition, study of poverty in Indonesia using social aspects is still limited. It was also found that economic growth has different effect on poverty in Indonesia.

Poverty alleviation in Indonesia has a problem because it is measured by income-based approaches that do not directly show the actual poverty conditions. Therefore, it is necessary to identify determinants of poverty based on economic and social aspects in order to accurately implement poverty alleviation and create economic efficiency.

Poverty alleviation has become a global issue outlined in Sustainable Development Goals (SDGs). 1945 Constitution of Republic of Indonesia also mandates poverty alleviation to ensure that poor people and destitute children are protected, as well as citizens have decent employment and a decent standard of living. To

achieve this goal, the government has made poverty alleviation as one of the visions of Indonesia Emas 2045, which aims to achieve a poverty rate of 0.5%-0.8%.

This study has a novelty that can be found from different variables used compared to previous studies. Variables from both economic and social aspects used in a single equation model to avoid bias. Per capita income is chosen over regional income because it better reflects people's ability to meet basic needs. Gini coefficient is used to assess the effect of income inequality on poverty. In addition, this study considers the effect of human development aspects, including education, health, and a decent standard of living, on poverty.

This study aims to identify determinants of poverty in Indonesia through an economic and social aspect, including per capita income, Gini coefficient, unemployment, poverty line, average years of schooling, life expectancy, access to clean water, and access to electricity. Contributions to knowledge are provided in the form of determinants of poverty from economic and social aspects in Indonesia as an upper-middle income country. Meanwhile, policymakers are also expected to gain new insights from the determinants of poverty in Indonesia in order to formulate effective poverty alleviation policies.

RESEARCH METHODS

This study employs a quantitative approach using secondary data obtained from Statistics Indonesia. Detailed information on variables is presented in Table 1. Data sample is a panel dataset, which consists of 272 observations from 34 provinces in Indonesia during the years 2015-2022. This study employs a quantitative approach using secondary data obtained from

Statistics Indonesia. Detailed information on variables is presented in Table 1.

This study uses panel data regression because it can identify determinants of poverty in Indonesia at province level from economic and social aspects. Some data variables are transformed into logarithmic form to simplify data analysis. The model equation for panel data regression can be written as follows:

$$Poverty_{it} = \alpha_0 + \beta_1 \ln(Income_{it}) + \beta_2 Unemp_{it} + \beta_3 \ln(Gini_{it}) + \beta_4 \ln(PovLine_{it}) + \beta_5 \ln(School_{it}) + \beta_6 \ln(Life_{it}) + \beta_7 Water_{it} + \beta_8 Electric_{it} + \epsilon_{it}$$

Where α_0 is intercept; $\beta_{1,2,3,4,5,6,7,8}$ is coefficient; i is provinces, t is year and ϵ is error term. Data sample is a panel dataset with 272 observations from 34 provinces in Indonesia during the years 2015-2022.

Table 1. Variables and Data Sources

Variables	Descriptions	Unit	Sources
Poverty (Poverty)	Proportion of population below the poverty line	Percentage	Statistics Indonesia
Per capita income (Income)	Proportion of a nation's economic output per capita	Million (IDR)	Statistics Indonesia
Unemployment (Unemp)	Proportion of the population that is part of labor force and not working	Percentage	Statistics Indonesia
Gini coefficient (Gini)	Index of income inequality with a value of 0-1	Index	Statistics Indonesia
Poverty line (PovLine)	Minimum amount of money to meet basic needs of food and non-food	Thousand (IDR)	Statistics Indonesia
Average years of schooling (School)	Average years of formal education for the population aged 25 and above	Year	Statistics Indonesia
Life expectancy (Life)	Average life expectancy of a newborn baby	Year	Statistics Indonesia
Access to clean water (Water)	Proportion of population with access to clean water	Percentage	Statistics Indonesia
Access to electricity (Electric)	Proportion of population with access to electricity	Percentage	Statistics Indonesia

Source: Data Processed, 2024

Data sample at provincial level is used considering that some data variables at district level do not yet have available for certain years. Meanwhile, data sample for the period 2015-2022 is used due to data availability for North Kalimantan province after its split-off and final fixed data that has been recapitulated by Statistics Indonesia.

