Education, GDP and Their Role in Poverty in Indonesia: VECM Analysis

Hardy Dharmawan Prayogo[1], Bambang Hadi Prabowo[2], Budi Sasongko[3]

[1,2,3]STIE Jaya Negara Tamansiswa Malang, Indonesia

Abstract

The purpose of this investigation was to examine how progress in education and the economy have affected poverty levels in Indonesia. For Indonesia, we utilise World Bank information for the years 2000-2019. The levels of poverty and education are used as independent variables. Additionally, Vector AutoRegressive (VAR) is used in the testing process. The data indicated that higher levels of education correlate with lower rates of joblessness. In addition, there is a link between higher levels of education and economic development in Indonesia. The current high poverty rate in Indonesia is a consequence of earlier low poverty rates. The quality of education is a key indicator of economic development in Indonesia, thus policymakers should develop effective plans and programmes to that end. The poverty rate in Indonesia will decrease thanks to this programme.

Background

Millions of people all around the world are living in poverty, making it one of the world's biggest problems. The inability to acquire or maintain food, water, housing, health care, an education, or a sense of safety and security, or to take part in society's economic or social life, are all indicators of poverty. Inequality, war, environmental degradation, discrimination, and abuses of human rights are only some of the causes and effects of poverty. It is essential to review the current status of research on poverty and related themes in order to comprehend the issue and develop effective solutions. Growth can and will occur even if there are impoverished people living in the country (Widarni, Irawan, Harnani, Rusminingsih, & Alim, 2022 ; Prabowo, Sasongko, & Damayanti, 2022).

The global economy will continue to expand even if the global population increases. This holds true both in the long and medium terms, demonstrating that the economy has grown despite an increase in poverty levels. It is vital to understand that a high rate of unemployment will lead to a high rate of poverty even if the value of the gross domestic product is increasing. This will cause slight rather than significant growth in the economy (Adelowokan, 2019). As GDP rises, so does the gap between rich and poor, but only to a lesser extent. Put another way, when GDP rises, there is less of an impact poverty has on slowing growth. The impact of inequality is negative at lower quantiles of the conditional distribution of economic growth and positive at higher quantiles, according to two different assumptions. In addition, reducing poverty is more important for stimulating economic growth than narrowing the income gap. To effectively address the structural issues facing the Vietnamese economy, economic development and urbanisation must be complemented by more inclusive and pro-poor policies (Nguyen et al., 2020). As the Gini index reflects the distribution of income relative to expenditures, poverty is directly linked to income inequality. The Gini coefficient is unrelated to income, primary

school completion, or joblessness. Income disparity among OIC member nations is mostly caused by poverty. The countries need to take measures to better distribute their wealth and alleviate poverty. In order to achieve economic and social progress, the countries should increase their collaboration and integration (Fauziana, Wardhana, & Rusgianto, 2022).

More than a billion people were lifted out of extreme poverty between 1990 and 2015, as the World Bank reports that the global poverty rate (as determined by the international poverty level of $1.90 per day) fell from 36% to 10%. Many areas and nations continue deal with high rates of poverty and inequality, while improvement has been uneven and unstable. As a result of the COVID-19 epidemic, millions of people have fallen back into poverty. Understanding poverty's roots, scope, and dynamics can help in finding solutions. Low income is simply one cause of poverty; other contributors include discrimination, a lack of resources (such as education, healthcare, and infrastructure), vulnerability to shocks and hazards, and a diminished capacity to have a say in one's own destiny. Poverty has far-reaching effects on people, influencing their health, education, nutrition, security, and happiness. Poverty is dynamic in the sense that it varies over time and between different settings as a result of things like economic development, social policies, demographic shifts, environmental modifications, and armed conflicts. There is no long-run equilibrium link between these variables in South Africa, suggesting that social investment has failed to alleviate poverty, boost equality, or stimulate growth (Ogujiuba & Mngometulu, 2022).

An all-encompassing strategy that takes into account the interconnected nature of poverty is essential for achieving long-term success in reducing poverty. This strategy should be grounded on evidence-based research that examines the factors that contribute to poverty, the outcomes of poverty reduction programmes, and the best practises and lessons gained from a variety of settings and experiences. Involving the poor and other stakeholders like governments, civil society organisations, private sector actors, donors, and international agencies in the planning, carrying out, and assessing of strategies to alleviate poverty is essential. As GDP rises, so does the gap between rich and poor, but only to a lesser extent. Put another way, when GDP rises, there is less of an impact poverty has on slowing growth. The impact of inequality is negative at lower quantiles of the conditional distribution of economic growth and positive at higher quantiles, according to two different assumptions. Additionally, reducing poverty is more important for stimulating economic development than reducing income disparity. (Asongu & Eita, 2023).

Getting a good education is crucial to the growth of every society and economy. The world is undergoing rapid and deep changes in terms of technology, globalisation, demography, the environment, and culture, all of which have significant implications for education in the twenty-first century. Millions of people all over the world are affected by the intricate relationship between lack of education and extreme poverty. Access to and completion of a quality education are generally cited as crucial factors in eliminating poverty and encouraging economic and social development. However, poverty is a major impediment to both. However, there is no one-to-one correlation between schooling and financial stability because of the wide range of variables at play. Since there are many causes and factors that contribute to poverty, it will take more than just education to solve the problem. Because of its negative impact on economic growth and quality of life in developing nations, lack of access to affordable energy is one of the most pressing challenges of our day. However, energy poverty is negatively impacted by education, with lower rates and less severe effects at greater levels of schooling. The percentage of the population without access to electricity, the percentage of the population that uses solid fuels for cooking, and the energy intensity of GDP are all consistent with this finding (Apergis, Polemis, & Soursou, 2022). The purpose of this study is to examine the

relationship between Indonesia's education rate and economic growth and the country's poverty rate.

