

Measuring the Effect of Inequality and Human Resource Indicators to Poverty Density in Indonesia

Heffi Christya Rahayu¹⁾, Purwantoro²⁾, Eni Setyowati³⁾

^{1,2}Faculty of Economics, Universitas Pasir Pengaraian, Riau

³Faculty of Economics and Business, Universitas Muhammadiyah Surakarta

Corresponding Author: heffirahayu@upp.ac.id, es241@ums.ac.id

Received: April 2021 | Revised: September 2021 | Accepted: September 2021

Abstract

The density of the poor occurs because rapid population growth that is not followed by fast economic growth, resulting in a density of poor people in Indonesia. This study aims to analyze the effect of the Poverty gap index-P1, HDI, GRDP, Labor Force on the Density of the Poor in Indonesia in 2015-2020. This study uses the Poverty gap index-P1 to fill the gap of research. All data obtained from the Central Bureau of Statistics (BPS) of the Republic of Indonesia. The data obtained are in the form of time series and cross-section data in 2015-2020. The analysis technique used is panel data regression. Result of the discussion the poverty gap index-P1 have positive impact to the poverty density indicated by the level of size and the depth of the poor population that increases, and the HDI have negative impact to poverty density. The suggestion from the study is poverty alleviation programs needs to be strengthened and expanding the access of health and employment facilities to the poor is of major importance.

Keywords: Poverty Density; HDI; GRDP; Unemployed; Panel Data

JEL Classification: I30, I32, J01

How to Cite: Rahayu, H. C., Purwantoro, P., Setyowati, E. (2021). Measuring the Effect of Inequality and Human Resource Indicators to Poverty Density in Indonesia, 22(2), 153-160. doi:<https://doi.org/10.23917/jep.v22i2.13631>

DOI: <https://doi.org/10.23917/jep.v22i2.13631>

1. Introduction

Poverty and inequality have always been sensitive topics for every country, especially in developing countries such as Indonesia. As a developing country, poverty becomes a latent and actual social problem that occurs in the middle of society (Hassan, 2014; Wu et al., 2015; Yuheng et al., 2016). Based on the definition of BPS, poverty is a situation for a person or group of people who are unable to meet the basic needs or basic needs approach of a certain standard of living (Statistics Indonesia, 2020b).

Poverty can be caused by various aspects that are interconnected. Hasibuan (2015) said that the dominant factors affecting poverty are accessibility, finance, education, and public services. While in the context of society, poverty

can be caused by geographic factors (Archibong et al., 2015; Sefiddashti et al., 2016). Java island is the most populous region in Indonesia, with only an area of about 7% of the total territory of Indonesia. However, Java island holds 53% of the total population in Indonesia. Java island becomes the most populous area because the island of Java has a strategic geographical location and has more complete facilities than in other island areas (Isdijoso et al., 2016).

Unforeseen conditions such as the Covid-19 pandemic are also expected to exacerbate poverty. Covid-19 has spread almost all over the world. It is predicted that the economic effects of Covid-19 will cause millions of people to fall into poverty. Indonesia's economic growth is projected to decline further, in 2020 economic growth is projected at

5%, but with the global pandemic, Covid-19 to be between 4.2% and -3.5% (Suryahadi et al., 2020).

Indonesia is a country that has a great diversity in terms of region or geography. The problem of poverty in Indonesia is very relevant to the problem of geography in Indonesia which is not evenly distributed. Location is one of the dimensions of space, so it directly affects poverty.



Figure 1. Indonesian Poverty Statistics

Source: Susenas 2020

Figure 1 shows that the poverty rate from 2016 to 2019 continues to decline. However, in March 2020 the percentage of poverty in Indonesia increased by 0.37%. The increase in the percentage of poverty is triggered by the increase of petrol prices. This phenomenon causes the increase in daily foodstuffs. Besides, the Covid-19 pandemic has also caused high of poverty in Indonesia (Statistics Indonesia, 2020a).

