



Understanding the Socio-Economic Dynamics: COVID-19 Pandemic, Human Development, and Poverty Issues in Indonesia

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Abstract

The COVID-19 pandemic has presented serious challenges to various aspects of life worldwide, including in Indonesia. It has not only impacted the healthcare sector, but also significantly affected society's social and economic aspects. This study aims to understand the socio-economic dynamics influenced by the COVID-19 pandemic, particularly in the context of human development and poverty issues in Indonesia. The method utilized is panel data analysis using a random effect model involving time series data from 2010 to 2021, covering 33 provinces in Indonesia. The findings indicate that human development is crucial in addressing poverty, where efforts to enhance the quality of healthcare and education are essential to confront these challenges, especially during the COVID-19 pandemic. Additionally, this study finds that investment plays a role in reducing poverty, whereas increases in minimum wages, particularly during the pandemic, and open unemployment rates contribute to its exacerbation. Economic growth and inflation did not have a significant impact on poverty alleviation. The government needs to implement strategic measures, such as investing in the education and healthcare sectors and providing affordable access to both sectors to enhance productivity and the well-being of society. Thus, active government intervention can improve quality of life and reduce the poverty rate in Indonesia.

Keywords: COVID-19, education, healthcare, panel data, poverty alleviation, socio-economic.

JEL Classification: A14, I30, O10, O15.

Introduction

One of the primary aims of the national and global development process is to alleviate poverty (Khan et al., 2020; Moyer and Hedden, 2020). Overall, economic,

social, and human development aim to enhance societal well-being by reducing poverty (Todaro and Smith, 2020; Werhane et al., 2020). Poverty is a serious issue experienced by every country worldwide, especially developing nations (Ravallion, 2020). Poverty is a rather complex problem in developing countries, but some have developed in terms of production and national income. Poverty in a country or region reflects the welfare of the population living there (Singh and Chudasama, 2020; Hemerijck and Matsaganis, 2024).

As a developing country, poverty in Indonesia remains a persistent challenge despite ongoing economic development efforts (Bray et al., 2020; Hill, 2021; Nugroho et al., 2021; Purwono et al., 2021; Endrawati, 2022; Sugiharti et al., 2023; Yuliany et al., 2024). Despite significant progress in recent decades, poverty rates have remained notably high in many areas, particularly in rural and remote regions (Hill, 2021; Rini and Tambunan, 2021). Factors such as limited access to quality education, restricted employment opportunities, and high economic inequality are the primary contributors to the enduring issue of poverty (Sachs, 2022; Nureev, 2020; Duflo and Banerjee, 2011). Furthermore, vulnerability to natural disasters, social conflicts, and economic instability exacerbate poverty (Hallegatte et al., 2020; Agusalm and Karim, 2023). The Government of Indonesia (GoI) has implemented various initiatives to address poverty, including social assistance programs and infrastructure development in marginalized areas (Laurens and Putra, 2020; Ayudiasari et al., 2023). However, tackling this complex challenge requires a holistic and sustainable approach to achieving significant poverty reduction in the future.

In 2020, the pandemic's drastic impact exacerbated economic and social conditions, presenting new challenges in addressing poverty (Srinivas et al., 2024; Takyi et al., 2023; Saleem et al., 2023). The global economic downturn has led to job losses in the formal and informal sectors, which are crucial for supporting low-income families (Parolin, 2023; Ogando et al., 2023). During efforts to alleviate poverty, the COVID-19 pandemic has severely impacted poverty alleviation in Indonesia (Gibson and Olivia, 2020; Suryahadi et al., 2021; Tambunan, 2021; Basri and Fitriana, 2022). The increasing number of impoverished people due to the pandemic paralyzed economic activities, as government policies implementing large-scale social restrictions to contain COVID-19 halted economic production, resulting in job losses and decreased purchasing power (Rosyadi et al., 2022; Tarigan et al., 2020; Muhyiddin and Nugroho, 2021). Setyadi and Indriyani (2021) noted that much of the pandemic's impact on poverty stems from job losses due to imposed restrictions. Moreover, the pandemic has had a more detrimental impact

on vulnerable populations, which are those with lower education, illiteracy, and living in rural areas (Tantriana, 2023). Although the social protection programs provided by the GoI during the pandemic have mitigated poverty, it continues to rise (Suryahadi et al., 2021; Sumarto and Syarifah, 2022).

Before the COVID-19 pandemic, the poverty trend in Indonesia had exhibited a declining pattern (Hill, 2021). In 2010, the poverty rate was 13.33 percent (28.55 million people), which progressively decreased to 9.22 percent (24.76 million people) by 2019. However, in 2020, poverty increased due to the pandemic, with the poverty rate reaching 10.19 percent (27.55 million people), representing a 0.97 percent (2.79 million people) increase from the previous year (see Figure 1). Nevertheless, in 2021, it declined to 9.71 percent (26.50 million people) owing to the implementation of the National Economic Recovery policy (Pemulihan Ekonomi Nasional or PEN).

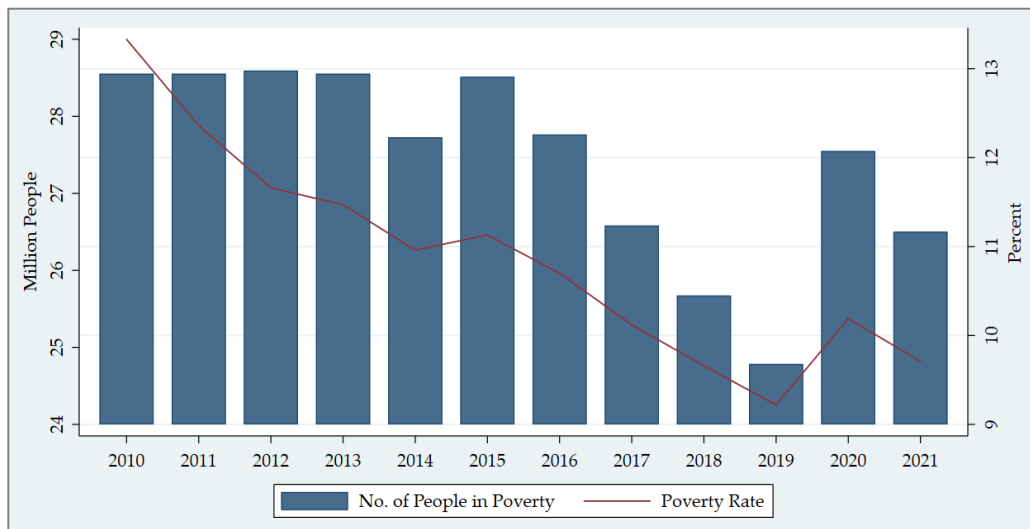


Figure 1. Poverty in Indonesia Before and During the COVID-19 Pandemic

Source: Research findings.

Despite the implementation of the PEN program, segments of the population are still affected by poverty due to COVID-19, amounting to 0.49 percent (1.74 million people). Hence, not all individuals benefited from the program. Nonetheless, the PEN initiative represents a governmental effort to safeguard and enhance the economic capabilities of commercial players in both real and financial sectors to sustain their operations during the COVID-19 pandemic. The PEN policy aims to alleviate the burden on industries affected by COVID-19 (Kennedy, 2021; Evi and Pramesworo, 2021; Ghanian et al., 2023). According to Abidin

(2021), the PEN program is instrumental in boosting Indonesia's purchasing power and overall economic recovery. In 2021, the provinces with the highest poverty rates were East Nusa Tenggara (20.44 percent), West Papua (21.82 percent), and Papua (27.38 percent), whereas those with the lowest poverty rates were DKI Jakarta (4.67 percent), Bangka Belitung (4.67 percent), and South Kalimantan (4.56 percent) (BPS-Statistics Indonesia, 2021).

According to the United Nations Development Programme (UNDP), human development correlates with the poverty level in a region, as human development can affect the number of impoverished individuals. Impoverished communities generally face limitations in production factors, resulting in restricted access to economic activities. These limitations impede their ability to generate sufficient income and meet basic needs such as clothing, food, and shelter. When basic needs are difficult to attain, access to education and healthcare becomes significantly more challenging (Dahliah and Nur, 2021; Hasan, 2021). Human development can be achieved by investing in the healthcare and education sectors, which benefit impoverished communities (Banerjee et al., 2021). Affordable education and healthcare facilities are expected to enhance productivity and increase income (Raghupathi and Raghupathi, 2020; Suripto and Subayil, 2020). According to Rassanjani et al. (2020), impoverished families face constraints in financing their livelihoods with limited or scarce resources, resulting in low-quality human resources that ultimately lead to poverty.

The correlation between the Human Development Index (HDI) and poverty levels across Indonesian provinces in 2021 is depicted in Figure 2. This illustrates that a higher HDI corresponds to lower poverty rates, whereas lower HDI correlates with higher poverty rates. For instance, DKI Jakarta Province had the highest HDI of 81.11 percent, with a relatively low poverty rate of 4.67 percent. In contrast, Papua Province exhibited the lowest HDI of 60.62 percent, coupled with a significantly higher poverty rate of 27.38 percent. This pattern underscores the critical role of human development indicators in understanding and addressing poverty disparities within regions, highlighting the importance of targeted interventions to improve socio-economic conditions and enhance well-being across diverse geographical areas (Asadullah et al., 2021; Idike et al., 2021; Attanasio et al., 2022).