Panel data regression can be applied through common effect model (CEM), fixed effect model (FEM), and random effect model (REM). Model selection tests are performed using chow test, lagrange multiplier test, and hausman test to obtain the best model based on data sample characteristics (Gujarati & Porter, 2009).

In addition, Gauss-Markov assumptions must be met to ensure that model estimation is linear, unbiased, and efficient. Gauss-Markov assumptions can be met after passing data normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

Table 2. Descriptive Statistics

Variables	Obs	Mean	Std. Dev	Min	Max
Poverty (Poverty)	272	0.1079	0.0563	0.0342	0.2840
Per capita income (Income)	272	43.0729	32.2801	11.4690	192.1333
Unemployment (Unemp)	272	0.0525	0.0185	0.0140	0.1095
Gini coefficient (Gini)	272	0.3524	0.0390	0.2470	0.4590
Poverty line (PovLine)	272	464.3208	114.4571	261.8540	853.2260
Average years of schooling (School)	272	8.4414	0.9710	5.9900	11.3100
Life expectancy (Life)	272	69.7795	2.5721	64.2200	75.0800
Access to clean water (Water)	272	0.7809	0.1249	0.3735	0.9986
Access to electricity (Electric)	272	0.9608	0.0760	0.4314	1.0000

Source: Data Processed, 2024

RESULTS AND DISCUSSION

Descriptive statistics that show information about poverty and variables related to economic and social aspects in 34 provinces of Indonesia during the period 2015-2022 can be explained in Table 2. Poverty rate variable has a large standard deviation, indicating disparities in poverty rates among provinces in Indonesia during the observation period.

Table 3. Panel Data Regression Model

Selection Tests	P-value	Decision
Chow test	0.0000	FEM
Lagrange multiplier test	0.0000	REM
Hausman test	0.5618	REM

Source: Data Processed, 2024

On the economic aspect, per capita income has the highest standard deviation, indicating that income inequality in Indonesia is relatively high, with 27 provinces (79.41%) having per capita income below the national average. In terms of the social aspect, access to

clean water has the highest standard deviation, indicating that many people, particularly in 14 provinces (41.18%) have difficulty accessing clean water for drinking, sanitation, and agricultural production due to geographic condition.

Based on Table 3, panel data regression was analyzed using the random effect model. Therefore, model equation (1) can be written based on random effect model as follows:

$$Poverty_{it} = \alpha_0 + \beta_1 \ln(Income_{it}) + \beta_2 Unemp_{it} + \beta_3 \ln(Gini_{it}) + \beta_4 \ln(PovLine_{it}) + \beta_5 \ln(School_{it}) + \beta_6 \ln(Life_{it}) + \beta_7 Water_{it} + \beta_8 Electric_{it} + \mu_i + \varepsilon_{it}$$

Where α_0 is intercept; $\beta_{1,2,3,4,5,6,7,8}$ is coefficient; i is provinces, t is year; μ_i is random term and ε is error term. Random effect model with generalized least squares (GLS) estimator will consider the characteristics of provinces as individuals. Intercept has a random value for each province.

Error term (ε) in random effect model is not correlated with independent variables.

However, heterogeneity in each province can be explained by random term (μ) that occurs at the individual level. Residuals of random term (μ) contain random characteristics of unit observations, while error term (ϵ) represents residuals from the equation (Ekananda, 2019).