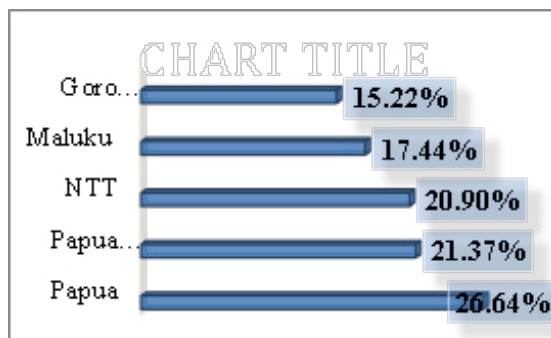


Figure 2. Percentage of Provinces With the Highest Poverty Rate in March 2020

Source: Statistics Indonesia, March 2020

Based on Figure 2, provinces that have the highest poverty rate are Papua Province with 26.64%, followed by West Papua Province 21.37%, East Nusa Tenggara Province 20.9%, Maluku

Province 17.44%, and Gorontalo Province by 15.22%. In its report, BPS noted that the rural poor have a percentage of 12.82% and in urban areas 7.38%.

In recent years, although Indonesia has experienced economic growth of between 5%-6% per year, the poverty reduction has not been significant. The percentage gap in poverty in Java island and outside Java still indicates inequality and the number of people still living below the poverty line. The difference value of the poverty gap index indicates the further the average monthly expenses between population (Statistics Indonesia, 2020b). The poverty gap of 10 percent means that on average, the poor have a shortfall of 10 percent below the poverty line. It could also be an indication that it takes an average cost of 10 percent of the poverty line per poor person to lift them out of poverty through selective transfer (Suryahadi et al., 2020).

Ridena's research (2021) with the panel's data approach found that environmental factors can affect the quality of the environment, where the urban poor have the potential to damage the quality of the environment compared to the poor in the countryside. This indicates that the impact of poverty can damage the quality of the environment. Eigbiremolen (2018) analyzed poverty dynamics in Nigeria using General Household Survey (GHS) data with a transitional model approach showing that households (with a small number of families) and households that head fewer male households are less likely to fall into poverty. Other results from his identification show that large household sizes, lack of access to the economy and low levels of education are factors in households staying poor over time.

The Poverty gap index-P1 is used to look at the average measure of the spending gap of the poor against the poverty line. This is in line with research by Primadianti (n.d.) which stated that to alleviate the poverty of poor households, resources and resources are needed. The poverty gap index-P1 value can be used to calculate the minimum cost necessary to alleviate poverty by transferring it to poor individuals or households. Milanovic (2002) calculated the poverty gap between Estonia and Kyrgyzstan and found that

the country of Kyrgyzstan showed an average consumption of 2.13 poor people while Estonia 1.49 with an average size of poor households in Estonia 2.41 while in Kyrgyzstan 4.93. There is a difference in country size between Estonia and Kyrgyzstan, but it can be indicated that a large country with a high poverty gap tends to be a poor country.

Besides, the high poverty rate in a country can be influenced by the quality of its human resources by Human Development Index (HDI) (Todaro & Smith, 2006). The low quality of human resources will lead to low work productivity and low income (Kuncoro, 2015). Research from Adelfina and Jember (2016) states that The level of quality of human resources affects the level of the number of poor people. The lower the level of quality of human resources, the higher number of poverty in Bali Province. Suparmono (2004) explained that the low level of quality of human resources leads to low levels of productivity of the community. Low productivity leads to low-income levels which ultimately leads to low levels of community savings accumulation. People's savings rates affect investment levels. Low public savings causes low investment levels because the investment is derived from the accumulation of people's savings.

Income from a region is one of the important indicators in analyzing poverty. Every policy carried out by the government is directed to be able to increase the value of GRDP. GRDP value can be used as a benchmark for development success in a region. Research from Wibisono and Arianti (2015) states that the higher the GRDP value, the poverty rate will be reduced. Kuncoro in Setiawati (2017) stated that the development approach has traditionally been closely related to the improvement of GRDP in a region. If the GRDP value in a region decreases it shows that the decline in the quality and purchasing power of the community will ultimately have an impact on the problem of poverty.

Research conducted by Ulfa (2015) which found that GRDP value has a negative relationship with poverty level in The Development Area Unit (SWP) IV in East Java in 2000-2013. This explained that the increase rapidly in GRDP

value will be followed by a decrease in the poverty rate in the region.

