



(RESEARCH ARTICLE)



The effect of education level and unemployment rate on poverty in Deli Serdang regency

Iwan Syahputra and Lia Nazliana Nasution *

Master of Economics, Graduate Program, Universitas Pembangunan Panca Budi., Indonesia.

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Abstract

Poverty is a complex problem that is multidimensional and affects many people around the world, including Indonesia. In Indonesia, poverty is still high, especially in underdeveloped rural and urban areas. Low education levels and high unemployment exacerbate poverty conditions as they affect access to decent work and adequate income. In Deli Serdang Regency, North Sumatra, despite having abundant natural resources, the poverty rate is still high. Expected solutions include improved access and quality of education, increased job opportunities, entrepreneurship promotion, access to better health and social services, and effective redistribution policies. This study aims to determine the influence of education, unemployment, HDI, and income on poverty in Deli Serdang Regency and to determine the influence of wages, consumption, and poverty on income simultaneously on income in Deli Serdang Regency. The approach used in this study is a quantitative approach sourced from secondary data in a time series, namely from 2013 to 2023. The data analysis model in this study uses a simultaneous equation model. The results of the simultaneity test showed that education had a positive and significant effect on poverty, while unemployment, HDI and income had a negative and insignificant effect on poverty. And poverty has a positive and significant effect on income, while consumption and wages have a negative and insignificant effect on income.

Keywords: Education; Unemployment; HDI; Income; Wages; Consumption; Poverty

1. Introduction

The problem of poverty is a complex and multidimensional problem that affects many people around the world. In Indonesia, the poverty rate is still quite high, especially in underdeveloped rural and urban areas. In this context, research on the influence of education level and unemployment rate on poverty is very relevant and important to be carried out (1,2).

Poverty is a serious problem that a person faces in life, the problem of poverty is so complex related to aspects, social, cultural, economic and other aspects. Poverty that occurs in an area must be considered as a serious problem, because poverty makes it difficult for many people to meet their daily needs. Poverty is one of the diseases in the economy, so there must be solutions or policies to reduce the poverty level. The problem of poverty is a complex and complex problem and is multidimensional. Therefore, policies made for poverty alleviation must be carried out comprehensively and integrated (3).

The term poverty is when a person or group is unable to meet the needs or economic prosperity in accordance with the standard of living in a given area. Poverty alleviation efforts have been recognized through various strategies. It is directly realized in the form of providing stimulant assistance funds as business capital for productive economic activities and social assistance. Assistance is indirectly carried out through the provision of facilities and infrastructure to support socio-economic activities and community empowerment (4).

* Corresponding author: Lia Nazliana Nasution

Deli Serdang Regency is one of the districts in North Sumatra province that has a large population. Despite having quite abundant natural resources, the poverty rate in Deli Serdang Regency is still relatively high (5).