Table 4. Panel Data Regression Random Effect Model Results

Independent Variables	Dependent Variables		
	Coefficients	Standard Errors	P-values
Per capita income (lnIncome)	-0.0179***	0.0048	0.0000
Unemployment (Unemp)	0.2397***	0.0400	0.0000
Gini coefficient (lnGini)	0.0299***	0.0102	0.0030
Poverty line (lnPovLine)	0.0135*	0.0076	0.0750
Average years of schooling (lnSchool)	-0.0962***	0.0314	0.0020
Life expectancy (lnLife)	-0.2548**	0.1263	0.0440
Access to clean water (Water)	-0.0205***	0.0078	0.0090
Access to electricity (Electric)	-0.0237**	0.0111	0.0330
Observation	272		
Prob>F	0.0000		
R-squared	0.5299		

Note: significance * p<0.10; ** p<0.05; *** p<0.01

Source: Data Processed, 2024

GLS is a common effect model or ordinary least squares (OLS) on the transformed variables that satisfies Gauss-Markov assumptions. GLS estimators are best linear unbiased estimators (BLUE) and do not require tests for normality, multicollinearity, heteroskedasticity, and autocorrelation (Gujarati & Porter, 2009).

The estimation results from panel data regression in this study can be explained based on Table 4. $P>|t|$ values show that unemployment, Gini coefficient, and poverty line have a significant positive effect, while per capita income, average years of schooling, life expectancy, access to clean water, and access to electricity have a significant negative effect on poverty in Indonesia.

Based on Prob>F, per capita income, unemployment, Gini coefficient, poverty line, average years of schooling, life expectancy,

access to clean water, and access to electricity simultaneously have a significant effect on poverty in Indonesia. R-squared value indicates that 52.99% of dependent variable can be explained by independent variables, while remaining portion is explained by other variables not included in the equation model.

Per capita income has a significant negative effect on poverty. Increased per capita income by 1% will reduce poverty by -0.0179%, ceteris paribus. Increased per capita income will increase purchasing power to meet basic needs. Increased per capita income has been driven by rapid economic growth in Indonesia over the past 50 years (Hill, 2020).

Structural transformation from agriculture to manufacturing has been key to economic growth. This finding is consistent with the study conducted by Amaluddin (2020), who found that

economic growth has a significant negative effect on poverty in Indonesia. Balasubramanian et al. (2023) also found that economic growth can reduce poverty in low-middle income countries. However, this study contradicts the research conducted by Wau (2022), who found that economic growth cannot significantly reduce poverty in the short and long term in underdeveloped districts in Indonesia, as they only have an economic growth rate of 3.62%.

De Silva & Sumarto (2014) found that economic growth only benefits non-poor people, while poor people in Indonesia receive minimal benefits. This is because poverty alleviation policies have not been properly targeted, such as energy subsidies (for fuel and LPG), which are intended to increase the overall purchasing power of population but are not effective in reducing poverty, as only 25.50% of its benefits reach poor people (Sugiharti et al., 2023).

Unemployment has a significant positive effect on poverty. Increased unemployment by 1% will increase poverty by 0.2397%, *ceteris paribus*. Unemployment will reduce per capita income and purchasing power. Unemployment will make it even more difficult for poor people to meet their food and non-food needs.

Unemployment in Indonesia occurs because there are more people in the labor force than available job. In addition, people with low levels of education and no link and match to industry needs will struggle to find formal jobs, as well as those with limited access to finance will find it difficult to start their own businesses. This finding is consistent with the study conducted by Graham (2020), who found that unemployment increases poverty in South Africa.

Disabled people have fewer job opportunities and lower wages compared to

others. Zou et al. (2023) also found that unemployment increases poverty in China. However, this finding is not the same as the study conducted by Safitri et al. (2023), who found that unemployment does not affect poverty in Indonesia because there are other household members who still have income to meet basic family needs.

Gini coefficient has a significant positive effect on poverty. Increased Gini coefficient by 1% will increase poverty by 0.0299%, *ceteris paribus*. Gini coefficient indicates income inequality among the population in Indonesia. van Leeuwen & Földvári (2016) found that income inequality in Indonesia has decreased since 1960 due to structural change from agricultural sector to manufacturing. Decreased income inequality and increased per capita income will reduce poverty in Indonesia.