Meanwhile, social conditions in the community are also one of the important factors to see the phenomenon of poverty that causes overcrowding in Indonesia. The level of welfare of the community can also be described through the condition of the number of unemployed. Unemployment harms the economy, this is because unemployment causes a decrease in people's incomes, thereby affecting people's prosperity. Unemployment occurs because jobs are unable to absorb the number of the labor force (Arsyad, 2004). Unemployment can cause economic problems, the occurrence of unemployment leads to low productivity of goods and services that will ultimately affect incomes and cause poverty problems. This is in fulfillment with research of Andhykha et al. (2018) that unemployment has a positive relationship with the poverty rate. So it can be inferred that the higher unemployed rate is followed by the higher poverty rate.

Based on the exposure in advance, it is important to analyze the factors that can affect the density of poor people in Indonesia. To fill the study gap, researchers used the poverty gap index-P1 variable used to look at the average measure of the spending gap of the poor against the poverty line. To fill the research gap, researchers used to look at the average measure of the spending gap of the poor against the poverty line. This study will analyze several variables namely Poverty Density variables from 34 provinces in Indonesia, Poverty gap index-P1 variables from 34 provinces in Indonesia, Human Development Index variables from 34 provinces in Indonesia, Gross Regional Domestic Product variables from 34 provinces in Indonesia, and Labor Force variables that also come from 34 provinces in Indonesia.

2. Research Method

The type of research carried out is quantitative research. The research was conducted using secondary data consisting of dependent variables namely Poverty Density and independent variables consisting of variables Poverty gap index-P1, GRDP, Human Development Index

(HDI), and unemployment rate. The data source is obtained from publications conducted by the Central Statistics Agency (BPS) Indonesia. Data obtained in the form of time series and cross-section data in 2015-2020.

The poverty depth index method uses national socioeconomic survey data (Susenas) with the following calculations:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \times \left[\frac{z - y_i}{z} \right]^{\alpha}$$

Where α is 1, z is the poverty line, is the average per capita expenditure in a month from the population below the poverty line, q is the number of people below the poverty line and n is the number of inhabitants. The difference with the calculations used by Milanovic (2002) is that there is no population (n). The BPS data is then used to form the variables used in this study. The operational definition of variables used can be seen in Table 1.

Table 1. Operational Definition of Research Variables

Variable	Operational Definition
Poverty Density	The number of poor people per unit area (per sq. ²)
Poverty gap index-P1	The average spending gap of each population is against the poverty line.
GRDP	The amount of added value of goods and services produced by various economic sectors in a particular region.
HDI	An index explaining how the population can access the proceeds from a development made through the ability to access income, health, education, and so on
Unemployment	The number of unemployed people in the labor force is high.

Source: Central Statistics Agency of the Republic of Indonesia

Based on the explanation, this study will observe the factors that affect the Poverty Density in Indonesia by using the panel data regression analysis (Gujarati, 2012). The econometric model

used is as follows:

$$\text{Log KPM}_{it} = \beta_0 + \beta_1 P1_{it} + \beta_2 HDI_{it} + \beta_3 GRDP_{it} + \beta_4 TPT_{it} + \varepsilon_{it} \quad (1)$$

Where, is Poverty Density log, is poverty gap index-P1, is human development index, is percentage of GRDP log Ak, is open unemployment rate. In addition, there are coefficients like (constant), until (independent regression coefficient) and subscript i or t (observation to i , and year to t).

Analysis of model selection was carried out using the common effect, the fix effect model or FEM (Gujarati, 2004), and the random effect model (Widarjono, 2013). The model is selected using the Chow test, Hausman test and Lagrange multiplier test.

3. Results and Discussion

3.1 Results

The first model selection test is the chow test. From the chow test results seen the p-value, probability, or empirical significance statistic F is 0.0000 which means < 0.10 ; so H_0 is rejected, FEM is better than CEM. The second model selection test is the Hausman test. From the results of the Hausman test seen the value p, probability, or empirical significance of statistic Chi squares is 0.0000 which means < 0.10 ; so H_0 is rejected, FEM is better than REM. Thus, in this study, the model used is the FEM model.

