



Understanding Poverty of the First Goal of SDGs: An Analysis of Contributing Factors

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ABSTRACT:

The level of poverty in Sumatra is one of the poverty problems that need a solution in accordance with the first goal of the Sustainable Development Goals (SDGs). The reason for choosing the Poverty Level in Sumatra as the research object is because the problem of poverty has the potential to create social problems and low access to various kinds of resources and productive assets, as well as fulfilling basic human needs, both food and non-food. The problem of poverty has an impact on the quality of human resources. This research aims to analyze the influence of the Dependency Ratio, Government Expenditure, Population Growth and Job Opportunities on Poverty Levels in Sumatra. The variables used are Dependency Ratio, Government Expenditure, Population Growth and Job Opportunities. The data used in this research is secondary data taken over a period of 15 years. Secondary data was obtained from the Sumatra Central Statistics Agency (BPS). For data analysis, computer tools were used, including the SPSS (Statistics Program for Social Science) program version 13.00. The analysis used in this research is multiple linear regression, and the hypothesis tests used are the t-test and statistical F-test. The test results prove that the Dependency Ratio and Job Opportunities influence the poverty level in Sumatra. Meanwhile, the results of testing Government Expenditures and Population Growth do not affect the Poverty Level in Sumatra.

Keywords: Dependency Ratio, Government Expenditure, Job Opportunities, Population Growth, Poverty Level, SDGs.

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INTRODUCTION

Indonesia is a country full of paradoxes. This country is fertile and has abundant natural resources, but quite a large proportion of the people are poor. Results from [Lokadata](#) and research from the Department of Social Affairs and the Central Statistics Agency (BPS) show that in 2020 the number of poor people in Indonesia will be 26.42 million people or 9.78% of the entire population of Indonesia. The best situation was in 2019 when the poverty rate only reached 9.22% or 24.79 million people (see Figure 1). When the poverty rate showed its lowest level, not long after that a devastating economic crisis occurred, which apparently could not be overcome immediately. According to [Gunawan & Sugiyanto \(2005\)](#) in their article entitled Conditions of Poor Families, many efforts to overcome poverty have been carried out to date, especially since Indonesia experienced an economic and monetary crisis which has become increasingly popular and known to the wider community, and some people are even looking for it to be able to enjoy anti-poverty programs. Solving a problem more strategically is usually invisible and takes time.

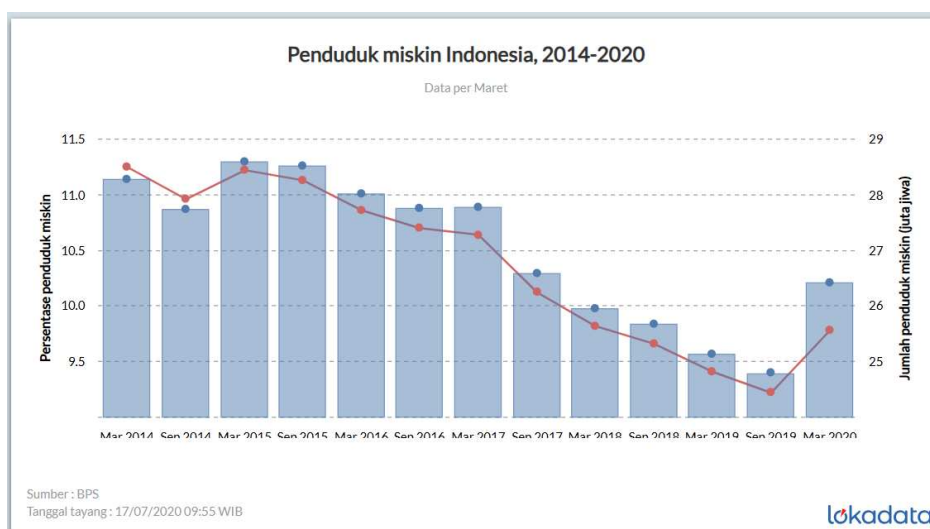


Figure 1. Indonesia's Poor Population 2014-2020

Source: [Lokadata](#), Indonesia's Poor Population, 2014-2020.
<https://lokadata.beritagar.id/chart/preview/penduduk-miskin-indonesia-2014-2020-1594954552>

The roots of poverty in Indonesia must be sought not only in the culture of being lazy about working hard but also in the limited job opportunities available to people. All situations that cause a person to be unable to carry out their full productive activities must be taken into account. Government funding of the public sector, high population growth, and high dependency ratios can also trigger poverty ([Tarigan, 2020](#); [Sigit & Kosasih, 2020](#)).