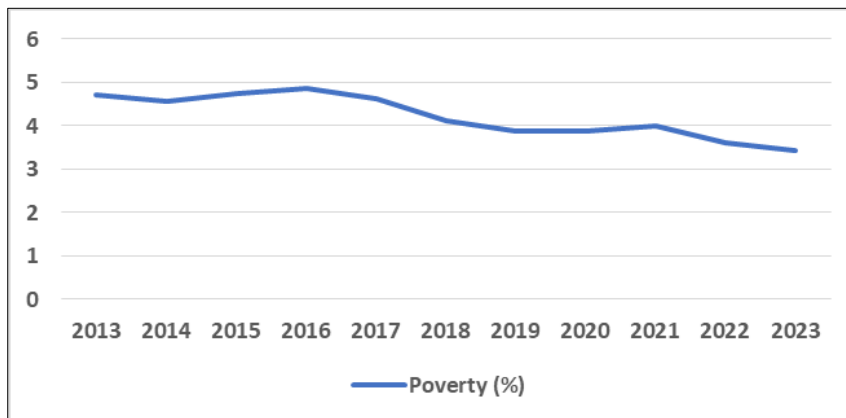


Figure 1 Number of Poverty in Deli Serdang Regency

According to the data from the table above, the number of pre-prosperous/welfare-I population in North Nias is 32,702 with a high poverty rate in Deli Serdang Regency can be caused by various factors, including the level of education and the unemployment rate in the region. Low levels of education and high unemployment rates can exacerbate poverty conditions in the region, as they can affect access to decent work and sufficient income. Poverty data from 2013 to 2023 shows a general downward trend. From 4.71% in 2013, the poverty rate dropped to 3.44% in 2023. Although there were temporary increases in 2015 and 2016, the downward trend continued, especially after 2017. The COVID-19 pandemic in 2020 and 2021 led to temporary stability, but the decline continued until it reached its lowest point in the decade in 2023.

The level of education and unemployment can be factors that affect the poverty rate in Deli Serdang Regency. According to BPS data, the level of education in Deli Serdang Regency is still low, with only about 20.4% of the population having an education above high school. In addition, the unemployment rate in Deli Serdang Regency is also relatively high, with the open unemployment rate reaching 7.24%.

This condition can be a concern because the low level of education and the high unemployment rate can have an impact on the quality of human resources and economic growth in the region. If the residents of Deli Serdang Regency have a low level of education, then they tend to be only able to do physical jobs or jobs that do not require special skills, which will ultimately result in low wages. In addition, high unemployment can also trigger social problems such as crime and drug abuse.

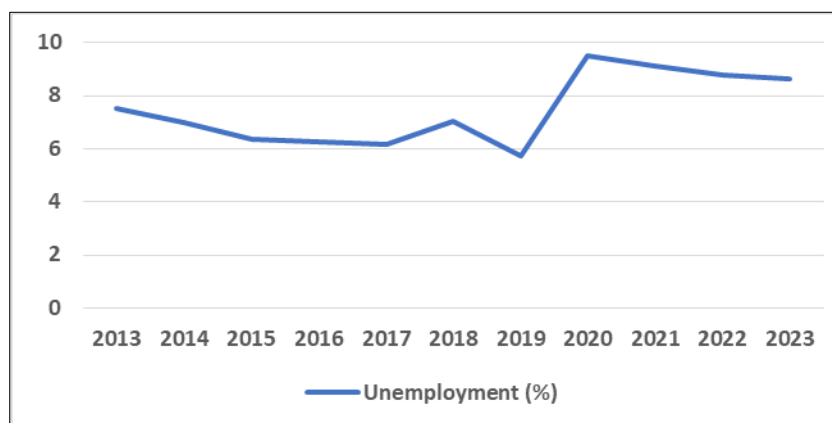


Figure 2 Unemployment in Deli Serdang Regency

Based on the table above, it shows that the number of unemployed in Deli Serdang Regency from 2013 to 2023 shows a fluctuating trend. Initially, the unemployment rate decreased from 7.54% in 2013 to 6.16% in 2017. However, there was a significant increase in 2018 with the unemployment rate reaching 7.06%. The downward trend continued until

2019 with the lowest unemployment rate in the decade, which was 5.74%. In 2020, the impact of the COVID-19 pandemic caused a spike in unemployment of up to 9.50%. Although there was a slight decline afterwards, the unemployment rate remained relatively high, at 8.62% in 2023. Overall, this data reflects fluctuations affected by global economic conditions and the pandemic.

To increase job opportunities, the Deli Serdang Regency government needs to take steps to increase job opportunities for the community. This can be done by promoting sectors that have the potential to create new jobs, such as tourism, creative industries, and agriculture. In addition, the government can also provide training and skill development to the community so that they are better prepared to enter the world of work.

Encouraging entrepreneurship, entrepreneurship can be an alternative for people who find it difficult to get a job in the formal sector. Therefore, the government can provide the support and facilities needed to encourage the development of entrepreneurship in Deli Serdang Regency.

2. Literature review

Poverty is an economic phenomenon that usually occurs in countries that do not have the strength of competitiveness and capital resources in the form of natural resources and human resources. Every government always strives to suppress poverty in order to ensure the welfare of the community by carrying out economic activities in the form of production, distribution and consumption by involving the resources they have. A government that has competitiveness can compete and carry out economic activities and can reduce poverty by increasing good competitiveness.