Table 2 displays the results of the FEM model. The conclusion of the model used in the study exists, because the probability value is 0.0000 (< 0.10). The estimation model (P1, HDI, logGRDP, and TPT) can explain the dependent variable by 99.9%, this can be seen from the R2 value of 0.999. The remaining 0.1% is influenced by variables or other factors. Diagnostic tools on autocorrelation show prob values $> 5\%$ which means there are no autocorrelation problems and cross-sectional dependence using Pesaran approach shows a probability value of $> 5\%$ which means there is no problem cross-sectional dependence. Then, the statistical effects are gathered in Table 3.

Table 2. FEM Model Estimation Results

$$\widehat{\log KPM}_t = 4.574 + 0.013 P1_t - 0.017 HDI_t - 0.068 \log GRDP_t - 0.001 TPT_t +$$

(0.014) * (0.065)*** (0.313) (0.732)

R² = 0.999; DW-Stat. = 1.831723; F-Stat. = 10063.90; Prob. F-Stat = 0.000000

Autocorrelation = 0.6326; Cross-sectional dependence = 0.569

Source: Research output

Note:

*Significant at = 0.01;

**Significant at = 0.05;

***Significant at = 0.10.

Numbers in parentheses are empirical probabilities (p-value) t-statistics.

Table 3. Independent Variable Validity Test Results

Variable	itself. T	Criteria	Conclusion
P1	0.0141	< 0.10	Significant on $\alpha = 0.10$
HDI	0.0652	< 0.10	Significant on $\alpha = 0.10$
LogGRDP	0.3131	> 0.10	Not significant
TPT	0.7322	> 0.10	Not significant

Source: Research output

From the validity of research findings, it is seen that independent variables that statistically significant to dependent variables are poverty gap index-P1 and Human Development Index (HDI), because the p-value is significant on $\alpha = 0.10$. While logGRDP and TPT are not significant on $\alpha = 0.10$.

3.2 Discussion

A new unit of analysis is needed to understand the conditions associated with poverty (Tinsley and Bishop, 2006). This research finds that poverty gap index-P1 and Human Development Index (HDI) have a significant effect on Poverty Density. Where the Poverty gap index-P1 has a positive effect with a coefficient of 0.013. With a linear logarithmic pattern, this means that if the Poverty Gap Index-P1 increases by 1 percent, the density of the poor will increase by 1.3 percent. Conversely, if the poverty gap index-P1 falls by 1 percent, the density of the poor will fall by 1.3 percent. The poverty depth index shows that the gap in average poverty expenditure is getting further away from the poverty line, indicating that the average purchasing power or expenditure of the poor is decreasing can have an impact on

increasing the poor. With a measure with an increased depth of the poor population tending to be a poor country, it is confirmed that the World Bank categorizes Indonesia into a lower middle income country.

While HDI has a negative effect with a coefficient of -0.017. This means if the HDI rises by 1 percent then the Density of the Poor will fall by 1.7 percent. Conversely, if the Human Development Index falls by 1 percent, the Density of the Poor will increase by 1.7 percent. This confirms research from Dartanto and Nur kholis (2013), which found that education and health are the determining factors for the dynamics of poverty in Indonesia. This indicates that improved quality of education and health care can improve HDI, hdi improvement can increase productivity so as to increase income levels. Suparmono (Suparmono & Sudarman, 2004) explained that the low level of quality of human resources leads to low levels of productivity of the community. Low productivity leads to low-income levels which ultimately leads to low levels of community savings accumulation.

However, in contrast to the findings of this study that the GRDP does not have a significant

effect, Henderson et al. (2019) found that regional income is an important factor in increasing density in an area. This explains the attractive forces that drive rapid urbanization in areas with high regional incomes. Contrast with research of Wibisono and Arianti (Wibisono & Arianti, 2015) states that the higher the GRDP value, the poverty rate will be reduced of the 33 provinces in Indonesia, DKI Jakarta province has the highest density of poor population with a constant value of 8.502, then Yogyakarta ranked second with a constant value of 6.919, followed by Central Java Province in third place with a constant value of 6.768. This is because this province has a high rate of economic growth and center in trade, industry, and services.

The 3 provinces that have Poverty Density include Central Kalimantan with a constant value of 1.673, West Papua with a constant value of 2.335, and the lowest of East Kalimantan Province with a constant value of 2.498. This is because the three provinces still have a less dense population, so the density of the poor tends to be lower.