This finding is consistent with a study by Amponsah et al. (2023), who found that income inequality will exacerbate poverty, especially in rural areas of sub-Saharan Africa. Income inequality can be reduced by promoting inclusive economic growth. Benedetti & Crescenzi (2023) found that income inequality contributes to poverty in Italy and Germany, as well as regional poverty maps are needed for more accurate decision-making on poverty alleviation. Min & Rao (2023) also found that income inequality increases poverty in Rwanda and India, highlighting the need for economic policies that focus on both economic growth and income redistribution. Poverty line has a significant positive effect on poverty. Increased poverty line by 1% will increase poverty by 0.0135%, *ceteris paribus*.

Poverty line indicates the amount of money needed to meet basic needs, both food and non-food, for each individual per month.

Each province in Indonesia has a different poverty line, depending on the cost of living. Increased price of essential goods will lead to increased spending by households, potentially exacerbating poverty. Government must implement policies to control price stability in order to reduce poverty. Sumner & Edward (2014) found that increased price of rice, a staple food for most of Indonesia's people, would hinder poverty alleviation. Moreover, economic growth tends to benefit rich people more than poor people in Indonesia.

This finding is consistent with a study conducted by Pereira & Marques (2023), who found that increased price due to electricity tariff hikes will exacerbate poverty in the U.S. Government needs to implement time-of-use and critical-peak-pricing tariffs to control citizens' spending and reduce poverty. Sullivan et al. (2024) also found that capitalism in China will raise the prices of essential goods and increase poverty. This occurs because government does not regulate prices for basic necessities, but rather relies on market mechanisms.

Average years of schooling has a significant negative effect on poverty. Increased average years of schooling by 1% will reduce poverty by -0.0962%, *ceteris paribus*. Average years of schooling serves as a proxy for educational level. Dartanto et al. (2020) found that higher education level can reduce poverty in Indonesia. Kurniasari & Oktavilia (2023) also found that average years of schooling has a significant negative effect on poverty in Indonesia. Higher education level can lead to greater productivity, thereby increasing per capita income.

This finding is consistent with studies conducted by Eryong & Xiuping (2018), who found that education is a fundamental policy for

reducing poverty in China, replacing subsidy policies. Abaidoo (2021) found that tertiary education can reduce poverty in Ghana by aligning the curriculum with community needs. Hofmarcher (2021) found that increased average years of schooling will increase labor force participation and thus reduces poverty in Europe. In addition, Serneels & Dercon (2021) found that educational outcomes in India can be improved by mothers' aspirations for their children's education.

Life expectancy has a significant negative effect on poverty. Increased life expectancy by 1% will reduce poverty by -0.2548%, *ceteris paribus*. Average years of schooling serve as a proxy of health level. A healthy body will encourage someone to be more productive at work and thus earn a higher income.

This finding is consistent with the study conducted by Sugiharti et al. (2023), who found that health has a significant negative effect on poverty in Indonesia. In addition, Febriandika et al. (2022) also found that government has an important role in poverty alleviation in Indonesia by increasing budget allocation of health expenditure to improve public health services.

Financial and health protection in form of health insurance has an important role in maintaining both physical well-being and financial stability of poor people. Araujo & Coelho (2021) found that financial and health protection for poor people in Brazil can reduce out-of-pocket healthcare spending, allowing these funds to be used for other essential needs. Korenman et al. (2021) found that improved health levels resulting from implementation of health insurance for elderly people can reduce poverty in U.S. Li et al. (2023) also found that providing health insurance to rural residents can

reduce out-of-pocket healthcare spending for poor people, thereby helping to poverty alleviation. Thakur & Faizan (2024) also found that rural health insurance in India (AB-PMJAY) can reduce poverty by reducing out-of-pocket healthcare spending.

Access to clean water has a significant negative effect on poverty. Increased access to clean water by 1% will reduce poverty by -0.0205%, *ceteris paribus*. Clean water availability is highly determined by infrastructure and geography condition in Indonesia. Provinces in southern Sumatra and Papua have limited access to clean water due to a lack of infrastructure, while provinces in Kalimantan have limited availability due to acidic groundwater caused by peatlands. Poor people with access to clean water do not have to spend more on household water for drinking and sanitation. Water availability can also be used to increase agricultural productivity in rural areas, thereby increasing per capita income.