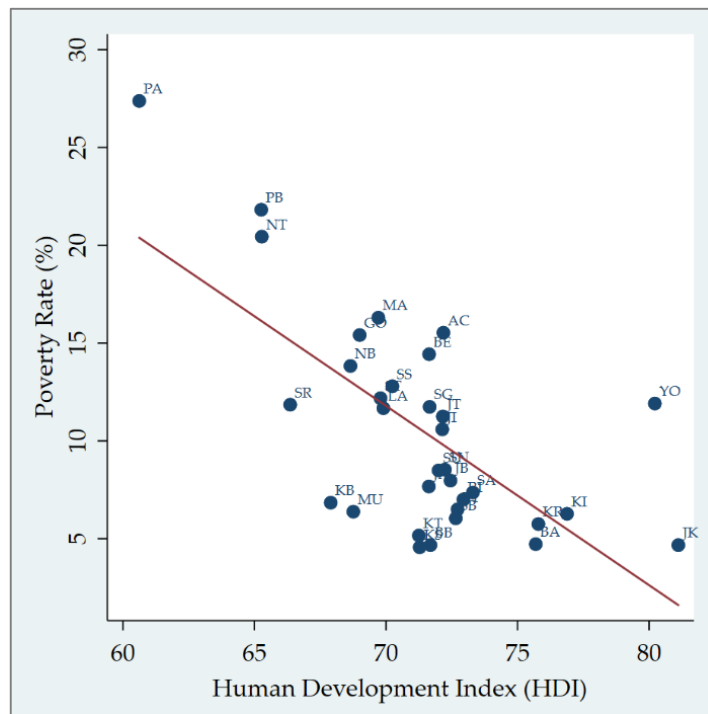


Figure 2. The Indication of the Relationship between HDI and Poverty in 2021

Source: Research findings.

Myrdal (1957; 1968) posited that poverty begins with low income, leading to inadequate nutrition, which further results in health issues. Poor health leads to low productivity, perpetuating the cycle of low income and ultimately resulting in poverty, thus giving rise to a vicious circle of poverty theory (Hirvilammi, 2020; Henry, 2022). This cycle can only be broken through human development, education, and health. Inadequate access to education, health services, sanitation, and water is also a major issue for impoverished communities (Adekoya, 2018). The primary causes of poverty in Nigeria stem from limitations in education, health care, sanitation, and access to water. Burgess (2020) and Abdulrahman (2022) assert that human resource development is the most crucial factor in addressing poverty in the long term.

This study makes a new contribution by complementing previous empirical research by focusing on the interaction between human development and poverty within the context of the pandemic crisis. Covering the period from 2010 to 2021, this research offers a more in-depth, long-term analysis compared to previous studies, which typically focus on shorter time frames. The use of panel data with a random effects model presents an approach that has rarely been applied,

particularly in understanding the socio-economic dynamics across provinces. The insights gained from this focus can help formulate more effective poverty alleviation policies, tailored to the socio-economic conditions of each province.

Based on the background provided, it is necessary to conduct in-depth research on the role of human development in addressing poverty issues before and during the COVID-19 pandemic. This study is expected to assist governments in formulating appropriate policies to combat poverty during the COVID-19 pandemic that are related to the enhancement of human resources.

Methodology

We conducted both descriptive and quantitative analyses. The data utilized were secondary panel data, consisting of time-series data from 2010 to 2021 and cross-sectional data from 33 provinces in Indonesia. Table 1 displays the variables used in this study, sourced from the BPS-Statistics Indonesia.

Table 1. Research Variables

No	Variable	Description	Unit
1	POV	Poverty rate	Percent
2	HDI	Human development index	0-100
3	MYS	Mean years of schooling	Year
4	LE	Life expectancy	Year
5	CD	COVID-19 dummy	Before COVID-19=0, During COVID-19=1
6	PMW	Provincial minimum wage	Million Rupiah
7	GROWTH	Gross regional domestic product per capita (log)	Million Rupiah
8	GFCF	Gross fixed capital formation per capita	Million Rupiah
9	GINI	Gini ratio	0-1
10	OUR	Open unemployment rate	Percent
11	INF	Inflation	Percent

Source: Research findings.

We employed panel data regression analysis to examine the influence of human development on the poverty rate before and during the COVID-19 pandemic period. In general, the panel data model is expressed as follows:

$$y_{it} = a + \beta x_{it} + \varepsilon_{it} \quad (1)$$

Parameter estimation in panel data models can be conducted using techniques such as Pooled Least Squares (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) (Gujarati, 2021).

Model Specifications

This research model was developed based on the ideas of Nurkse (1953) and Myrdal (1970) in the theory of the vicious circle of poverty. Furthermore, the model is also modified from the studies conducted by Setyadi and Indriyani (2021), Budhijana (2019), and Prasetyoningrum and Sukmawati (2018) by adding the COVID-19 dummy variable. The following two models were used in this study.

Model 1

$$lPOV_{it} = \alpha + \beta_1 lHDI_{it} + \beta_2 lHDI_{it} cd_{it} + \gamma' CV_{it} + \delta' CV_{it} cd_{it} + \varepsilon_{it} \quad (2)$$

Model 1, as depicted in Equation (2), is utilized to determine whether there are differences in the interaction effects between the variable $lHDI$ and the control variables (CV) on the poverty rate ($lPOV$) before and during COVID-19. The control variables include the minimum wage, economic growth, investment per capita, income inequality, open unemployment rate, and inflation. Several variables were transformed into natural logarithms to normalize and symmetrize the data and ensure constant variance. Equation (2) can be rearranged into Equations (4) and (6) to illustrate the effects before and during the COVID-19 pandemic, respectively.

Before COVID-19 ($cd_{it} = 0$)

$$lPOV_{it} = \alpha + \beta_1 lHDI_{it} + \beta_2 lHDI_{it} cd_{it}(0) + \gamma' CV_{it} + \delta' CV_{it} cd_{it}(0) + \varepsilon_{it} \quad (3)$$

$$lPOV_{it} = \alpha + \beta_1 lHDI_{it} + \gamma' CV_{it} + \varepsilon_{it} \quad (4)$$

During COVID-19 ($cd_{it} = 1$)

$$lPOV_{it} = \alpha + \beta_1 lHDI_{it} + \beta_2 lHDI_{it} cd_{it}(1) + \gamma' CV_{it} + \delta' CV_{it} cd_{it}(1) + \varepsilon_{it} \quad (5)$$

$$lPOV_{it} = \alpha + (\beta_1 + \beta_2) lHDI_{it} + (\gamma' + \delta') CV_{it} + \varepsilon_{it} \quad (6)$$

The significance of β_2 and δ' in Equation (6) determines whether there are differences in the influence of the independent variables on the poverty rate in Indonesia both before and during the COVID-19 pandemic.

Model 2

$$lPOV_{it} = \alpha + \beta_1 lMYS_{it} + \beta_2 lMYS_{it} cd_{it} + \beta_3 lLE_{it} + \beta_4 lLE_{it} cd_{it} + \gamma' CV_{it} + \delta' CV_{it} cd_{it} + \varepsilon_{it} \quad (7)$$

Model 2, as shown in Equation (7), replaces the $lHDI$ with $lMYS$ and lLE , maintaining the control variables in Model 1. Equation (7) can be rearranged into Equations (9) and (11) to demonstrate the effects before and during the COVID-19 pandemic.

Before COVID-19 ($cd_{it} = 0$)

$$lPOV_{it} = \alpha + \beta_1 lMYS_{it} + \beta_2 lMYS_{it} cd_{it}(0) + \beta_3 lLE_{it} + \beta_4 lLE_{it} cd_{it}(0) + \gamma' CV_{it} + \delta' CV_{it} cd_{it}(0) + \varepsilon_{it} \quad (8)$$

$$lPOV_{it} = \alpha + \beta_1 lMYS_{it} + \beta_3 lLE_{it} + \gamma' CV_{it} + \varepsilon_{it} \quad (9)$$

During COVID-19 ($cd_{it} = 1$)

$$lPOV_{it} = \alpha + \beta_1 lMYS_{it} + \beta_2 lMYS_{it} cd_{it}(1) + \beta_3 lLE_{it} + \beta_4 lLE_{it} cd_{it}(1) + \gamma' CV_{it} + \delta' CV_{it} cd_{it}(1) + \varepsilon_{it} \quad (10)$$

$$lPOV_{it} = \alpha + (\beta_1 + \beta_2) lMYS_{it} + (\beta_3 + \beta_4) lLE_{it} + (\gamma' + \delta') CV_{it} + \varepsilon_{it} \quad (11)$$

The significance of β_2 , β_4 , and δ' in Equation (11) determines whether there are differences in the influence of the independent variables on the poverty rate in Indonesia before and during the COVID-19 pandemic.

Results and Discussion

Descriptive Analysis

Human development is a key indicator for measuring the success of efforts to improve society's quality of life. In addition, HDI can determine the level or ranking of development in a region or country. The HDI is based on a three-dimensional approach as a measure of quality of life. These dimensions include (1) longevity and health, (2) knowledge, and (3) decent living standards. These three dimensions have broad implications as they are associated with many factors.