4. Conclusions

Poverty and inequality have always been sensitive topics for every country. It can be caused by various aspects that are interconnected. This research tries to find out the relationship between the poverty gap index-P1, human development index, gross regional domestic income, and unemployment rate to Poverty Density.

From the results of the discussion, it can be concluded that the poverty gap index and human development index have a significant effect on the poverty density. However, Gross regional domestic product and open unemployment rate not significant on poverty density. The poverty gap index shows a positive relationship to poverty density, indicating that lower average purchasing power or spending in the poor can lead to an increase in the poor. With a measure of depth of the poor population that increases from cenderung to a poor country. The increase in HDI can decrease the poverty density rate, this indicates that improved the quality of education and health services can increase HDI,

hdi increase can increase productivity so as to increase income level which can further lower poverty density. Simultaneously, the poverty gap index-P1, human development index, gross regional domestic income, and unemployment rate have a significant effect on Poverty Density.

Research advice to policyholders is a family program of hope proclaimed by the government through the ministry of social strengthened again by increasing and expanding the access of beneficiaries to health services and employment opportunities. So that beneficiaries can be more productive.

Researchers are then advised to continue to research the development of Poverty Density, which can find out the distribution areas with Poverty Density so that in the future it can be used as reference material for further research. This research is provided as a reference for determining government policies and reduce inequality in society.

5. References

- Adelfina, & Jember, I. M. (2016). Pengaruh Pertumbuhan Ekonomi, Kemiskinan, Dan Belanja Daerah Terhadap Indeks Pembangunan Manusia Di Kabupaten Kota Provinsi Bali Periode 2005–2013. *Jurnal Ekonomi Pembangunan*, 5(10), 1011–1025.
- Andhykha, R., Handayani, H. R., & Woyanti, N. (2018). Analisis Pengaruh PDRB, Tingkat Pengangguran, dan IPM Terhadap Tingkat Kemiskinan di Provinsi Jawa Tengah. *Media Ekonomi Dan Manajemen*, 33(2), 113–123.
- Archibong, B., Modi, V., & Sherpa, S. (2015). Geography of Infrastructure Functionality at Schools in Nigeria: Evidence From Spatial Data Analysis Across Local Government Areas. *Papers in Applied Geography*, 1(2), 176–183.
- Arsyad, L. (2004). *Ekonomi Pembangunan dan Perencanaan Pembangunan* (4th ed.). Yogyakarta: STIE YKPN.
- Badan Pusat Statistik. (2020a). *Jumlah Penduduk Miskin Per Provinsi Tahun*