This finding is consistent with studies conducted by Miranti (2017), who found that access to clean water can reduce poverty in Indonesia and potentially have a positive impact on health. Dartanto et al. (2020) also found that access to clean water can reduce poverty in Indonesia by improving productivity. Radosavljevic et al. (2020) found that poor water quality and quantity can reduce agricultural productivity, thereby contributing to rural poverty. Meanwhile, Mu et al. (2022) found that water-saving irrigation technology and water trading policies can provide clean water sources for agricultural production and consumption in arid areas of China, thereby reducing poverty.

Access to electricity has a significant negative effect on poverty. Increased access to electricity by 1% will reduce poverty by -

0.0237%, *ceteris paribus*. Although electrification rate in Indonesia has reached 99.37% by 2023, Papua still faces limitations in access to electricity, with an electrification rate only 77.43%. This occurs due to challenging geographical conditions for building adequate electrical infrastructure.

Government needs to provide alternative power generation options in remote areas to ensure a balanced distribution of electricity in Indonesia. Access to electricity can improve labor productivity and increase per capita income. In addition, stable electricity prices, which have a multiplier effect on essential goods cost, can reduce household expenses.

This finding is consistent with a study conducted by Ikhsan & Amri (2022), who emphasizes that electrification can reduce poverty in western Indonesia by enabling economic activities in rural areas. Shyu (2022), found that electrification rates in Indonesia vary between urban and rural areas, as well as western and eastern Indonesia. Indonesia has endowment natural resources such as natural gas and coal that can be used for power plants.

Electrification inequality in remote areas can be addressed through stand-alone access to electricity and renewable energy such as hydropower. 'Iffah et al. (2023) also found that access to electricity has a significant negative effect on poverty in Indonesia because it can promote economic growth. Meanwhile, Asghar et al. (2022) found that access to electricity will promote poverty alleviation in 82 developing countries, requiring government provision of electricity grids in urban areas and interest-free loans to residents of remote areas to access renewable energy sources.

Sperry et al. (2023) found that solar energy can be easily used to generate electricity in rural,

remote, and agricultural areas in Guatemala and Puerto Rico. Saadaoui Mallek et al. (2024) also found that water and electricity infrastructure development will reduce poverty in sub-Saharan Africa by improving education, employment, and environmental quality in rural areas, thereby reducing income inequality and urbanization.

CONCLUSION

This study was conducted to identify determinants of poverty in Indonesia from economic and social aspects using a sample data of 272 observations, analyzed through panel data regression with random effect model. This study found that unemployment, Gini coefficient and poverty line have a significant positive effect, while per capita income, average years of schooling, life expectancy, access to clean water, and access to electricity have a significant negative effect on poverty in Indonesia.

These findings contribute to scientific understanding of poverty determinants in Indonesia as an upper-middle income country. Therefore, policymakers are expected to increase economic growth, improve education and healthcare quality, provide access to clean water and electricity, reduce income inequality and unemployment, and maintain price stability and purchasing power for the community. Government has an important role in providing public goods to create economic efficiency and thus accelerate poverty alleviation in Indonesia.

Poverty alleviation in Indonesia is not only implemented by increasing per capita income, but also by addressing economic and social aspects related to basic needs. Government expenditure has an important role as a distribution function used to provide public goods needed by poor people, particularly in

education, health, and a decent standard of living, in order to create economic efficiency.

This study has limitations because it uses only economic and social aspects to identify the determinants of income poverty in Indonesia. Further study is needed to identify the incidence and intensity of poverty effect to formulate poverty alleviation strategies, comparing income and multidimensional poverty measurement, and identifying the important role of government in the short and long-run poverty alleviation.