Life expectancy (LE) at birth is an indicator of health. By contrast, literacy rate and mean years of schooling (MYS) indicators are employed to gauge knowledge (Agusalim et al., 2022). Table 2 presents a comparison of HDI, MYS, and LE. DKI Jakarta Province had the highest HDI at 80.76, whereas Papua Province had the lowest HDI at 60.84, resulting in a 19.92-point difference. The average HDI for all the provinces was 71.04. Decreases were observed in certain regions during the pandemic. DKI Jakarta Province maintained its highest HDI of 80.77, surpassing pre-pandemic levels. At the same time, Papua Province retained its status as the province with the lowest HDI of 60.44, indicating significant pandemic-induced impacts. The overall ratio between the highest and lowest HDI levels remains 1.33 times. During the post-PEN program implementation period, notable HDI increases were observed in select regions, with DKI Jakarta Province leading with an HDI of 81.11.

Conversely, Papua Province registered the lowest HDI of 60.62, highlighting persistent human resource quality challenges. Despite HDI improvements across all provinces post-PEN program, Papua Province lags for three consecutive years due to insufficient human resource quality. In contrast, DKI Jakarta maintains its

status as the province with the highest HDI, benefiting from superior human resource quality, technology, and other factors.

The region with the highest MYS value was DKI Jakarta Province, with a value of 11.06 years, while the region with the lowest MYS value was Papua Province, at 6.65 years. Overall, the average MYS was 8.53 years, with a ratio of 1.66 times between the highest and lowest MYS values. After the pandemic, MYS values increased, with DKI Jakarta Province maintaining its position with the highest MYS at 11.13 years and Papua Province retaining the lowest MYS value at 6.69 years. Nationally, the average MYS is 8.64 years, with a ratio of approximately 1.66 times between the highest and lowest MYS values. With the implementation of the PEN program, MYS values showed significant improvement. DKI Jakarta Province continues to have the highest MYS value at 11.17 years, whereas Papua Province retains the lowest MYS value post-pandemic at 6.76 years. The national average MYS stands at 8.70 years, with a ratio of 1.65 times. A comparison before and during the pandemic revealed an overall increase in MYS across all provinces, with only nine provinces experiencing notably rapid increases, including North Sulawesi Province, with the highest increase in MYS of 1.37 years.

LE represents the average age estimated for an individual based on mortality rates at that time, and is projected to remain the same. It also evaluates the government's performance in enhancing the country's welfare. The LE values have increased over the years. The region with the highest LE value was found in the Yogyakarta Special Region at 74.92 years, whereas the lowest LE value was found in the West Sulawesi Province at 64.82 years. The national average LE was 69.81 years, with a ratio of 1.15 times between the highest and lowest LE values. During the COVID-19 pandemic, LE values increased compared with those in the previous year. The Yogyakarta Special Region remained the province with the highest LE value at 74.99 years, and West Sulawesi Province retained the lowest LE value at 65.06 years. The ratio between the lowest and highest LE values remains 1.15 times, with a national average LE of 69.96 years. The implemented PEN policy has been successful in increasing LE in several provinces. The province with the most significant LE increase was East Kalimantan Province, with a ratio of 0.38, followed by several other provinces. Table 2 shows that the averages of HDI, MYS, and LE during the pandemic were higher than those in the previous year or during the implementation of the PEN policy during the COVID-19 pandemic.

Table 2. Changes in Human Development in Indonesia Before and During the COVID-19 Pandemic

Province	Human development index					Mean years of schooling (years)					Life expectancy (years)				
	2019	2020	2021	Δ2020	Δ2021	2019	2020	2021	Δ2020	Δ2021	2019	2020	2021	Δ2020	Δ2021
AC	71.9	71.99	72.18	0.13	0.26	9.18	9.33	9.37	1.63	0.43	69.87	69.93	69.96	0.09	0.04
SU	71.74	71.77	72	0.04	0.32	9.45	9.54	9.58	0.95	0.42	68.95	69.1	69.23	0.22	0.19
SB	72.39	72.38	72.65	-0.01	0.37	8.92	8.99	9.07	0.78	0.89	69.31	69.47	69.59	0.23	0.17
RI	73	72.71	72.94	-0.40	0.32	9.03	9.14	9.19	1.22	0.55	71.48	71.6	71.67	0.17	0.18
JA	71.26	71.29	71.63	0.04	0.48	8.45	8.55	8.6	1.18	0.58	71.06	71.16	71.22	0.14	0.08
SS	70.02	70.01	70.24	-0.01	0.33	8.18	8.24	8.3	0.73	0.73	69.65	69.88	69.98	0.33	0.14
BE	71.21	71.4	71.64	0.27	0.34	8.73	8.84	8.87	1.26	0.34	69.21	69.35	69.42	0.20	0.10
LA	69.57	69.69	69.9	0.17	0.30	7.92	8.05	8.08	1.64	0.37	70.51	70.65	70.73	0.20	0.11
BB	71.3	71.47	71.69	0.24	0.31	7.98	8.06	8.08	1.00	0.25	70.5	70.64	70.73	0.20	0.13
KR	75.48	75.6	75.79	0.16	0.25	9.99	10.12	10.18	1.30	0.59	69.8	69.96	70.12	0.23	0.23
JK	80.76	80.77	81.11	0.01	0.42	11.06	11.13	11.17	0.63	0.36	72.79	72.91	73.01	0.16	0.14
JB	72.03	72.09	72.45	0.08	0.50	8.37	8.55	8.61	2.15	0.70	72.85	73.04	73.23	0.26	0.26
JT	71.73	71.87	72.16	0.20	0.40	7.53	7.69	7.75	2.12	0.78	74.23	74.37	74.47	0.19	0.13
YO	79.99	79.97	80.22	-0.03	0.31	9.38	9.55	9.64	1.81	0.94	74.92	74.99	75.04	0.09	0.07
JI	71.5	71.71	72.14	0.29	0.60	7.59	7.78	7.88	2.50	1.29	71.18	71.3	71.38	0.17	0.11
BT	72.44	72.45	72.72	0.01	0.37	8.74	8.89	8.93	1.72	0.45	69.84	69.96	70.02	0.17	0.09
BA	75.38	75.5	75.69	0.16	0.25	8.84	8.95	9.06	1.24	1.23	71.99	72.13	72.24	0.19	0.15
NB	68.14	68.25	68.65	0.16	0.59	7.27	7.31	7.38	0.55	0.96	66.28	66.51	66.69	0.35	0.27
NT	65.23	65.19	65.28	-0.06	0.14	7.55	7.63	7.69	1.06	0.79	66.85	67.01	67.15	0.24	0.21
KB	67.65	67.66	67.9	0.01	0.35	7.31	7.37	7.45	0.82	1.09	70.56	70.69	70.76	0.18	0.01
KT	70.91	71.05	71.25	0.20	0.28	8.51	8.59	8.64	0.94	0.58	69.69	69.74	69.79	0.07	0.07
KS	70.72	70.91	71.28	0.27	0.52	8.2	8.29	8.34	1.10	0.60	68.49	68.66	68.83	0.25	0.25
KI	76.61	76.24	76.88	-0.48	0.84	9.7	9.77	9.84	0.72	0.72	74.22	74.33	74.61	0.15	0.38
SA	72.99	72.93	73.3	-0.08	0.51	9.43	9.49	9.62	0.64	1.37	71.58	71.69	71.76	0.15	0.01
ST	69.5	69.55	69.79	0.07	0.35	8.75	8.83	8.89	0.91	0.68	68.23	68.69	68.83	0.67	0.20
SN	71.66	71.93	72.24	0.38	0.43	8.26	8.38	8.46	1.45	0.95	70.43	70.57	70.66	0.20	0.13
SG	71.2	71.45	71.66	0.35	0.29	8.91	9.04	9.13	1.46	1.00	70.97	71.22	71.27	0.35	0.07
GO	68.49	68.68	69	0.28	0.47	7.69	7.82	7.9	1.69	1.02	67.93	68.07	68.19	0.21	0.18
SR	65.73	66.11	66.36	0.58	0.38	7.73	7.89	7.96	2.07	0.89	64.82	65.06	65.25	0.37	0.29
MA	69.45	69.49	69.71	0.06	0.32	9.81	9.93	10.03	1.22	1.01	65.82	65.98	66.09	0.24	0.17
MU	68.7	68.49	68.76	-0.31	0.39	9	9.04	9.09	0.44	0.55	68.18	68.33	68.45	0.22	0.18
PB	64.7	65.09	65.26	0.60	0.26	7.44	7.6	7.69	2.15	1.18	65.9	66.02	66.14	0.18	0.18
PA	60.84	60.44	60.62	-0.66	0.30	6.65	6.69	6.76	0.60	1.05	65.65	65.79	65.93	0.21	0.21
Max	80.76	80.77	81.11	0.13	0.84	11.06	11.13	11.17	2.50	1.37	74.92	74.99	75.04	0.67	0.38
Min	60.84	60.44	60.62	-0.66	0.14	6.65	6.69	6.76	0.44	0.25	64.82	65.06	65.25	0.07	0.01
Ratio	1.32	1.33	1.33			1.66	1.66	1.65			1.15	1.15	1.15		
Mean	71.04	71.09	71.37			8.53	8.64	8.70			69.81	69.96	70.07		

Source: Research findings.