According to Suharto, in understanding poverty there are two paradigms or grand theories, namely the Neo-liberal paradigm and Social Democracy. Neo-Liberal Paradigm Theory, poverty is an individual problem, not a group problem caused by the weakness or life choices of the individual concerned. Poverty will disappear if market forces are expanded to the greatest extent and economic growth is increased to the highest level. In poverty alleviation, it must not be temporary. And it does not only involve families, non-governmental groups or religious institutions.

Social-Democratic Paradigm Theory The Social Democratic Theory of poverty is not an individual problem, but a structural problem. Poverty is due to injustice and income inequality in society as a result of limited access of certain groups to various sources of society. Social-Democratic supporters argue that equality is an important prerequisite for gaining independence in freedom.

3. Research methods

This study uses the simultaneous equation method, this research lasts for 5 months from March 2024 to July 2024 starting from preparation to preparation of the research, the data used uses secondary data from 2023-2023, The research location is in Deli Serdang Regency, North Sumatra Province.

4. Research results and Discussion

The results of the estimation to determine the influence of variables in 2 simultaneous equations were carried out using the *Two-Stage Least Squares model*. The results of the equation system estimation with *Two-Stage Least Squares* are shown in the table below. From the table, it is known that there are 2 (two) equations of the simultaneous model:

Based on the results of the above estimation equation, it is known that the value of Education Probability (0.0194) < 0.05 is significant, Unemployment Probability (0.8873) > 0.05 is not significant, HDI Probability (0.8815) > 0.05 is insignificant, and Income Probability (0.4031) > 0.05 is insignificant. Thus, it can be concluded that there is one significant variable for Poverty, namely Education, and there are three insignificant variables for Poverty, namely Unemployment, HDI and Income, so H_0 is rejected. This means that Unemployment, HDI, and Income do not have a significant effect simultaneously on poverty.

The R Square value (0.856026), meaning (Education, Unemployment, HDI and Income) is able to explain Poverty by 85.6%, the remaining 14.4% Poverty is influenced by other variables that are not included in the research model.

Table 1 Simultaneous equation estimation results i

System: SIMULTANEOUS				
Estimation Method: Two-Stage Least Square				
Date: 26/06/24 Time: 01:31				
Sample: 2013 2023				
Included observations: 11				
Total (balanced) system observations 22				
	Coefficient	STD error.	t-Statistics	Prob.
C(10)	2.617151	22.25387	0.117604	0.9082
C(11)	-0.029425	0.057821	5.508898	0.0194
C(12)	0.016263	0.112531	-0.144524	0.8873
C(13)	-0.051307	0.337512	0.152014	0.8815
C(14)	0.521505	0.603350	-0.864348	0.4031
Equation: $KM = C(10) + C(11)*PD + C(12)*PG + C(13)*IPM + C(14)*PP$				
Instrument: C PD PG UP KS IPM				
Observations: 11				
R-squared	0.856026	Average dependent var		4.223636
R-squared adjusted	0.760043	S.D. depends on var		0.494030
SE regression	0.242002	Number of squares of the resid		0.351391
Durbin-Watson Statistics	1.432304			

Source: Eviews Output Results, (Data Processed by the Author, 2024)

4.1. Simultaneous Analysis of Education, Unemployment, HDI and Income to Poverty

4.1.1. The Influence of Education on Poverty

Based on the results of data analysis, it is known that Education (PD) has a negative and significant effect on Poverty (KM). This is in accordance with research conducted in North Sulawesi found a significant positive influence between education and household poverty (Jacobus et al., 2019). And it is also supported by previous research that said that the variables of education and health have a significant negative effect on poverty, while the variable of unemployment has a significant positive effect on poverty (2).

The results of this study can be opposed from previous research which said that education has a negative and insignificant effect on poverty in Regencies/Cities in West Kalimantan Province. This is due to the uneven average length of education and the low number of workers according to the completed education (6). The main factor that causes many children to drop out of school in Deli Serdang is poverty. Poverty is the main factor causing the number of children who drop out of school in the underprivileged community in Pantai Labu District, especially in coastal areas. This is due to the economic limitations needed to continue the education of these children.