REFERENCES

- Abaidoo, A. (2021). The nexus between education and poverty reduction in Ghana from 2013 to 2017. *Cogent Social Sciences*, 7(1). <https://doi.org/10.1080/23311886.2021.1986933>
- Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7-8), 476-487. <https://doi.org/10.1016/j.jpubeco.2010.11.006>
- Amaluddin, A. (2020). The nexus between poverty, education, and economic growth in Indonesia. *Economics Development Analysis Journal*, 8(4), 345-354. <https://doi.org/10.15294/edaj.v8i4.34130>
- Amponsah, M., Agbola, F. W., & Mahmood, A. (2023). The relationship between poverty, income inequality, and inclusive growth in Sub-Saharan Africa. *Economic Modelling*, 126, 106415. <https://doi.org/10.1016/j.econmod.2023.106415>
- Araujo, E. C., & Coelho, B. D. P. (2021). Measuring financial protection in health in Brazil: Catastrophic and poverty impacts of healthcare payments using the latest national household consumption survey. *Health Systems & Reform*, 7(2). <https://doi.org/10.1080/23288604.2021.1957537>
- Asghar, N., Amjad, M. A., Rehman, H. U., Munir, M., & Alhaji, R. (2022). Achieving sustainable development resilience: Poverty reduction through affordable access to electricity in developing economies. *Journal of Cleaner Production*, 376, 134040. <https://doi.org/10.1016/j.jclepro.2022.134040>
- Balasubramanian, P., Burchi, F., & Malerba, D. (2023). Does economic growth reduce multidimensional poverty? Evidence from low- and middle-income countries.