Table 3. Poverty Change in Indonesia Before and During the COVID-19 Pandemic

Province	Poverty rate (percent)					No. of people in poverty (thousand people)				
	2019	2020	2021	Δ2020	Δ2021	2019	2020	2021	Δ2020	Δ2021
AC	15.01	15.43	15.53	0.42	0.1	809.76	833.91	850.26	2.98	1.96
SU	8.63	9.14	8.49	0.51	-0.65	1,260.5	1,356.72	1,273.07	7.63	-6.17
SB	6.29	6.56	6.04	0.27	-0.52	343.09	364.79	339.93	6.32	-6.81
RI	6.9	7.04	7	0.14	-0.04	483.92	491.22	496.66	1.51	1.11
JA	7.51	7.97	7.67	0.46	-0.3	273.36	288.1	279.85	5.39	-2.86
SS	12.56	12.98	12.79	0.42	-0.19	1,067.16	1,119.65	1,116.61	4.92	-0.27
BE	14.91	15.3	14.43	0.39	-0.87	298.01	306	291.8	2.68	-4.64
LA	12.3	12.76	11.67	0.46	-1.09	1,041.48	1,091.14	1,007.02	4.77	-7.71
BB	4.5	4.89	4.67	0.39	-0.22	67.37	72.05	69.71	6.95	-3.25
KR	5.8	6.13	5.75	0.33	-0.38	127.75	142.61	137.75	11.63	-3.41
JK	3.42	4.89	4.67	1.47	-0.22	362.3	496.84	498.29	37.13	0.29
JB	6.82	6.13	5.75	-0.69	-0.38	3,375.9	4,188.52	4,004.86	24.07	-4.38
JT	10.58	11.84	11.25	1.26	-0.59	3,679.41	4,119.93	3,934.01	11.97	-4.51
YO	11.44	12.8	11.91	1.36	-0.89	440.89	503.14	474.49	14.12	-5.69
JI	10.2	11.84	11.25	1.64	-0.59	4,056	4,585.97	4,259.6	13.07	-7.12
BT	4.94	6.63	6.5	1.69	-0.13	641.41	857.64	852.28	33.71	-0.62
BA	3.61	4.45	4.72	0.84	0.27	156.91	196.92	211.46	25.5	7.38
NB	13.88	14.23	13.83	0.35	-0.4	705.68	746.04	735.31	5.72	-1.44
NT	20.62	21.21	20.44	0.59	-0.77	1,129.46	1,173.53	1,146.28	3.9	-2.32
KB	7.28	7.24	6.84	-0.04	-0.4	370.47	370.72	354	0.07	-4.51
KT	4.81	5.5	5.16	0.69	-0.34	131.24	141.79	141.03	8.04	-0.54
KS	4.47	4.83	4.56	0.36	-0.27	190.29	206.92	197.76	8.74	-4.43
KI	5.91	6.64	6.27	0.73	-0.37	269.52	296.69	282.62	10.08	-4.74
SA	7.51	7.78	7.36	0.27	-0.42	188.6	195.85	186.55	3.84	-4.75
ST	13.18	13.06	12.18	-0.12	-0.88	404.03	403.74	381.21	-0.07	-5.58
SN	8.56	8.99	8.53	0.43	-0.46	759.58	800.24	765.46	5.35	-4.35
SG	11.04	11.69	11.74	0.65	0.05	299.96	317.32	323.27	5.79	1.88
GO	15.31	15.59	15.41	0.28	-0.18	184.71	185.31	184.6	0.32	-0.38
SR	10.95	11.5	11.85	0.55	0.35	151.87	159.04	165.99	4.72	4.37
MA	17.65	17.99	16.3	0.34	-1.69	319.52	322.4	294.96	0.9	-8.51
MU	6.91	6.97	6.38	0.06	-0.59	87.17	87.52	81.18	0.4	-7.24
PB	21.51	21.7	21.82	0.19	0.12	207.59	215.22	221.29	3.68	2.82
PA	26.55	26.8	27.38	0.25	0.58	900.95	912.23	944.49	1.25	3.54
Max	26.55	26.8	27.38	1.69	0.58	4,056	4,585.97	4259.60	37.13	7.38
Min	3.42	4.45	4.56	-0.69	-1.69	67.37	72.05	69.71	-0.07	-8.51
Ratio	7.76	6.02	6			60.20	63.64	61.10		
Mean	10.35	10.86	10.49			751.09	834.84	803.14		

Source: Research findings.

Table 3 displays the poverty rates and poverty amounts in Indonesia. Before the COVID-19 pandemic, Papua Province had the highest poverty rate at 26.55 percent, whereas DKI Jakarta had the lowest at 3.42 percent. The national average poverty rate was 10.35 percent, with a ratio of 7.76 times between the lowest and highest poverty rates. During the pandemic, Papua Province had the highest poverty rate at 26.80 percent, whereas Bali Province had the lowest poverty rate at 4.45 percent. The ratio between the highest and lowest poverty rates increased by 6.02 times, with an average increase of 10.6 percent.

After the implementation of the PEN policy, a noticeable decrease in poverty rates was observed across Indonesia. In 2021, Papua Province still had the highest poverty rate (27.38%), whereas the lowest poverty rate was in South Kalimantan Province (4.56%). The national average poverty rate was 10.49 percent, which was lower than that of the previous year. When comparing poverty rates after the economic recovery, Maluku Province emerged as the region with the highest decrease in poverty rates, reaching 1.69 percent. This pattern indicates a successful economic recovery, particularly when addressing poverty issues. However, there are regions where poverty rates have increased by 0.58 %, such as Papua.

Table 3 also displays the number of poor people, revealing that both before and during the COVID-19 pandemic, East Java Province had the highest poverty count of approximately four million people. Conversely, the province with the lowest poverty level before the pandemic was Bangka Belitung, with approximately 67.37 thousand people. The average poverty count during that period was approximately 751.09 thousand people, with the highest and lowest poverty ratios reaching a factor of 60.20 times. East Java Province remained the area with the highest poverty count during the pandemic, reaching 4.5 million individuals, followed by West Java Province at 4.2 million. The lowest poverty level persisted in Bangka Belitung Province, with approximately 72.05 thousand people. On average, unemployment figures increased during the pandemic to approximately 834 thousand people, with the highest and lowest poverty ratios nationally at around 63.64 times. Furthermore, the highest increase in poverty levels before and after the pandemic was observed in DKI Jakarta Province, rising by 37.13 percent, whereas the lowest increase occurred in Southeast Sulawesi Province, at only 0.07 percent.

The implementation of the PEN program has significantly impacted poverty reduction efforts. Table 3 shows that only eight provinces experienced increased poverty levels after the PEN program was implemented. The region with the highest poverty counts during that year remained East Java, with a value of 4.3

million people, showing a decrease compared to the previous year. Conversely, the region with the lowest poverty count persisted in Bangka Belitung Province at approximately 69.1 thousand people. The national poverty average was approximately 803.14 thousand people, with the highest and lowest unemployment differences around 61.10 times. Furthermore, comparing poverty levels after the implementation of the PEN program, Maluku Province emerged with the highest reduction in poverty levels compared to other provinces, at 8.51 percent. At the same time, Bali Province experienced a decrease in population, reaching 7.38 percent.

Table 4 summarizes the variables used in this study, including the number of observations, mean values, standard deviations, and the minimum and maximum values. This study comprised 396 observations. Most variables have a standard deviation smaller than one, except for the investment variable (*IGFCF*) and the open unemployment rate (*OUR*). This difference occurred because these two variables had a wide range of values from the average.

Table 4. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
IPOV	396	2.324	0.528	1.23	3.61
IHDI	396	4.228	0.066	4	4.4
IMYS	396	2.085	0.126	1.72	2.41
ILE	396	4.237	0.038	4.14	4.32
IPMW	396	2.799	0.423	1.84	3.79
GROWTH	396	3.431	0.559	2.23	5.16
IGFCF	396	3.748	1.188	1.23	6.62
IGINI	396	3.573	0.109	3.18	3.81
OUR	396	5.531	2.143	1.37	13.74
INF	396	1.280	0.174	1	1.66

Source: Research findings.

Results of Panel Data Regression Analysis

In the panel data regression analysis, three tests were conducted to determine the best technique to address the research objectives. These three tests are the Chow test to determine the best technique between PLS and FEM, followed by the Hausman test to determine the best technique between FEM and REM if the first test results indicate that FEM is the best. The final test is then conducted, namely the Lagrange Multiplier (LM) test. This test selects the best use between REM and PLS for the research. After conducting the Chow, Hausman, and LM tests,

Table 5 shows that Models 1 and 2 were selected using REM. Table 5 presents the results of the analysis of the two selected research models. The R-squared value of Model 1 was greater than that of Model 2. The Wald Chi² results show that the independent variables in each model simultaneously significantly influence Indonesia's poverty rate.