Based on data obtained from the Central Statistics Agency, in 2015, the number of poor people was 7,181,757 people, decreasing to 7,064,289 people in 2016 and decreasing again in 2017 to 6,979,565 people. But then it increased significantly in 2018 to 8,390,996 people. In 2019, the poverty level of the Sumatran population decreased again to 7,455,655 and 7,137,699 in 2020. From this data, in general, the number of poor people in Sumatra tends to decrease, but the rate of decline is not drastic because it remains in the range figure between 7 million.

According to [Bonasir \(2014\)](#) and [Purnama \(2024\)](#), the large number of poor people has the potential to create social problems in the form of crimes such as theft, robbery, prostitution and other acts. If this condition continues, peace in society will decrease, which can disrupt their activities. According to [Schleicher et al. \(2018\)](#), poverty is a multifaceted, multidimensional and integrated phenomenon. Living in poverty does not only mean living in conditions of lack of clothing, food and shelter. Living in poverty often also means low access to various kinds of productive resources and assets that are necessary to obtain the means to fulfil life's most basic needs, including information, knowledge, technology and capital. Moreover, living in poverty often also means living in alienation, having low access to power, therefore, having narrow life choices. For this reason, the Indonesian state must have a strategy or serious efforts to deal with the problem of poverty.

Sustainable Development Goals (SDGs) which are related to poverty levels directly refer to Goal 1: No Poverty (Bappenas, 2023). This goal focuses on ending poverty in all its forms everywhere. This includes targets to end extreme poverty for all people currently earning less than US\$1.25 per day, as well as reducing by at least half the proportion of men, women and children of all ages living in poverty across all dimensions as appropriate, with a national definition (detiknews, 2018). These SDGs also encourage the implementation of appropriate social protection systems for all, including the poorest groups, and achieve substantial coverage for poor and vulnerable groups by 2030. In addition, these SDGs emphasize the importance of ensuring equal rights for all men and women to economic resources, as well as access to basic services, ownership and control over land and other forms of ownership. Furthermore, these SDGs are committed to building the resilience of poor communities and those in vulnerable conditions, as well as reducing their vulnerability to climate-related extreme events, economic, social, environmental shocks and disasters. Mobilizing resources to implement policies to end poverty in all dimensions is also a focus, as well as creating a strong policy framework at the national, regional and international levels based on development strategies that are pro-poor and sensitive to gender issues (Kompas, 2023).

The economic development strategy that we need here is a strategy that does not just prioritize growth, but must also contain aspects of equality. This understanding of economic development is not only about pursuing the fulfilment of basic needs as outlined previously, namely food and non-food, especially basic education, basic health, housing and transportation needs, but also a sense of security and justice. Every effort to overcome the problem of poverty will continue to fail as long as economic problems and social injustice progress slowly and statically, as the substance of various factors that result in the low quality of human resources (Nurul Fitri, 2021; Kurniawati, 2022).

According to Gunawan & Sugiyanto (2005), for example, in Sumatra, steps have been taken to equalize economic growth. For example, building new economic centers in the region, such as building fish landing bases and strengthening the economy of non-capital districts/cities. Another option for equal distribution falls on increasing access for small, medium and cooperative businesses to capital through the disbursement of revolving funds from the State Revenue and Expenditure Budget (APBD). Through the transmigration program, poor residents from densely populated areas are given better opportunities to improve their economic welfare (Almasri, 2014; Hernany et al., 2023). The opening and development of new agricultural land is expected to increase employment opportunities for migrants. Limited employment opportunities should be overcome by creating jobs. However, this is not something that can simply be done through domestic government funding sources (Nyoman & Yasa, 2017). Therefore, an active role is needed from the government and all levels of society to quickly achieve community prosperity, through rapid development strategies accompanied by equality. Over time, it is hoped that it can reduce the level of poverty in Indonesia. Therefore, this research aims to analyze the influence of the dependency ratio, government spending, population growth, and employment opportunities on poverty in Sumatra and determine the most dominant variables influencing it.