- 2015- 2020. Badan Pusat Statistik.
- Badan Pusat Statistik. (2020b). *Kemiskinan dan Ketimpangan*. Badan Pusat Statistik.
- Dartanto, T., & Nurkholis. (2013). The Determinants of Poverty Dynamics in Indonesia: Evidence From Panel Data. *Bulletin of Indonesian Economic Studies*, 49(1), 61–84. <https://doi.org/10.1080/00074918.2013.772939>
- Eigbiremolen, G. O. (2018). Poverty Trends and Poverty Dynamics: Analysis of Nigerian's first-ever National Panel Survey Data. *Journal of International Development*, 30(4), 691–706. <https://doi.org/10.1002/jid.3342>
- Gujarati, Damodar. (2004). *Basic Econometrics (Ekonometrika Dasar), Terjemahan Sumarno Zain*. Jakarta: Penerbit Erlangga.
- Gujarati, D. N. (2012). *Dasar-dasar Ekonometrika, Terjemahan Mangunsong (5th ed.)*. Jakarta: Salemba Empat.
- Hasibuan, J. S. (2015). Analisis Kontribusi Sektor Industri Terhadap PDRB Kota Medan. *Ekonomikawan: Jurnal Ilmu Ekonomi Dan Studi Pembangunan*, 13(1), 53–61. <http://dx.doi.org/10.30596%2Fekonomikawan.v13i1.230>
- Hassan, A. (2014). The Challenge in Poverty Alleviation: Role of Islamic Microfinance and Social Capital. *Humanomics*, 30(1), 76–90. <https://doi.org/10.1108/H-10-2013-0068>
- Henderson, J. V., Nigmatulina, D., & Kriticos, S. (2019). Measuring urban economic density. *Journal of Urban Economics*, July 2018. <https://doi.org/10.1016/j.jue.2019.103188>
- Isdijoso, W., Suryahadi, A., & Akhmadi, A. (2016). Penetapan Kriteria dan Variabel Pendataan Penduduk Miskin yang Komprehensif dalam Rangka Perlindungan Penduduk Miskin di Kabupaten/Kota. *Kertas Kerja SMERU*, (September), 1–16.
- Kuncoro, M. (2015). *Indikator Ekonomi*. Yogyakarta: UPP AMP YKPN.
- Milanovic, B. (2002). Do We Tend to Overestimate Poverty Gaps? The Impact of Equivalency Scales on The Calculation of The Poverty Gap. *Applied Economics Letters*, 9(2), 69–72. <https://doi.org/10.1080/13504850110049397>
- Primadianti, N., & Sugiyanto, C. (n.d.). Ketimpangan Regional, Pertumbuhan Ekonomi Pro Poor, dan Kemiskinan di Nusa Tenggara Barat. *Jurnal Dinamika Ekonomi Pembangunan*, 3(1), 1–20. <https://doi.org/10.14710/jdep.3.1.1-20>
- Ridena, S. (2020). Kemiskinan Dan Lingkungan: Perspektif Kemiskinan Di Perkotaan Dan Pedesaan. *Jurnal Litbang Sukowati: Media Penelitian Dan Pengembangan*, 5(1), 39–48. <https://doi.org/10.32630/sukowati.v5i1.196>
- Sefiddashti, S. E., Karyani, A. K., & Ghazanfari, S. (2016). The Disparity in Geographical Accessibility to Healthcare Resources in Iran: The Comparison of Two Cross-Section. *International Journal of Human Rights in Healthcare*, 9(2), 86–94. <https://doi.org/10.1108/IJHRH-08-2015-0025>
- Setiawati, I. (2017). *Pengaruh Produk Domestik Regional Bruto, Pendidikan Dan Tenaga Kerja Terhadap Tingkat Kemiskinan Di Kabupaten Pinrang* [Universitas Islam Negeri Alauddin Makassar]. <http://repositori.uin-alauddin.ac.id/id/eprint/8244>
- Suparmono, & Sudarman, A. (2004). *Pengantar Ekonomi Makro: Teori, Soal dan Penyelesaiannya*. Yogyakarta: UPP AMP YKPN.
- Suryahadi, A., Al Izzati, R., & Suryadarma, D. (2020). *The Impact of COVID-19 Outbreak on Poverty: An Estimation for Indonesia*. Jakarta: The SMERU Research Institute.
- Tinsley, K., & Bishop, M. (2006). Poverty and Population Density: Implications for Economic Development Policy. *Journal of Higher Education Outreach and Engagement*, 11(1), 195–208.
- Todaro, M. P., & Smith, S. C. (2006). *Pembangunan ekonomi*. Jakarta: Erlangga.
- Ulfa, N. A. (2015). *Pengaruh PDRB dan PAD*

(Pendapatan Asli Daerah) Terhadap Tingkat Kemiskinan di Satuan Wilayah Pengembangan (SWP) IV Jawa Timur [Universitas Jember]. <http://repository.unej.ac.id/handle/123456789/74248>

- Wibisono, R. Y., & Arianti, F. (2015). *Analisis Pengaruh PDRB, Pengangguran Dan Pendidikan Terhadap Kemiskinan Di Jawa Tengah Tahun 2008–2013*. Universitas Diponegoro.
- Widarjono, A. (2013). *Ekonometrika Pengantar dan Aplikasinya*. Yogyakarta: UPP STIM YKPN.
- Wu, H., Ding, S., & Wan, G. (2015). Income Inequality and Rural Poverty in China: Focusing on The Role of Government Transfer Payments. *China Agricultural Economic Review*, 7(1), 65–85. <https://doi.org/10.1108/CAER-01-2014-0005>
- Yuheng, L., Yanfei, W., & Yansui, L. (2016). Impact and Mechanism of Social Capital in Poverty Alleviation of China. *Bulletin of Chinese Academy of Sciences*, 3, 302–308.