Table 5. Results of the Panel Data Model Estimation

Independent variable	Dependent variable: Poverty rate (<i>IPOV</i>)	
	Model 1	Model 2
IHDI	-3.282*** (0.441)	-
IHDI * CD	-0.226** (0.097)	-
IMYS	-	-1.019*** (0.235)
IMYS * CD	-	0.244* (0.132)
ILE	-	-1.571* (0.918)
ILE * CD	-	-0.444*** (0.112)
IPMW	0.011 (0.034)	-0.002 (0.041)
IPMW * CD	0.205*** (0.061)	0.207*** (0.064)
GROWTH	0.017 (0.056)	-0.017 (0.059)
GROWTH * CD	0.035 (0.028)	-0.001 (0.031)
IGFCF	-0.063* (0.037)	-0.076** (0.037)
IGFCF * CD	0.012 (0.012)	0.024* (0.013)
IGINI	0.027 (0.067)	-0.041 (0.072)
IGINI * CD	0.082 (0.084)	0.192** (0.089)
OUR	0.009** (0.004)	0.009** (0.004)
OUR * CD	-0.009 (0.0059)	-0.018** (0.007)
INF	0.078 (0.0964)	-0.097 (0.094)
INF * CD	-0.049 (0.114)	0.052 (0.117)
Constant	16.10*** (1.784)	11.67*** (3.746)
Model	REM	REM
R-squared	0.378	0.337
Wald Chi ²	665.74	603.86
No. of Observations	396	396
Provinces	33	33

Source: Research findings.

Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$; standard errors are in parentheses.

Table 5 is rearranged into Table 6 to facilitate a partial analysis of the influence of the independent variables on the poverty rate in Indonesia. Table 6

presents a comparison of the estimation results before and during the COVID-19 pandemic.

Table 6. A Comparison of Estimation Results Before and During the COVID-19 Pandemic

Independent variable	Dependent variable: Poverty (IPOV)			
	Model 1		Model 2	
	Before COVID-19 (cd=0)	During COVID-19 (cd=1)	Before COVID-19 (cd=0)	During COVID-19 (cd=1)
IHDI	-3.282	-3.508	-	-
IMYS	-	-	-1.018	-0.775
ILE	-	-	-1.571	-2.015
IPMW	-	0.205	-	0.207
GROWTH	-	-	-	-
IGFCF	-0.063	-0.063	-0.076	-0.052
IGINI	-	-	-	0.192
OUR	0.009	0.009	0.009	0.009
INF	-	-	-	-

Source: Research findings.

Based on the estimations in Tables 5 and 6, it can be concluded that human development played a significant role in reducing poverty, both before and during the COVID-19 pandemic. Indicators representing human development, such as the HDI, mean years of schooling, and life expectancy, significantly impact poverty rates. The HDI reflects various aspects of human well-being, including access to education, healthcare, and decent living standards. Average years of schooling indicates the education level attained by individuals in a population, while life expectancy reflects the average lifespan of the population. During the COVID-19 pandemic, the role of human development in poverty reduction became stronger, consistent with the study by Lewaherilla (2021). This relationship occurs because human development enhances the community's capacity to address economic and social challenges during the pandemic. For instance, communities with better access to healthcare services can help mitigate the risk of poverty due to high healthcare costs. These findings are supported by those of Moyo et al. (2022), Prasetyoningrum and Sukmawati (2018), and Andhykha et al. (2018), who concluded that higher human development reduces poverty rates. They argued that HDI, comprising health, education, and living standards, is closely linked to productivity and serves as a crucial component in economic development to alleviate poverty.

However, one variable in human development that did not increase poverty reduction during the COVID-19 pandemic is the mean number of years of schooling. This result may be due to various factors, including disruptions in education delivery during the pandemic, such as school closures, and the transition to remote learning. These disruptions may affect the effectiveness of education in reducing poverty in the short-term.

Human development has become increasingly important, particularly when linked to Indonesia's goal of reaping demographic bonuses (Adriani and Yustiani, 2021; Sutrisno, 2023; Wardhana, 2023). Indonesia's demographic bonus will continue to rise and peak in 2025, when the productive population exceeds the non-productive age group. The dependency ratio reached its lowest level of 44.67 percent in 2022 (BPS-Statistics Indonesia, 2023). Indonesia can optimize the utilization of the demographic bonus to achieve the Golden Indonesian Vision 2045, which aims to realize a better and more evenly distributed welfare level for Indonesians with higher human quality. As the first pillar of reaching Golden Indonesia in 2045, human development is directed towards accelerating poverty alleviation.

With a population dominated by the working-age group, investments in education, health, and skill development are key to ensuring that the workforce can make maximum contributions to economic growth (Adeleye et al., 2022; Sulistiyowati and Agusalm, 2023). Strong human development will enable Indonesia to transform the demographic bonus into a sustainable opportunity by enhancing productivity, creativity, and innovation across various economic sectors (Ernawan et al., 2023). By ensuring equal and equitable access to education and healthcare services for the entire workforce, Indonesia can maximize the potential of the demographic bonus to achieve inclusive and sustainable development (Burgess et al., 2020).

The utilization of the demographic bonus cannot be viewed as a direct guarantee of increased welfare, considering the complex correlation between demographic bonus, human development, and poverty (Nasution, 2021). Challenges associated with harnessing demographic bonus must be addressed, particularly concerning inequality and poverty. While the demographic bonus may boost overall per capita income, there remains the risk that these benefits are unevenly distributed and do not reach the most vulnerable groups (Sanderson, 2020). Therefore, targeted policies are required to ensure that the demographic bonus is accompanied by concrete efforts to reduce social disparities and poverty. Thus, all segments of society can have a positive impact.

In addition to human development, investments, represented by gross fixed capital formation per capita, play a crucial role in reducing poverty in Indonesia, as evidenced by studies such as Xiao et al. (2022), Dhahri and Omri (2020), Dhrifi et al. (2020), and Amalia and Agusalim (2023). However, during the COVID-19 pandemic, the influence of investments diminished. Despite its ongoing relevance to poverty alleviation efforts, economic uncertainty during the pandemic remains a challenge. When markets become unstable and demand decreases, investors tend to be cautious in allocating capital, potentially reducing investment in job-creating sectors. Additionally, rapid and often unpredictable policy changes during the pandemic have disrupted long-term investment processes, leading to greater investor uncertainty. These challenges can hinder economic growth and create additional obstacles for poverty reduction.

Moreover, during the pandemic, investments focused more on economic recovery than long-term projects, which could potentially reduce poverty. Many countries and companies have allocated resources to support sectors directly affected by the pandemic or emergency social assistance programs. This policy can lead to a lack of investment in the long-term infrastructure, education, or skill training essential for enhancing economic capacity and reducing poverty in the long run. Therefore, although investment remains a critical factor in poverty reduction, economic challenges and shifting priorities during the pandemic may reduce the impact on poverty alleviation.

Raising the provincial minimum wage is often seen as a solution to reduce worker poverty (Sotomayor, 2021; Campos-Vazquez and Esquivel, 2023). However, this study revealed a surprising outcome: increasing wages worsened the poverty problem in Indonesia, particularly during the COVID-19 pandemic. This phenomenon occurs because when wages rise during the pandemic, companies reduce their workforce or work hours to offset the increased labor costs. Many companies have taken proactive steps to prevent worsening poverty during the pandemic, such as cutting employee salaries to retain jobs, even if this means squeezing workers' family incomes, even with modest wages. Wage reduction prevents mass layoffs. The GoI has taken significant steps to prevent increased poverty by not raising provincial minimum wages during the COVID-19 pandemic. This finding reported by Burkhauser (2014) and Jadoon et al. (2021).

Estimates also indicate that income inequality can exacerbate poverty, particularly during the COVID-19 pandemic. Ibrahim and Taiga (2020) found similar trends in Nigeria, whereas Michálek and Výboštok (2019) observed similar trends across 28 European Union member states. This relationship occurs because

a significant portion of economic resources is concentrated among a few individuals or groups, limiting lower-income communities' access to basic food and non-food needs. This limitation can worsen their poverty status. Income inequality can also lead to socio-economic instability among different societal groups, potentially triggering social tension, unrest, and political instability (Yang et al., 2020). This instability can hinder governments from effectively addressing poverty issues as they must focus on alleviating social discontent.

Moreover, income inequality can create an unfavorable economic climate for inclusive economic growth. When most resources and wealth are concentrated among a few, opportunities for marginalized groups to achieve economic prosperity are limited. Hence, Bergstrom (2022) asserts that reducing income inequality is an effective strategy to alleviate poverty.

Open unemployment is another factor that significantly increases poverty. Before and during the pandemic, unemployment significantly exacerbated poverty, a finding echoed in studies by Pohlig (2021), Feriyanto et al. (2020), and Agusalim (2017). Their estimations indicated no difference in the impact of unemployment on poverty across these periods. Adults without jobs struggle to afford necessities, such as food, housing, and healthcare, trapping them in worsening living conditions. Unemployment also fosters economic uncertainty, reduces purchasing power, and hinders economic growth. This phenomenon can create a cycle in which low economic growth leads to fewer job opportunities, exacerbating unemployment and poverty. Additionally, unemployment can trigger social issues, such as crime, social conflicts, and political instability (Demeke, 2022; Ejo-Orusa, 2020).

Another valuable lesson from this study is that economic growth alone cannot always address poverty, as Janjua et al. (2023) also found. This study revealed that increases in economic growth did not significantly impact poverty reduction, both before and during the COVID-19 pandemic. This finding can be attributed to economic growth, which is primarily driven by the wealthy few (Agusalim and Pohan, 2018). High economic growth accompanied by increasing income inequality is a key reason poverty remains challenging to alleviate. Even though the economy grows, if the benefits are not evenly distributed, only a small portion of the population benefits, whereas others remain impoverished. Economic growth tends to favor wealthier individuals with greater access to economic resources. An exclusive economic structure can also render economic growth ineffective for addressing poverty.