LITERATURE REVIEW

Poverty and SDGs

Poverty is a condition where individuals or communities lack the financial resources to meet basic life necessities such as food, shelter, and healthcare. It is often measured by the poverty line, which varies by country and context. The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, aim to address global challenges, including poverty. SDG 1 specifically targets "No Poverty," aiming to eradicate extreme poverty for all people everywhere by 2030 (Pérez-Peña, et al., 2021). The Sustainable Development Goals (SDGs) are a comprehensive framework established by the United Nations in 2015 to tackle a wide range of global challenges, including but not limited to poverty, hunger, health, education, gender equality, clean water and sanitation, affordable and clean energy, and climate action (Schleicher, et al., 2018). There are 17 goals in total, each with specific targets and indicators to measure progress.

SDG 1, titled "No Poverty," focuses specifically on eradicating extreme poverty, which is defined as living on less than \$1.90 a day. The goal aims to ensure that all people everywhere have access to basic necessities, including adequate food, clothing, and shelter, and it encompasses several key targets. First, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.90 a day, by 2030. Second, reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions by 2030. Third,

implement social protection systems and measures for all, including floors, and achieve substantial coverage of the poor and the vulnerable by 2030. Fourth, ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance by 2030. Finally, build the resilience of the poor and those in vulnerable situations** and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters by 2030 (Pérez-Peña, et al., 2021).

Achieving SDG 1 is crucial because poverty is often at the root of many other issues, such as poor health and lack of education, which in turn perpetuate the cycle of poverty. Progress towards this goal is therefore seen as foundational to achieving many of the other SDGs (Liu et al., 2015; Rassanjani, 2018; Filho et al., 2021). These targets highlight the multifaceted approach needed to tackle poverty, including economic, social, and environmental strategies. They also emphasize the importance of international cooperation and the involvement of both public and private sectors to create sustainable and inclusive solutions. The success of SDG 1 is monitored through various indicators, such as the poverty headcount ratio, proportion of population covered by social protection systems, and measures of economic resilience and equality.

Dependency Ratio and Poverty Level

Dependency Ratio is a measure that describes the number of unproductive individuals (usually children under working age and elderly over working age) compared to the number of productive individuals (working age). This ratio is used to assess the economic burden borne by the productive population in supporting the unproductive population. The higher the Dependency Ratio, the greater the economic burden that must be borne by the productive population (Skirbekk et al., 2022). When the Dependency Ratio is high, families with many children and the elderly must allocate more income for basic needs such as food, housing, health, and education for unproductive family members. This reduces the amount of income that can be saved or invested, thereby increasing the risk of poverty. A high dependency ratio also means that the proportion of the productive population working to support the unproductive is smaller. This can reduce a country's total economic productivity and competitiveness (Liu et al., 2015). With reduced productivity, average income per capita also decreases, which can worsen poverty conditions. Countries with a high Dependency Ratio may experience difficulties in social and economic development. Limited government budgets must be divided between meeting the needs of a large, unproductive population and investing in infrastructure and public services. This can slow down development and worsen poverty conditions in society.

Nurhafizah & Mafruhah (2023), explained that the Dependency Ratio has a significant influence on the level of poverty in West Java Province. This research shows that an increase in the Dependency Ratio is associated with an increase in poverty levels due to the greater burden on the productive age population to support unproductive family members. A high Dependency Ratio has a negative impact on household economic welfare and increases the risk of poverty. In addition, a high Dependency Ratio worsens poverty conditions because it places a greater burden on the productive population (Aleffin & Imaningsih, 2024).