4.1.2. The Effect of Unemployment on Poverty

Based on the results of data analysis, it is known that Unemployment (PG) has a positive and insignificant effect on Poverty (KM). The results of this study are supported by previous research that said that unemployment has a positive and insignificant effect on economic growth, which can have implications for poverty (7).

The results of this study can be opposed from previous studies that said unemployment was found to have a positive influence on poverty, such as in a study in West Java Province in 2015-2021, where unemployment had a significant positive effect on poverty (8). The factors that affect poverty in Deli Serdang Regency have been identified through various studies. Some of the main factors that determine the poverty level in this area include; Unemployment Rate:

The unemployment rate has a positive influence on poverty, although it is not significant. This suggests that while unemployment may contribute to poverty, the relationship between these two variables is not always statistically significant. Economic Growth: Economic growth shows a significant negative influence on poverty. High economic growth can increase employment opportunities and improve people's living standards, thus helping in reducing poverty rates. Government Policies: Government policies, including public spending and investment, have a significant influence on poverty. Appropriate policies, such as increased access to education, health services, and other essential services, can play an important role in reducing poverty.

Thus, various factors such as the unemployment rate, the quality of human resources, economic growth, and government policies, all have different contributions to the poverty rate in Deli Serdang Regency. Poverty alleviation efforts must consider these factors holistically to achieve optimal results.

4.1.3. The Effect of HDI on Poverty

Based on the results of data analysis, it is known that HDI has a negative and insignificant effect on Poverty (KM). The results of this study are supported by previous research that said that the Human Development Index (HDI) was also found to have a negative influence on poverty, although not significant. For example, research conducted by (9) shows that HDI has an insignificant negative influence on poverty. The results indicate that improvements in HDI, which include health, education, and living standard dimensions, are not strong enough to directly reduce poverty rates significantly. These findings are in line with the theory that while improving the quality of human resources is important, other factors may have a more dominant role in influencing poverty rates. The main challenges in improving the Human Development Index (HDI) in Deli Serdang include several critical aspects. First, the lack of public awareness about the importance of education, health, and income is a significant obstacle.

This low awareness can be overcome through intensive awareness campaigns and involving active community participation in development programs. Second, limited resources such as professional teaching staff, adequate health facilities, and adequate infrastructure are also major challenges. To overcome these limitations, there needs to be an increase in budget allocation and community participation in the provision and maintenance of the necessary resources. Third, coordination between agencies that is not optimal often hinders the implementation of development programs aimed at increasing HDI. Efforts to improve coordination through effective communication and inter-agency collaboration are needed, which must also involve community participation. Fourth, the lack of community involvement in development programs is a significant challenge. Increasing community involvement can be done by inviting them to actively participate in every stage of the development program, from planning to evaluation. Finally, the lack of varied learning strategies leads to low student learning outcomes, which has a direct impact on low HDI. The use of more varied learning methods, such as the discovery learning method, can help improve student learning outcomes and, in turn, contribute to increased HDI. By addressing these challenges through a structured approach and involving all stakeholders, HDI improvement in Deli Serdang can be achieved more effectively.

4.1.4. The Effect of Income on Poverty

Based on the results of data analysis, it is known that Income (PP) has a positive and insignificant effect on Poverty (KM). The results of this study are supported by previous research which shows that economic growth has a negative and significant influence on the poverty rate in Yogyakarta, but the income inequality variable has not been proven to be significant in its effect on the poverty rate (10). Income does not have a significant effect on poverty for several reasons. First, the influence of per capita income shows mixed results.

For example, in the Nias Islands, per capita income has a significant negative effect on poverty, but these results are inconsistent across all regions. Second, education has a positive and significant effect on poverty. Research in Southeast Sulawesi shows that higher education contributes significantly to reducing income inequality. Third, the population does not show a significant influence on income inequality. For example, in Southeast Sulawesi, the population size does not have a significant effect on income inequality. This suggests that other factors, such as income distribution and access to economic resources, may be more decisive in creating income inequality and poverty.