Research Method

The purpose of this study was to investigate how progress in education and the economy have affected poverty levels in Indonesia. For Indonesia, we utilise World Bank information for the years 2000-2019. The levels of poverty and education are used as independent variables.

$$POV_t = \beta_0 + \beta_1 EDU_{t1} + \beta_2 GDP_{t2} + e_t$$
$$EDU_t = \beta_0 + \beta_1 POV_{t1} + \beta_2 GDP_{t2} + e_t$$
$$GDP_t = \beta_0 + \beta_1 POV_{t1} + \beta_2 EDU_{t2} + e_t$$

Information:
POV   = Poverty
EDU   = Education Rate
GDP   = Economic Growth (in percent)
β   = Konstanta
e   = Error term
t   = Time Period

Furthermore, the data obtained will be processed and tested using the var test through the cointegration test.

Result and Discussion

Research variables were assumed to be stationary at some level, and their stationarity was evaluated using the unit root test. Table 1's unit root test.

Table 1. Unit Root Test Result on POV, EDU, and GDP.

Variable	Level		First Difference	
	Prob.	Description	Prob.	Description
POV	0.8480	Not Fulfil	0.0039	Fulfil
EDU	0.6576	Not Fulfil	0.0000	Fulfil
GDP	0.1464	Not Fulfil	0.0001	Fulfil

The unit root test findings shown in Table 1 above indicate that all study variables are stationary at the same initial difference. The lag that will be employed in the study will be provided in table 2 once an optimal lag test has been conducted.

Table 2. Lag Optimum Test

Lag	LogL.	LR	FPE	AIC	SC	HQ
0	-182.7267	NA	62120.92	19.55018	19.69930	19.57541
1	-140.2091	67.13302*	1858.554*	16.02201*	16.61850*	16.12296*

Table 2 of the optimum lag test indicates that the lag to be used in the study is lag 1. Next, a cointegration test will be carried out as shown in table 3.

Table 3. Cointegartion Test Result

Hypothesized	Eigenvalue	Trace Statistic	0,05 Critical Value	Probability
None	0.628760	26.45068	29.79707	0.1158
At most 1	0.323717	9.605285	15.49471	0.3123

At most 2	0.159597	2.955848	3.841466	0.0856

Based on table 3 in the cointegration test above, no cointegration was found so that the VAR test can be continued.

Table 4. VAR Test Result

	POV	EDU	GDP
POV(-1)	0.525736	-39.13924	0.119990
	(0.19486)	(27.5145)	(0.20951)
	[2.69802]	[-1.42250]	[0.57271]
EDU(-1)	-0.003095	0.731925	0.000889
	(0.00134)	(0.18898)	(0.00144)
	[-2.31249]	[3.87309]	[0.61764]
GDP(-1)	0.041069	1.337211	0.434673
	(0.22386)	(31.6094)	(0.24069)
	[0.18346]	[0.04230]	[1.80592]
C	14.75139	1384.009	-1.225826
	(6.26881)	(885.163)	(6.74018)
	[2.35314]	[1.56356]	[-0.18187]

Table 4 of the VAR findings demonstrates that education has a negative influence on unemployment, as measured by a t-statistic of [-2.31249]. This effect is attributable to EDU(-1) and POV, which stand for point of view. The t-statistic for the correlation between education and GDP is [0.61764], which indicates a significant positive relationship between the two variables. In contrast, a t-statistic of [0.57271] indicates a positive correlation between POV(-1) and unemployment GDP, which in turn boosts economic expansion.

Past poverty levels are contributing to the current upward trend of poverty in Indonesia. The correlation between low income and economic expansion is intriguing, and it has important implications. Conversely, schooling tends to increase joblessness. And there is a link between higher levels of education and the expansion of Indonesia's economy.

Table 5. Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
EDU does not Granger Cause POV	23	0.0263	0.0263
POV does not Granger Cause EDU		2.25939	0.1523
GDP does not Granger Cause POV	23	0.24608	0.6266
POV does not Granger Cause GDP		0.01193	0.9144
GDP does not Granger Cause EDU	23	0.09091	0.7669
EDU does not Granger Cause GDP		0.06779	0.7979

The above Granger causality test findings table 6 displays the correlation between the variables. The likelihood of POV occurring independently of EDU is 0.0263. This may be explained by the fact that while poverty affects education, it has no effect on a person's degree of education if they have a high level of education.

Conclusion

Past poverty levels have contributed to the current high poverty rate in Indonesia. There's a fascinating correlation between rising prosperity and a decline in poverty. Conversely, schooling tends to increase joblessness. In addition, there is a link between higher levels of education and economic development in Indonesia. For Indonesia's economy to flourish, policymakers must devise effective policies and programmes to raise education standards. The poverty rate in Indonesia will decrease thanks to this programme.

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