This study found no significant relationship between inflation and poverty rate in Indonesia, both before and during the COVID-19 pandemic. These results are consistent with the findings of Susanto and Pangesti (2021) and Amalia and Rachmawati (2022). This lack of relationship occurs because price increases in Indonesia are considered low and have yet to reach a level that would lower purchasing power. In addition, low inflation can be followed by income increases that do not lead to impoverishment.

Based on the findings of this study, progressive policies are required to reduce poverty. Sen and Chinara (2012) and Ravallion (2020) suggest that significant poverty reduction requires comprehensive and coordinated efforts involving collaboration between the government, civil society, private sector, and international institutions. These efforts include policies supporting access to quality education, affordable healthcare services, and creating inclusive economic opportunities. Ray (2012) states that human development involving education, health, and individual empowerment is key to breaking the poverty cycle. Furthermore, he asserted that investing in human resources is a vital foundation for a country's economic and social progress. From his perspective, human development is about increasing income and providing fair opportunities for individuals to realize their potential. Thus, effective human development can create empowered, high-income, and equally opportunistic societies, gradually reducing poverty rates.

Conclusion

The main contribution of this study is its long-term analysis from 2010 to 2021 using panel data with a random-effects model that offers new insights into the interaction between human development and poverty across provinces during the COVID-19 pandemic. Based on the analysis, it is concluded that human development plays a significant role in poverty alleviation both before and during the COVID-19 pandemic. Human development variables such as HDI, average years of schooling, and life expectancy partially affect the poverty rate. These relationships indicate that improving access to education, healthcare services, and decent living standards can help to reduce poverty. Despite economic downturns during the COVID-19 pandemic, the impact of human development on poverty reduction remains noticeable, although educational variables tend to show a decrease in their influence. Poverty alleviation can also be achieved by increasing domestic investments. Research shows that investment contributes positively to economic growth and societal welfare, especially in the long-term. However,

during the pandemic, there has been a decline in the strength of investment's influence in addressing poverty. This decline was due to unstable economic conditions and increased uncertainty, resulting in investment slowdowns and an overall decline in economic activity. Consequently, efforts to reduce poverty through investment are hindered by insufficient resources and economic support. Therefore, responsive and appropriate policy measures from both the government and private sectors are needed to support sustainable and inclusive human development and investment, thus creating growth that benefits all parties.

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References

- Abdulrahman, I. A. (2022). Measuring the Impact of Human Resource Development on Poverty Incidence in Nigeria: A Bound Testing Approach. *Economics and Culture*, 19(2), 81-96. Retrieved from <https://doi.org/10.2478/jec-2022-0018>.
- Abidin, M. Z. (2021). National Economic Recovery during the COVID-19 Pandemic: Analysis of Labor Productivity in the Agricultural Sector. *Indonesian Treasury Review: Journal of Treasury, State Finance and Public Policy*, 6(2), 117-138.
- Adekoya, O. D. (2018). Impact of Human Capital Development on Poverty Alleviation in Nigeria. *International Journal of Economics and Management Sciences*, 7(4), 1-8. Retrieved from <https://doi.org/10.4172/2162-6359.1000544>.
- Adeleye, B. N., Bengana, I., Boukhelkhal, A., Shafiq, M. M., & Abdulkareem, H. K. (2022). Does Human Capital Tilt the Population-Economic Growth Dynamics? Evidence from Middle East and North African Countries. *Social Indicators Research*, 162(2), 863-883. Retrieved from <https://doi.org/10.1007/s11205-021-02867-5>.
- Adriani, D., & Yustini, T. (2021). Anticipating the Demographic Bonus from the Perspective of Human Capital in Indonesia. *International Journal of Research in Business*

and Social Science, 10(6), 141-152. Retrieved from <https://doi.org/10.20525/ijrbs.v10i6.1377>.

Agusalim, L., & Karim M. (2023). *Religious Teachings' Transformation Against the Climate Crisis*. Bogor: PT. IPB Press.

Agusalim, L. (2017). The Dynamic Impact of Trade Openness on Poverty: An Empirical Study of Indonesia's Economy. *International Journal of Economics and Financial Issues*, 7(1), 566-574. Retrieved from <https://dergipark.org.tr/en/download/article-file/364240>.

Agusalim, L., & Pohan, F. S. (2018). Trade Openness Effect on Income Inequality: Empirical Evidence from Indonesia. *Significant: Journal of Economics*, 7(1), 1-14. Retrieved from <https://doi.org/10.15408/sjie.v7i1.5527>.

Agusalim, L., Anggraeni, L., & Pasaribu, S. H. (2022). The Economy of Indonesia: Driven by Physical or Human Capital? *JEJAK: Journal of Economics and Policy*, 15(1), 10-28. Retrieved from <https://doi.org/10.15294/jejak.v15i1.34418>.

Agusalim, L., Sulistiyowati, & Amalia, S. N. (2023). *Gender and Economic Development: A Cross-Provincial Study in Indonesia*. Malang: Madza Media.

Amalia, R., & Rachmawati, L. (2022). The Influence of Inflation, Economic Growth and Unemployment on Poverty Levels in Surabaya City. *Independent: Journal of Economics*, 2(1), 175-186. Retrieved from <https://doi.org/10.26740/independent.v2i1.46004>.

Andhykha, R., Handayani, H. R., & Woyanti, N. (2018). Analysis of the Influence of GRDP, Unemployment Rate, and HDI on Poverty Levels in Central Java Province. *Economics and Management Media*, 33(2), 113-123. Retrieved from <https://doi.org/10.24856/mem.v33i2.671>.

Asadullah, M. N., Mansor, N., & Savoia, A. (2021). Understanding a "Development Miracle": Poverty Reduction and Human Development in Malaysia Since the 1970s. *Journal of Human Development and Capabilities*, 22(4), 551-576. Retrieved from <https://doi.org/10.1080/19452829.2021.1975664>.

Attanasio, O., Cattan, S., & Meghir, C. (2022). Early Childhood Development, Human Capital, and Poverty. *Annual Review of Economics*, 14, 853-892. Retrieved from <https://doi.org/10.1146/annurev-economics-092821-053234>.

Ayudiasari, K. T., Rosialani, R., & Khoerizza, M. A. S. (2023). Development Transformation: Strategy for Economic and Social Progress in Indonesia. *Social Impact Journal*, 2(2), 54-61. Retrieved from <https://doi.org/10.61391/sij.v2i2.63>.

Banerjee, R., Mishra, V., & Maruta, A. A. (2021). Energy poverty, Health and Education Outcomes: Evidence from the Developing World. *Energy Economics*, 101, 105447. Retrieved from <https://doi.org/10.1016/j.eneco.2021.105447>.

- Basri, M. C., & Fitrania, S. N. (2022). The Indonesian Economy in the Time of COVID-19: Saving Lives and Livelihoods? (12-45). In L. Y. Ing and M. C. Basri (Eds.), *COVID-19 in Indonesia: Impacts on the Economy and Ways to Recovery*. Oxford shire: Taylor & Francis. Retrieved from <https://doi.org/10.4324/9781003243670-2>
- Bergstrom, K. (2022). The Role of Income Inequality for Poverty Reduction. *The World Bank Economic Review*, 36(3), 583-604. Retrieved from <https://doi.org/10.1093/wber/lhab026>.
- Bray, R., de Laat, M., Godinot, X., Ugarte, A., & Walker, R. (2020). Realizing Poverty in All Its Dimensions: A Six-Country Participatory Study. *World Development*, 134, 105025. Retrieved from <https://doi.org/10.1016/j.worlddev.2020.105025>.
- Budhijana, R. B. (2019). Analysis of the Influence of Economic Growth, Human Development Index (HDI) and Unemployment on Poverty Levels in Indonesia 2000-2017. *Journal of Economics, Management and Banking*, 5(1), 36-44. Retrieved from <https://scholar.archive.org/work/z2fcxsdd55agxi42f5lyyzvvwe/access/wayback/http://journal.ibs.ac.id/index.php/JEMP/article/download/170/167> .
- Burgess, J., Dayaram, K., Lambey, L., & Afrianty, T. W. (2020). The Challenges of Human Resource Development in Indonesia. In *Developing the Workforce in an Emerging Economy* (1-17). London: Routledge.
- Burkhauser, R. V. (2014). Why Minimum Wage Increases are a Poor Way to Help the Working Poor. *IZA Policy Paper*, 86. Retrieved from <https://www.econstor.eu/bitstream/10419/104981/1/788983458.pdf>.
- Campos-Vazquez, R. M., & Esquivel, G. (2023). The Effect of the Minimum Wage on Poverty: Evidence from a Quasi-Experiment in Mexico. *The Journal of Development Studies*, 59(3), 360-380. Retrieved from <https://doi.org/10.1080/00220388.2022.2130056>.
- Clemente-Suárez, V. J., Navarro-Jiménez, E., Moreno-Luna, L., Saavedra-Serrano, M. C., Jimenez, M., Simón, J. A., & Tornero-Aguilera, J. F. (2021). The Impact of the COVID-19 Pandemic on Social, Health, and Economy. *Sustainability*, 13(11), 6314. Retrieved from <https://doi.org/10.3390/su13116314>.
- Dahliah, D., & Nur, A. N. (2021). The Influence of Unemployment, Human Development Index and Gross Domestic Product on Poverty Level. *Golden Ratio of Social Science and Education*, 1(2), 95-108. Retrieved from <https://doi.org/10.52970/grsse.v1i2.84>.
- Demeke, Y. H. (2022). Youth Unemployment and Political Instability: Evidence from IGAD Member Countries. *Cogent Economics & Finance*, 10(1), 2079211. Retrieved from <https://doi.org/10.1080/23322039.2022.2079211>.
- Dhahri, S., & Omri, A. (2020). Foreign Capital Towards SDGs 1 & 2—Ending Poverty and Hunger: The Role of Agricultural Production. *Structural Change and Economic Dynamics*, 53, 208-221. Retrieved from <https://doi.org/10.1016/j.strueco.2020.02.004>.
- Dhrifi, A., Jaziri, R., & Alnahdi, S. (2020). Does Foreign Direct Investment and Environmental Degradation Matter for Poverty? Evidence from Developing Countries. *Structural Change and Economic Dynamics*, 52, 13-21. Retrieved from <https://doi.org/10.1016/j.strueco.2019.09.008>.