H1: Dependency ratio has a negative effect on poverty levels

Government Expenditures and Poverty Levels

Government spending plays an important role in reducing poverty levels by increasing access to public services, such as education, health and infrastructure. Appropriate spending can help create economic opportunities and improve community welfare. Government spending in the education sector can improve the quality of education and access to education for the community (Simarmata & Iskandar, 2022). Better education can improve the skills and competitiveness of the workforce, which in turn can reduce poverty levels. Spending in the health sector can improve community welfare by providing access to quality health services. Better health can reduce the medical costs that families have to incur, thereby increasing their economic welfare (Pusparani, 2022). Government spending on infrastructure development, such as roads, bridges, and electricity, can create jobs and increase economic efficiency. Good infrastructure can also increase access to markets and public services, which can help reduce poverty (Irhamni, 2017). The results of this research show that appropriate government spending oriented towards social and economic development can contribute significantly to reducing poverty levels.

H2: Government spending has a negative effect on poverty levels

Population Growth and Poverty Levels

Government population growth refers to the increase in population resulting from government policies and programs, such as family planning programs, reproductive health, etc. This population growth can affect poverty levels in various ways. In terms of economic burden, an increase in population can increase the economic burden on the government and society. The more people there are to support, the greater the costs of providing basic services such as education, health and infrastructure. If the government is unable to bear this burden, poverty may increase. Related to access to public services. Rapid population growth can cause an imbalance between population and public service capacity. This can reduce access to health services, education, and employment, which can ultimately increase poverty levels. Apart from that, in terms of income distribution, population growth that is not accompanied by an increase in income and employment can cause income inequality. This inequality can worsen the economic conditions of society and increase poverty levels (Ariyanto & Nugraha, 2024; Irhamni, 2017). Aminda et al. (2024) in his research in Gorontalo revealed that population growth that is not accompanied by economic improvement can increase poverty levels. This is no different from the results of Irhamni (2017) and Fitri et al. (2023) which proves that the increase in population in Indonesia in the last five years is associated with an increase in long-term poverty levels.

H3: Population growth has a positive effect on poverty levels

Job Opportunities and Poverty Levels

Job opportunities provided by the government through various programs and policies can have a significant impact on poverty levels. More job opportunities can increase people's income and reduce unemployment, which in turn can reduce poverty levels. Job opportunities provided by the government can reduce the unemployment rate. Low unemployment means more people have income, which can help reduce poverty. Programs such as infrastructure development, skills training, and job creation can contribute to reducing unemployment. With job opportunities, people's income increases. Higher income allows families to meet basic needs such as food, clothing, and education. It can also help them to save money and invest, which can improve long-term well-being. Job opportunities provided by the government can also help in empowering the community's economy. With jobs, people can participate more actively in the economy, both as consumers and as producers. This can increase economic stability and reduce social inequality. Nuraniah (2019) proves that employment opportunities have a negative and significant effect on poverty levels in South Kalimantan Province. Putra & Arka (2018) emphasize that employment opportunities have a negative and significant effect on poverty levels in Bali Province and Zahari & Prabowo (2022) highlight the government's role in creating employment opportunities as an effort to reduce poverty.

H4: Job opportunities have a negative effect on poverty levels

RESEARCH METHOD

Operational Definition and Variable Measurement

The operational definition in research is to show the concepts used in the research. This research analyzes several factors that influence the level of poverty in Sumatra. The operational definition of the variables used can be described as follows:

Dependent Variable

Poverty Level (Y), this is based on the stages of welfare levels, namely the number of poor and very poor households measured in terms of population (people).

Independent variables

An independent variable is a variable that can stand alone and its value does not depend on the results of observations. There are four independent variables (X) used in this research, namely:

1. *Dependency Ratio (X1)*. Dependency Ratio (dependency burden) is an important demographic indicator. The higher the dependency ratio percentage, the higher the burden that the productive population must bear to finance the lives of the unproductive and no longer productive population. It is expressed in percentage (%).
2. *Government Expenditures (X2)*. Government expenditure consists of two types, namely: routine expenditure budget is a budget provided to finance activities that are current and continuous, for

example paying salaries to employees and retirees, purchasing goods and everything that is not for investment purposes (consumptive in nature). The development budget is government expenditure in certain areas which aims to carry out development and procurement of facilities and infrastructure for community needs. Expressed in millions of rupiah.