- World Development*, 161, 106119. <https://doi.org/10.1016/j.worlddev.2022.106119>
- Benedetti, I., & Crescenzi, F. (2023). The role of income poverty and inequality indicators at the regional level: An evaluation for Italy and Germany. *Socio-Economic Planning Sciences*, 87, 101540. <https://doi.org/10.1016/j.seps.2023.101540>
- Budi Setiawan, A., & Adzim, F. (2018). Determinant of poverty in Indonesia. *Economics Development Analysis Journal*, 6(1), 22–29. <https://doi.org/10.15294/edaj.v6i1.22197>
- Dartanto, T., Moeis, F. R., & Otsubo, S. (2020). Intragenerational economic mobility in Indonesia: A transition from poverty to the middle class in 1993–2014. *Bulletin of Indonesian Economic Studies*, 56(2), 193–224. <https://doi.org/10.1080/00074918.2019.1657795>
- De Silva, I., & Sumarto, S. (2014). Does economic growth really benefit the poor? Income distribution dynamics and pro-poor growth in Indonesia. *Bulletin of Indonesian Economic Studies*, 50(2), 227–242. <https://doi.org/10.1080/00074918.2014.938405>
- Ekananda, M. (2019). *Basic econometrics* (2nd ed.). Mitra Wacana Media.
- Erumban, A. A., & de Vries, G. J. (2024). Structural change and poverty reduction in developing economies. *World Development*, 181, 106674. <https://doi.org/10.1016/j.worlddev.2024.106674>
- Eryong, X., & Xiuping, Z. (2018). Education and anti-poverty: Policy theory and strategy of poverty alleviation through education in China. *Educational Philosophy and Theory*, 50(12), 1101–1112. <https://doi.org/10.1080/00131857.2018.1438889>
- Febriandika, N. R., Rahayu, C., & Kumar, R. (2022). The determinant factors of poverty in eastern Indonesia: Evidence from 12 provinces. *JEJAK*, 15(2), 283–299. <https://doi.org/10.15294/jejak.v15i2.36675>
- Fransman, T., & Yu, D. (2019). Multidimensional poverty in South Africa in 2001–16. *Development Southern Africa*, 36(1), 50–79. <https://doi.org/10.1080/0376835X.2018.1469971>
- Gibson, J., & Olivia, S. (2020). Direct and indirect effects of COVID-19 on life expectancy and poverty in Indonesia. *Bulletin of Indonesian Economic Studies*, 56(3), 325–344. <https://doi.org/10.1080/00074918.2020.1847244>
- Graham, L. (2020). Differences in employment and income poverty between people with and without disabilities in South Africa. *Alter*, 14(4), 299–317. <https://doi.org/10.1016/j.alter.2020.06.011>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill/Irwin.
- Gweshengwe, B., & Hassan, N. H. (2020). Defining the characteristics of poverty and their implications for poverty analysis. *Cogent Social Sciences*, 6(1). <https://doi.org/10.1080/23311886.2020.1768669>
- Hagenaars, A. (1987). A class of poverty indices. *International Economic Review*, 28(3), 583. <https://doi.org/10.2307/2526568>
- Hill, H. (2020). Indonesian living standards over 50 years: A multidimensional analysis. *Asian Economic Journal*, 34(3), 249–274. <https://doi.org/10.1111/asej.12221>
- Hofmarcher, T. (2021). The effect of education on poverty: A European perspective. *Economics of Education Review*, 83, 102124. <https://doi.org/10.1016/j.econedurev.2021.102124>
- Iffah, A., Suliyanto, S., Sediono, S., Saifudin, T., Ana, E., & Amelia, D. (2023). Poverty modeling in Indonesia: A spatial regression analysis. *Economics Development Analysis Journal*, 12(4), 441–457. <https://doi.org/10.15294/edaj.v12i4.66027>
- Ikhshan, I., & Amri, K. (2022). Does electrification affect rural poverty and households' non-food spending? Empirical evidence from Western Indonesia. *Cogent Economics & Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2095768>
- Islam, D., Sayeed, J., & Hossain, N. (2017). On determinants of poverty and inequality in Bangladesh. *Journal of Poverty*, 21(4), 352–371. <https://doi.org/10.1080/10875549.2016.1204646>
- Korenman, S., Remler, D. K., & Hyson, R. T. (2021). Health insurance and poverty of the older population in the United States: The importance of a health-inclusive poverty measure. *The Journal of the Economics of Ageing*, 18, 100297. <https://doi.org/10.1016/j.jjeoa.2020.100297>
- Kurniasari, A., & Oktavilia, S. (2023). Determinants of poverty in Western Indonesia and Eastern Indonesia. *Economics Development Analysis Journal*, 12(1), 84–99. <https://doi.org/10.15294/edaj.v12i1.63570>
- Li, Z., Chen, Y., & Ding, J. (2023). Health poverty alleviation project in rural China: Impact on poverty vulnerability, health status, healthcare utilization, health expenditures. *Risk Management and Healthcare Policy*, 16, 2685–2702. <https://doi.org/10.2147/RMHP.S438352>