- Duflo, E., & Banerjee, A. (2011). *Poor Economics* (619). New York: Public Affairs.
- Ejo-Orusa, D. (2020). Unemployment and Insecurity in Rivers State. *International Journal of Innovative Legal & Political Studies*, 8(3), 74-87. Retrieved from
- Endrawati, D. (2022). Determinants of Working Poverty in Indonesia. *Journal of Economics and Development*, 24(3), 230-246. Retrieved from <https://www.emerald.com/jed/article-pdf/24/3/230/1366518/jed-09-2021-0151.pdf>.
- Ernawan, D., Widodo, P., KY, I. G. S., & Uksan, A. (2023). Innovative Approaches in TNI's Territorial Development to Utilize the Demographic Dividend for the Realization of Indonesia's Golden 2045 Vision. *International Journal of Humanities Education and Social Sciences*, 3(3), 1431–1437.
- Evi, T., & Pramesworo, I. S. (2021). Providing Income Tax Article 21 Tax Incentives during the COVID-19 Pandemic for the Stability of Economic Growth in Indonesia. *Journal of Economics, Finance and Management Studies*, 4(03), 106-119. Retrieved from <https://www.researchgate.net>.
- Feriyanto, N., El Aiyubbi, D., & Nurdany, A. (2020). The Impact of Unemployment, Minimum Wage, and Real Gross Regional Domestic Product on Poverty Reduction in Provinces of Indonesia. *Asian Economic and Financial Review*, 10(10), 1088. Retrieved from <https://ideas.repec.org/a/asi/aeafjr/v10y2020i10p1088-1099id2002.html>.
- Garad, A., Budiyanto, G., & Ansi, A. (2021). Impact of COVID-19 Pandemic on the Global Economy and Future Prospects: A Systematic Review of Global Reports. *Journal of Theoretical and Applied Information Technology*, 99(4), 1-15. Retrieved from <https://www.researchgate.net>.
- Ghania, N. A., Farhan, F., Rahmadhani, H., Eriska, M., Rahman, A., & Pratama, S. (2023). Government's Strategy to Overcome the Impact of Fiscal and Monetary Policy on the Indonesian Economy. *Indonesian Journal of Multidisciplinary Sciences (IJoMS)*, 2(2), 289-301.
- 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. Retrieved from <https://doi.org/10.1080/00074918.2020.1847244>.
- Gujarati, D. N. (2021). *Essentials of Econometrics* (5th Ed.). Thousand Oaks: Sage Publications.
- Hallegatte, S., Vogt-Schilb, A., Rozenberg, J., Bangalore, M., & Beaudet, C. (2020). From Poverty to Disaster and Back: A Review of the Literature. *Economics of Disasters and Climate Change*, 4, 223-247. Retrieved from <https://doi.org/10.1007/s41885-020-00060-5>.
- Hasan, Z. (2021). The Effect of Economic Growth and Human Development Index on Poverty in Indonesia. *Journal of Economics and Sustainability*, 3(1), 12-12. Retrieved from <https://doi.org/10.32890/jes2021.3.1.5>.
- Hemerijck, A., & Matsaganis, M. (2024). *Who's Afraid of the Welfare State Now?* Oxford: Oxford University Press.

- Henry, J. (2022). Why Poverty Mentality Matter for Achieving the First Sustainable Development Goals (SDGS) in Nigeria. *FORCE: Focus on Research in Contemporary Economics*, 3(2), 357-367. Retrieved from <https://doi.org/10.31098/issues.v2i2.1061>.
- Hill, H. (2021). What's Happened to Poverty and Inequality in Indonesia Over Half a Century? *Asian Development Review*, 38(1), 68–97. Retrieved from https://doi.org/10.1162/adev_a_00158.
- Hirvilammi, T. (2020). The Virtuous Circle of Sustainable Welfare as a Transformative Policy Idea. *Sustainability*, 12(1), 391. Retrieved from <https://doi.org/10.3390/su12010391>.
- Ibrahim, V. H., & Taiga, U. U. (2020). Income Inequality and Poverty in Nigeria: An Empirical Analysis. *IOSR Journal of Economics and Finance*, 11(3), 7-14. Retrieved from https://www.academia.edu/download/119422661/Income_Inequality_and_Poverty_in_Nigeria.pdf.
- Idike, A. N., Ukeje, I. O., Ogbulu, U., Aloh, J. N., Obasi, V. U., Nwachukwu, K., Osuebi, K., & Ejem, E. N. (2021). The Practice of Human Capital Development Process and Poverty Reduction: Consequences for Sustainable Development Goals in Ebonyi State. Nigeria. *Public Organization Review*, 21(2), 263-280. Retrieved from <https://doi.org/10.1007/s11115-020-00482-5>.
- Jadoon, A. K., Tanveer, A., Javed, M. F., & Sarwar, A. (2021). Minimum Wages and Poverty: A Cross-Country Analysis. *Asian Economic and Financial Review*, 11(8), 632-643. Retrieved from <https://ideas.repec.org/a/asi/aeafjr/v11y2021i8p632-643id2119.html>.
- Janjua, L. R., Sanli, O., Panait, M., Cristea, M., & Razzak, A. (2023). Impact of Energy Security and Economic Growth on Poverty: Sample of Sub-Saharan Africa. In *Environment, Development and Sustainability* (1-26). Retrieved from <https://doi.org/10.1007/s10668-023-03689-w>.
- Kennedy, P. S. J. (2021). Evaluation of the COVID-19 Handling Programs and National Economic Recovery in Indonesia. *Fundamental Management Journal*, 6(1), 21-33. Retrieved from <https://doi.org/10.33541/fjm.v6i1p.2831>.
- Khan, N., Naushad, M., Faisal, S., & Fahad, S. (2020). Analysis of Poverty of Different Countries of the World. *SSRN*, 3701329. Retrieved from <https://doi.org/10.2139/ssrn.3701329>.
- Laurens, S., & Putra, A. H. P. K. (2020). Poverty Alleviation Efforts through MDG's and Economic Resources in Indonesia. *The Journal of Asian Finance, Economics and Business*, 7(9), 755-767. Retrieved from <https://doi.org/10.13106/jafeb.2020.vol7.no9.755>.
- Lewaherilla, E. (2021). The influence of the Human Development Index, Unemployment Rate on Poverty Levels during the COVID-19 Pandemic. *Musamus Journal of Economics Development*, 3(2), 57-63. Retrieved from <https://doi.org/10.35724/feb.v3i2.3902>.
- Michálek, A., & Výboštok, J. (2019). Economic Growth, Inequality and Poverty in the EU. *Social Indicators Research*, 141, 611-630. Retrieved from <https://doi.org/10.1007/s11205-018-1858-7>.

Moyer, J. D., & Hedden, S. (2020). Are We on the Right Path to Achieve the Sustainable Development Goals? *World Development*, 127, 104749. Retrieved from <https://doi.org/10.1016/j.worlddev.2019.104749>.

Moyo, C., Mishi, S., & Ncwadi, R. (2022). Human Capital Development, Poverty and Income Inequality in the Eastern Cape Province. *Development Studies Research*, 9(1), 36-47. Retrieved from <https://doi.org/10.1080/21665095.2022.2032236>.

Muhyiddin, M., & Nugroho, H. (2021). A year of COVID-19: A long Road to Recovery and Acceleration of Indonesia's Development. *Journal of Development Planning: The Indonesian Journal of Development Planning*, 5(1), 1-19. Retrieved from <https://doi.org/10.36574/jpp.v5i1.181>.

Myrdal, G. (1957). *Economic Theory and Under-Developed Regions*. London: Gerald Duckworth and Co. Ltd.

Myrdal, G. (1970). *The Challenge of World Poverty: A World Anti-Poverty Program in Outline*. Penguin: Pantheon Books.

----- (1968). *Asian Drama: An Inquiry into the Poverty of Nations; A Twentieth Century Fund Study, I, II, and III*. New York: Pantheon.