3. *Population Growth (X3)*. Population growth is the change in the number of residents in a certain area at a certain time compared to the previous time. Expressed in percentage (%).
4. *Job Opportunities (X4)*. Job Opportunities describe the availability of jobs (job opportunities to be filled by job seekers). Thus, employment opportunities can be interpreted as the demand for labor, expressed in the number of people.

Sample Determination Technique

The sample is a portion of the population consisting of Dependency Ratio, Government Expenditure, Job Opportunities and Population Growth. From these four samples, the level of development will be known, so that the level of poverty can be known. In this study, the data used as a research sample is Dependency Ratio, Government Expenditure, Job Opportunities and Population Growth data for fifteen years from 2006 to 2020. This data is periodic data (Time Series).

Analysis Techniques

To analyze the influence mentioned in the hypothesis above, this data analysis was carried out using a multiple linear regression model with the BLUE (Best Linear Unbiased Estimation) assumption to determine whether the coefficient in the equation is truly linear (unbiased). This model shows the specific relationship between the independent and dependent variables. The formulation form is as follows (Ghozali, 2018):

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + u \dots\dots\dots (1)$$

Where:

- Y = Poverty Level
- X1 = Dependency Ratio
- X2 = Development Expenditures
- X3 = Job Opportunities
- X4 = Population Growth
- B0 = Constant
- $\beta_1, \beta_2, \beta_3, \beta_4$ = Regression Coefficients X1, X2, X3, X4
- u = Error (residual)

Furthermore, whether the analysis model above is suitable for use in proof and to find out whether the independent variable is able to explain the dependent variable, it is necessary to know the R2 value (coefficient of determination) using the formula (Ghozali, 2018):

$$R^2 = \frac{\text{Regression sum of squares}}{\text{Total sum of squares}} \dots\dots\dots (2)$$

Econometric Evaluation

The regression equation above must be BLUE (Best Linear Unbiased Estimator), meaning that decision making through the F test and t test must not be biased. To produce a BLUE decision, three basic assumptions must be met. Three basic assumptions that must not be violated by multiple linear regression are:

1. There should be no autocorrelation
2. There should be no multicollinearity
3. There must be no heteroscedasticity

Hypothesis Testing

Before testing the hypothesis, the goodness of fit of the regression equation model is first confirmed using the F test. The coefficient of determination test is carried out to determine how far (weak or strong) the regression model can predict variable Y (poverty level). After that, the hypothesis test was carried out using the t-test. Acceptance or rejection of the hypothesis, apart from depending on the P-value <0.05, also looks at the positive or negative β coefficient.

RESULTS AND DISCUSSION

Economic Conditions on the Island of Sumatra

One source of economic growth in Sumatra comes from the contribution of sectors that are sources of income for a region and will later increase the region's growth. These sectors are the Agricultural, Processing Industry, and Trade, Hotel, and Restaurant sectors. For the processing industry sector and the trade sector, hotels and restaurants have an increasingly important role in contributing to economic growth. The agricultural sector contributed 17.81 per cent to economic growth, the processing industry sector contributed 27.14%, and the trade, hotel and restaurant sector contributed 20.75% in 2019. The sector that still contributed little was the mining and quarrying sector with a contribution of 2.23% in 2019. However, in 2020, the shift in the contribution of the economic sector that experienced an increase was the Mining and Quarrying sector, which rose to 2.81%.

Description of Research Results

The description of the results of this research provides an overview of the data and developments in the Poverty Level in Sumatra so that we can find out the changes that have occurred in the development of the Poverty Level in Sumatra, Dependency Ratio, Government Expenditure, Population Growth and Job Opportunities.