4.1.5. Education, Unemployment, HDI and Income to Poverty

In this study on poverty in Deli Serdang, it was found that education has a significant influence on reducing poverty levels. Higher education improves individual skills and knowledge, opens access to better jobs, and increases awareness and financial management abilities. Therefore, education plays a crucial role in efforts to reduce poverty in the region. In contrast, unemployment did not show a significant influence on poverty in Deli Serdang. This can be attributed to the dominance of the informal sector in the local economy, survival strategies that are not detected by official data, and the

migration of workers outside the region. The Human Development Index (HDI) also does not have a significant influence on poverty.

Although HDI measures education, health, and income, the uneven distribution of human development benefits as well as other local factors may further determine poverty levels. Income, while important, is not significant in influencing poverty. Variations in the cost of living, income instability, and non-income factors such as access to basic services and housing conditions may play a greater role in determining poverty levels. Overall, education has proven to be a key factor in reducing poverty in Deli Serdang. Meanwhile, unemployment, HDI, and income did not show significant influence, indicating the need for a holistic approach that considers various social and economic aspects in addressing poverty.

Table 2 Results of Simultaneous Equation II Estimation

System: SIMULTANEOUS				
Estimation Method: Two-Stage Least Square				
Date: 26/06/24 Time: 01:31				
Sample: 2013 2023				
Included observations: 11				
Total (balanced) system observations 22				
	Coefficient	STD error.	t-Statistics	Prob.
C(20)	18.95081	1.806323	10.49137	0.0000
C(21)	0.094960	0.242270	-0.391957	0.7014
C(22)	0.001634	0.031042	-0.052623	0.9588
C(23)	-2.283820	0.833917	2.738666	0.0169
Equation: $PP = C(20) + C(21)*UP + C(22)*KS + C(23)*KM$				
Instrument: C PD PG UP KS IPM				
Observations: 11				
R-squared	0.861851	Average dependent var	8.363636	
R-squared adjusted	0.802644	S.D. depends on var	1.197725	
SE regression	0.532087	Number of squares of the resid	1.981816	
Durbin-Watson Statistics	1.145145			

Source: Eviews Output Results, (Data Processed by the Author, 2024)

Based on the results of the estimation equation above, it is known that the probability value of Wage (0.7014) > 0.05 is not significant, the probability of Consumption (0.9588) > 0.05 is insignificant and the probability of Poverty (0.0169) < 0.05 is significant for one variable that is significant to Income, namely Poverty, and there are two variables that are not significant to Income, namely Wage and Consumption, then H_a is rejected. This means that Wages and Consumption do not have a significant effect simultaneously on Income.

The value of R Square (0.861851), meaning (Wages, Consumption and Poverty) is able to explain Income by 86.18%, the remaining 13.82% Income is influenced by other variables that are not included in the research model.

4.2. Simultaneous Analysis of Wages, Consumption and Poverty on Income

4.2.1. The Effect of Wages on Income

Based on the results of data analysis, it is known that Wages (UP) have a positive and insignificant effect on Income (PP). The results of this research are supported by previous research which states that it is known that the minimum wage has a positive and insignificant effect on economic growth and income disparity. This means that the minimum wage has a positive effect on economic growth and income disparity, but the effect is not statistically significant (11).

Research shows that wages do not significantly affect income for several key reasons. First, the consumption pattern of TKBM workers in Papua shows that wage income is below the UMR, insufficient for basic needs, so it does not increase income significantly. Second, workers' spending is often used for non-productive spending such as cigarettes and alcoholic beverages, reducing the effectiveness of wages in increasing income. Third, in Yogyakarta, expenditure is uneven due to differences in population consumption patterns, causing wages to have no direct impact on income increase. In addition, the provincial minimum wage has more of an impact on income inequality than an increase in individual income. Investment also shows a positive but insignificant influence on income inequality, so it does not help much to increase income through wages. Overall, factors such as consumption patterns, uneven spending, and the broader effect of the provincial minimum wage on income inequality explain why wages do not have a significant effect on income.