Nasution, M. (2021). Relationship between Demographic Bonus, Human Development Index, and Employment Development Index with Economic Growth. *Budget Journal: Issues and Problems of State Finance*, 6(1), 74-95.

Nureev, R. M. (2020). Poverty Theory and Practice: Contribution of Abhijit Banerjee and Esther Duflo. *Journal of Institutional Studies*, 12(1), 6-18. Retrieved from <https://cyberleninka.ru/article/n/poverty-theory-and-practice-contribution-of-abhijit-banerjee-and-esther-duflo>.

Nurkse, R. (1953). *Problems of Capital Formation in Underdeveloped Countries*. New York: Oxford University Press.

Ogando, A. C., Rogan, M., & Moussié, R. (2022). Impacts of the COVID-19 Pandemic and Unpaid Care Work on Informal Workers' Livelihoods. *International Labour Review*, 161(2), 171-194. Retrieved from <https://pmc.ncbi.nlm.nih.gov/articles/PMC8652843/pdf/ILR-161-171.pdf>.

Parolin, Z. (2023). *Poverty in the Pandemic: Policy Lessons from COVID-19*. New York: Russell Sage Foundation.

Pohlig, M. (2021). Unemployment Sequences and the Risk of Poverty: From Counting Duration to Contextualizing Sequences. *Socio-Economic Review*, 19(1), 273-305. Retrieved from <https://doi.org/10.1093/ser/mwz004>.

Prasetyoningrum, A. K., & Sukmawati, U. S. (2018). Analysis of the Influence of the Human Development Index (HDI), Economic Growth and Unemployment on Poverty in Indonesia. *Equilibrium: Journal of Sharia Economics*, 6(2), 217-240. Retrieved from <https://doi.org/10.37200/ijpr/v24i3/pr200758>.

- Purwono, R., Wardana, W. W., Haryanto, T., & Mubin, M. K. (2021). Poverty Dynamics in Indonesia: Empirical Evidence from Three Main Approaches. *World Development Perspectives*, 23, 100346. Retrieved from <https://doi.org/10.1016/j.wdp.2021.100346>.
- Raghupathi, V., & Raghupathi, W. (2020). Healthcare Expenditure and Economic Performance: Insights from the United States Data. *Frontiers in Public Health*, 8, 538294. Retrieved from <https://doi.org/10.3389/fpubh.2020.00156>.
- Rassanjani, S., Harakan, A., Pintobtang, P., & Jermisittiparsert, K. (2019). Social Protection System to Reduce Poverty in a Natural Resource Rich Country: Towards the Success of the Sustainable Development Goals. *International Journal of Innovation, Creativity and Change*, 7(8), 104-126. Retrieved from <https://www.researchgate.net/>.
- Ray, D. (2012). *Development Economics*. Oxford: Oxford University Press.
- Rini, D. L., & Tambunan, T. T. H. (2021). Inclusive Economic Growth of Indonesia and Its Determinants-Recent Evidence with Provincial Data. *Asian Journal of Interdisciplinary Research*, 4, 85-100. Retrieved from <https://doi.org/10.34256/ajir2118>.
- Rosyadi, S., Sabiq, A., Ahmad, A. A., & Nuryanti. (2022). The Indonesian Government Capacity in Responding to the COVID-19 Impacts on the Creative Economy Sector. *Sage Open*, 12(2), 21582440221105820. Retrieved from <https://doi.org/10.1177/21582440221105820>.
- Sachs, J. D. (2022). Chapter 13 the Challenge of Global Poverty. In *Ethics in Action for Sustainable Development* (157-162). New York: Columbia University Press.
- Saleem, R., Azam, S., & Hashmi, A. H. (2023). COVID-19 and Its Global Economic Effects: Erstwhile and Afterwards. In *Post-Pandemic Economy, Technology, and Innovation* (1-47). New Jersey: Apple Academic Press.
- Sanderson, J. (2020). Youth Bulge in Sub-Saharan Africa: A Theoretical Discourse on the Potential of Demographic Dividend vs. Demographic Bomb. *Susquehanna University Political Review*, 11(5), 99-132. Retrieved from https://susqu-researchmanagement.esploro.exlibrisgroup.com/view/pdfCoverPage?instCode=01SUU_INST&filePid=13230200110005236&download=true.
- Sen, B., & Chinara, M. (2012). *Economic Development and Poverty in India*. New Delhi: New Century Publications.
- Setyadi, S., & Indriyani, L. (2021). The Impact of the COVID-19 Pandemic on Increasing the Risk of Poverty in Indonesia. *PARETO: Journal of Economics and Public Policy*, 4(1), 53-66.
- Singh, P. K., & Chudasama, H. (2020). Evaluating Poverty Alleviation Strategies in a Developing Country. *PloS one*, 15(1), e0227176. Retrieved from <https://doi.org/10.1371/journal.pone.0227176>.
- Sotomayor, O. J. (2021). Can the Minimum Wage Reduce Poverty and Inequality in the Developing World? Evidence from Brazil. *World Development*, 138, 105182. Retrieved from <https://doi.org/10.1016/j.worlddev.2020.105182>.

- Srinivas, J., Kolloju, N., Singh, A., Naveen, S., & Naresh, S. (2024). The COVID-19 Pandemic and Its Impact on Sustainable Development Goals-2030. *Journal of the Knowledge Economy*, 15(4), 15485-15498. Retrieved from <https://doi.org/10.1007/s13132-023-01692-0>.
- 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), 2267927. Retrieved from <https://doi.org/10.1080/23322039.2023.2267927>.
- Sulistiyowati, & Agusalim, L. (2023). COVID-19, Gender Inequality, and Economic Growth: An Empirical Study in Indonesia. *Sosio Informa*, 9(2), 173-196.
- Sumarto, S., & Syarifah, Z. A. (2022). COVID-19 in Indonesia: The Significance of Social Safety Nets (101-126). In L. Y. Ing & M. C. Basri (Eds.), *COVID-19 in Indonesia: Impacts on the Economy and Ways to Recovery*. Oxfordshire: Taylor & Francis.
- Suryahadi, A., Al Izzati, R., & Yumna, A. (2021). The Impact of Covid-19 and Social Protection Programs on Poverty in Indonesia. *Bulletin of Indonesian Economic Studies*, 57(3), 267–296. Retrieved from <https://doi.org/10.1080/00074918.2021.2005519>.
- Susanto, R., & Pangesti, I. (2021). The Effect of Inflation and Economic Growth on Poverty Levels in Indonesia. *Journal of Applied Business and Economic*, 7(2), 271-278. Retrieved from <https://doi.org/10.30998/jabe.v7i2.7653>.
- Sutrisno, A. (2023). Skilling the Demographic Bonus: Progress and Gaps in Indonesian Employment Strategies. In *Sustainable and Dynamic Graduate Employability* (162-184). New Delhi: Routledge India.
- Takyi, P. O., Dramani, J. B., Akosah, N. K., & Aawaar, G. (2023). Economic Activities' Response to the COVID-19 Pandemic in Developing Countries. *Scientific African*, 20, e01642. Retrieved from <https://doi.org/10.1016/j.sciaf.2023.e01642>.
- Tambunan, T. T. H. (2021). Covid-19 Pandemic and Severity of Economic Impacts: The Indonesian Case. *Global Economics Science*, 2(3), 1–15. Retrieved from <https://doi.org/10.37256/ges.232021898>.
- Tantriana, A. (2024). Poverty and Vulnerability Transitions in Indonesia Before and during the COVID-19: Insights from Synthetic Panels. *Quality & Quantity*, 58(4), 3215-3249. Retrieved from <https://doi.org/10.1007/s11135-023-01785-7>.
- Tarigan, H., Sinaga, J. H., & Rachmawati, R. R. (2020). The Impact of the COVID-19 Pandemic on Poverty in Indonesia. *Center for Socioeconomic and Agricultural Policy*, 3, 457-479. Retrieved from <http://ojs.stie-tdn.ac.id/index.php/MV/article/download/411/336>.
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development* (13th Ed.). London: Pearson.
- Wardhana, D. (2023). The More the Merrier the Wealthier? Multi-dimensional Taxonomy of Demography and Development in Indonesia. *International Journal of Development Issues*, 22(3), 445-463. Retrieved from <https://doi.org/10.1108/ijdi-05-2023-0115>.

Werhane, P. H., Newton, L., & Wolfe, R. (2020). *Alleviating Poverty through Profitable Partnerships: Globalization, Markets, and Economic Well-being*. London: Routledge.

Xiao, H., Zheng, X., & Xie, L. (2022). Promoting Pro-Poor Growth through Infrastructure Investment: Evidence from the Targeted Poverty Alleviation Program in China. *China Economic Review*, 71, 101729. Retrieved from <https://doi.org/10.1016/j.chieco.2021.101729>.

Yang, J., Zhang, C., & Liu, K. (2020). Income Inequality and Civil Disorder: Evidence from China. *Journal of Contemporary China*, 29(125), 680-697. Retrieved from <https://doi.org/10.1080/10670564.2019.1705000>.

Yuliany, N., Roswiyanti, R., & Widiawati, A. (2024). Factors Affecting Productivity and Its Distribution for Poverty Alleviation. *Movere Journal*, 6(1), 133-154. Retrieved from <https://doi.org/10.53654/mv.v6i1.411>.



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