Development of Poverty Levels

The development of poverty levels in Sumatra can be presented in Table 1. Based on Table 1, the development of poverty levels in Sumatra over the 15 years (2006-2020) tends to increase. The highest development in the poverty rate in Sumatra was in 2018 at 20.22% and the lowest development was in 2019 at -11.15%. The highest poverty rate in Sumatra occurred in 2018 at 8,391 people and the lowest poverty rate in Sumatra was in 2019 at 4,424 people. The level of poverty in Sumatra has increased, this is because the Dependency Ratio has increased, resulting in an increase in the unproductive and unproductive population and resulting in the level of population welfare decreasing. Meanwhile, the poverty level in Sumatra has decreased due to the increasing number of job opportunities available and the increasing level of welfare in society.

Table 1. Development of Poverty Levels in Sumatra 2006-2020

| Year | Poverty Level (000) | Growth (%) |
|------|---------------------|------------|
| 2006 | 4,424 | - |
| 2007 | 4,486 | 1.40 |
| 2008 | 5,366 | 19.62 |
| 2009 | 5,428 | 1.16 |
| 2010 | 6,029 | 11.09 |
| 2011 | 6,689 | 10.94 |
| 2012 | 7,441 | 11.24 |
| 2013 | 7,353 | -1.17 |
| 2014 | 7,267 | -1.17 |
| 2015 | 7,182 | -1.17 |
| 2016 | 7,064 | -1.64 |
| 2017 | 6,980 | -1.20 |
| 2018 | 8,391 | 2.22 |
| 2019 | 7,456 | -11.15 |
| 2020 | 7,155 | -4.03 |

Source: Central Bureau of Statistics for the Sumatra Region (processed)

Development of Dependency Ratio

Based on Table 2, the development of the Dependency Ratio tends to decrease every year, the magnitude of which is uncertain. The highest development of the Dependency Ratio occurred in 2020 at 5.00%. But in 2012 there was the lowest development of -2.35%. The highest Dependency Ratio was in 2006 at 53.78% while the lowest was in 2019 at 44.38%. In 2012 the Dependency Ratio decreased, this was because in that year the non-productive age covered by the government decreased, because there were more workers available and more productive age could help ease the government's burden. Meanwhile, in 2020 there was the highest development due to the increasing number of people of non-productive age and the increasing number of layoffs that occurred.

Table 2. Development of Dependency Ratio in Sumatra 2006-2020

| Year | Dependency Ratio (%) | Growth (%) |
|------|----------------------|------------|
| 2006 | 53.78 | - |
| 2007 | 52.68 | -1.10 |
| 2008 | 55.15 | 2.47 |
| 2009 | 53.52 | -1.63 |
| 2010 | 51.52 | -2.00 |
| 2011 | 50.92 | -0.60 |
| 2012 | 48.57 | -2.35 |
| 2013 | 47.79 | -0.78 |
| 2014 | 48.30 | 0.51 |
| 2015 | 46.52 | -1.78 |
| 2016 | 45.12 | -1.40 |
| 2017 | 46.54 | 1.42 |
| 2018 | 45.41 | -1.13 |
| 2019 | 44.38 | -1.03 |
| 2020 | 49.38 | 5.00 |

Source: Central Bureau of Statistics for the Sumatra Region (processed)

Development of Government Expenditures

Based on Table 3, Government Expenditures increase every year. This can be seen in Table 3, which explains that from 2006 to 2020, the largest development in Government Expenditures, the highest in 2014, was 123.67%, and the lowest was -56.40%, which occurred in 2011. The largest Government expenditure in 2020 was IDR 6,208, and the lowest was in 2012, amounting to IDR 847. The highest growth in government spending is due to the increasing population, narrowing job opportunities and increasing unemployment. The lowest development occurred due to the higher incoming investment, resulting in more significant employment opportunities and reduced unemployment.