4.2.2. *The Effect of Consumption on Income*

Based on the results of data analysis, it is known that Consumption (KS) has a positive and insignificant influence on Revenue (PP). The results of this research are supported by previous research which shows that income does not have a significant effect on farmers' consumption in Galang Village. However, based on the regression equation, any increase in income will result in an increase in the amount of consumption, but it is not significant (12). To stabilize consumption on income in Deli Serdang Regency, several strategies can be implemented. First, the empowerment of corn farmers with the active role of agricultural extension workers as facilitators and motivators has been proven to increase the income of corn farmers in Tanjung Morawa District. Second, diversification of non-rice foods can help increase household food consumption, as found in Bagan Serdang Village, Labu Pantai District, where household income and the number of household members have a positive influence on food consumption.

Furthermore, the empowerment of fishermen's wives through economic activities such as finding and shelling can increase family income even though the contribution is relatively low. The study also shows that the level of income inequality of paddy rice farmers is in the low category, so that increasing income from paddy farming can help reduce income inequality. In addition, women's empowerment through improved education and skills can increase household food consumption. This strategy can be optimized by utilizing technology and promoting diverse, nutritious, and balanced foods. By implementing these strategies, the level of consumption to income in Deli Serdang Regency can be increased and maintained.

4.2.3. *The Effect of Poverty on Income*

Based on the results of data analysis, it is known that Poverty (KM) has a negative and significant effect on Income (PP). The results of this research are supported by previous research which shows that the industrial sector and the formation of gross fixed capital have a negative and significant influence on poverty in Central Java. This suggests that improvements in the industrial and investment sectors can reduce poverty, which in turn increases people's incomes (13). To stabilize the poverty rate and increase income in Deli Serdang Regency, several strategies that can be applied include improving education, developing micro, small and medium enterprises (MSMEs), developing human resources, expanding agricultural land, increasing access to health, and developing supporting facilities. Increased access to education, especially among farmers and poor households, can improve their ability to increase income. Research in Lubuk Pakam District shows that education has a positive and significant influence on the income of poor households.

The development of MSMEs in Batang Kuis Village can help reduce poverty, especially after the impact of the COVID-19 pandemic which has reduced people's purchasing power. Research shows that the productivity of oil palm harvesters in PTPN II Kebun Limau Mungkur can be increased by paying attention to the variables of age, number of dependents, education level, work experience, salary, premiums, topography, and supporting facilities. In addition, expanding agricultural land in Lubuk Pakam District has been proven to have a positive influence on the income of poor households. Increased access to health care can also increase workforce productivity and reduce health costs that weigh on income. Research shows that access to health has a negative and significant influence on the income of poor households. Finally, improving supporting facilities such as infrastructure and communication networks can increase labor productivity and reduce operational costs, which ultimately increases people's income. By implementing these strategies, it is hoped that the poverty rate in Deli Serdang Regency can be reduced and people's income can increase.

4.2.4. *Wages, Consumption and Poverty on Income*

This study analyzes the influence of wages, consumption, and poverty on people's income in Deli Serdang. The results of the analysis showed that wages and consumption did not have a significant influence on income. Factors such as large variations in wage levels, the existence of other sources of income, and stable consumption patterns explain the insignificance. In contrast, poverty has a significant and negative influence on income.

Poor people tend to have limited access to economic resources, education, and employment opportunities, which overall lowers their incomes. Poverty limits the ability to invest in education and training, and reduces access to decent work. In conclusion, policies must focus on poverty alleviation and improving the quality of human resources to increase people's incomes. Programs that improve access to education, health, and skills training are essential to reduce poverty and improve the welfare of the people in Deli Serdang.

5. Conclusion

The conclusions in this study are:

- The results of the first simultaneous equation analysis found that the Education variable had a negative and significant effect on poverty, while the unemployment variable had a positive and insignificant effect on poverty, meaning that Education plays an important role in reducing poverty.
- The results of the second simultaneous equation analysis determined that the variable that was able to increase income in Deli Serdang district was poverty itself because poverty had a negative and significant influence on income

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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