- Lundahl, M., Rauhut, D., & Hatti, N. (2021). *Poverty in contemporary economic thought* (M. Lundahl, D. Rauhut, & N. Hatti, Eds.). Routledge. <https://doi.org/10.4324/9780429331312>
- Min, J., & Rao, N. D. (2023). Growth and inequality trade-offs to eradicate absolute poverty. *Heliyon*, 9(11), e21441. <https://doi.org/10.1016/j.heliyon.2023.e21441>
- Miranti, R. (2017). Understanding the relationships between development factors and regional poverty: What have we learned from Indonesia? *Journal of Poverty*, 21(6), 483–507. <https://doi.org/10.1080/10875549.2017.1348420>
- Mu, L., Liu, Y., & Chen, S. (2022). Alleviating water scarcity and poverty through water rights trading pilot policy: A quasi-natural experiment-based approach. *Science of The Total Environment*, 823, 153318. <https://doi.org/10.1016/j.scitotenv.2022.153318>
- Pereira, D. S., & Marques, A. C. (2023). Are dynamic tariffs effective in reducing energy poverty? Empirical evidence from US households. *Energy*, 282, 128848. <https://doi.org/10.1016/j.energy.2023.128848>
- Priebe, J. (2016). How robust is Indonesia's poverty profile? Adjusting for differences in needs. *Bulletin of Indonesian Economic Studies*, 52(2), 229–248. <https://doi.org/10.1080/00074918.2015.1133801>
- Radosavljevic, S., Haider, L. J., Lade, S. J., & Schlüter, M. (2020). Effective alleviation of rural poverty depends on the interplay between productivity, nutrients, water, and soil quality. *Ecological Economics*, 169, 106494. <https://doi.org/10.1016/j.ecolecon.2019.106494>
- Saadaoui Mallek, R., Awad, A., Ozturk, I., & ben Douissa, I. (2024). Infrastructure development and poverty eradication in Sub-Saharan Africa: Its effect and transmission channels. *Cities*, 144, 104658. <https://doi.org/10.1016/j.cities.2023.104658>
- Safitri, I., Moehadi, M., Susilo, J. H., & Endang, E. (2023). Analysis of factors influencing economic growth, unemployment, and poverty in Indonesia. *JEJAK*, 16(2), 268–285. <https://doi.org/10.15294/jejak.v16i2.42032>
- Sen, A. (1976). Poverty: An ordinal approach to measurement. *Econometrica*, 44(2), 219. <https://doi.org/10.2307/1912718>
- Serneels, P., & Dercon, S. (2021). Aspirations, poverty, and education: Evidence from India. *The Journal of Development Studies*, 57(1), 163–183. <https://doi.org/10.1080/00220388.2020.1806242>
- Shyu, C.-W. (2022). Energy poverty alleviation in Southeast Asian countries: Policy implications for improving access to electricity. *Journal of Asian Public Policy*, 15(1), 97–121. <https://doi.org/10.1080/17516234.2020.1770426>
- Sperry, B. M., Dou, F. Y., Dillon, T., Tatum, W. K., Chapko, M. K., & Pozzo, L. D. (2023). Combating energy poverty via small-scale solar for initial electrification and post-disaster recovery in Guatemala and Puerto Rico communities. *Energy for Sustainable Development*, 76, 101291. <https://doi.org/10.1016/j.esd.2023.101291>
- Statistics Indonesia. (2024). Consumption and income. *Statistics Indonesia*. <https://www.bps.go.id/id/statistics-table?subject=523>
- Sugiharti, L., Esquivias, M. A., Shaari, M. S., Jayanti, A. D., & Ridzuan, A. R. (2023). Indonesia's poverty puzzle: Chronic vs. transient poverty dynamics. *Cogent Economics & Finance*, 11(2). <https://doi.org/10.1080/23322039.2023.2267927>
- Sullivan, D., Moatsos, M., & Hickel, J. (2024). Capitalist reforms and extreme poverty in China: Unprecedented progress or income deflation? *New Political Economy*, 29(1), 1–21. <https://doi.org/10.1080/13563467.2023.2217087>
- Sumner, A., & Edward, P. (2014). Assessing poverty trends in Indonesia by international poverty lines. *Bulletin of Indonesian Economic Studies*, 50(2), 207–225. <https://doi.org/10.1080/00074918.2014.938404>
- Thakur, R., & Faizan, M. A. (2024). Magnitude of health expenditure induced removable poverty in India: Some reflections of Ayushman Bharat. *Heliyon*, 10(1), e23464. <https://doi.org/10.1016/j.heliyon.2023.e23464>
- van Leeuwen, B., & Földvári, P. (2016). The development of inequality and poverty in Indonesia, 1932–2008. *Bulletin of Indonesian Economic Studies*, 52(3), 379–402. <https://doi.org/10.1080/00074918.2016.1184226>
- Wau, T. (2022). Economic growth, human capital, public investment, and poverty in underdeveloped regions in Indonesia. *Jurnal Ekonomi & Studi Pembangunan*, 23(2), 189–200. <https://doi.org/10.18196/jesp.v23i2.15307>
- Zou, W., Cheng, X., Fan, Z., & Yin, W. (2023). Multidimensional relative poverty in China: Identification and decomposition. *Sustainability*, 15(6), 4869. <https://doi.org/10.3390/sui5064869>