Table 3. Development of Government Expenditures in Sumatra 2006 – 2020

| Year | Government Expenditure (Rp M) | Growth (%) |
|------|-------------------------------|------------|
| 2006 | 1,104 | - |
| 2007 | 1,389 | 25.84 |
| 2008 | 1,522 | 9.61 |
| 2009 | 1,800 | 18.24 |
| 2010 | 2,046 | 13.63 |
| 2011 | 892 | -56.40 |
| 2012 | 847 | - 5.06 |
| 2013 | 852 | 0.64 |
| 2014 | 1,906 | 123.67 |
| 2015 | 2,935 | 53.97 |
| 2016 | 3,533 | 20.39 |
| 2017 | 3,516 | -0.48 |
| 2018 | 4,045 | 15.06 |
| 2019 | 5,127 | 26.73 |
| 2020 | 6,208 | 21.09 |

Source: Central Bureau of Statistics for the Sumatra Region (processed)

Development of Population Growth

Based on Table 4, population growth over the 15 years (2006-2020) tends to increase. The highest development during the research period was in 2014 at 2.08%, with a population growth value of 0.76%, whereas in the previous year, the value was – 1.32%. Meanwhile, the lowest development was in 2017 at –2.45%. The highest population growth in 2001 occurred due to a lack of public knowledge about family planning. Meanwhile, the lowest development in 2004 occurred due to more government outreach to make people aware of family planning.

Development of Job Opportunities

Based on Table 5, the development of Job Opportunities over the 15 years (2006-2020) tends to increase. The highest development during the research period was in 2020 at 185.29% with a Job Opportunity value of 83, whereas in the previous year, the value was 29.

Table 4. Development of Population Growth in Sumatra 2006 – 2020

| Year | Population Growth (%) | Growth (%) |
|------|-----------------------|------------|
| 2006 | 0.42 | - |
| 2007 | 0.79 | 0.37 |
| 2008 | 0.74 | -0.05 |
| 2009 | 0.69 | -0.05 |
| 2010 | 0.74 | 0.05 |
| 2011 | 1.15 | 0.41 |
| 2012 | 1.01 | -0.14 |
| 2013 | -1.32 | -2.33 |
| 2014 | 0.76 | 2.08 |
| 2015 | 1.28 | 0.52 |
| 2016 | 2.99 | 1.71 |
| 2017 | 0.54 | -2.45 |
| 2018 | 1.85 | 1.31 |
| 2019 | 1.10 | -0.75 |
| 2020 | 0.84 | -0.26 |

Source: Central Bureau of Statistics for the Sumatra Region (processed)

Meanwhile, the lowest development was in 2019 at -62.26% (see Table 5). The highest development in employment opportunities is due to the increasing amount of capital owned by companies and the increasing amount of existing investment. The lowest development occurred due to higher production prices, resulting in many workers being laid off and more businesses leaving.

Table 5. Development of Job Opportunities in Sumatra 2006 – 2020

| Year | Employment Opportunity (000) | Growth (%) |
|------|------------------------------|------------|
| 2006 | 67 | - |
| 2007 | 83 | 24.62 |
| 2008 | 99 | 19.31 |
| 2009 | 146 | 46.86 |
| 2010 | 155 | 5.95 |
| 2011 | 155 | 0.09 |
| 2012 | 121 | -22.10 |
| 2013 | 89 | -25.91 |
| 2014 | 88 | -1.13 |
| 2015 | 56 | -36.63 |
| 2016 | 59 | 5.62 |
| 2017 | 56 | -5.15 |
| 2018 | 77 | 37.42 |
| 2019 | 29 | -62.26 |
| 2020 | 83 | 185.29 |

Source: Central Bureau of Statistics for the Sumatra Region (processed)

Hypothesis Analysis and Testing

This analysis used multiple linear regression analysis to test and process existing data using computer tools with the SPSS (Statistics Program for Social Science) version 13.0. Based on the analysis results in Table 8, the following is a multiple linear regression equation:

$$Y = 22975418.739 - 360368.091X1 + 0.116X2 - 179346.814X3 + 13.681X4 \dots\dots\dots (3)$$

Based on the equation above, it can be explained through the following explanation:

- β_0 = constant value of 22975418.739 shows that if the Dependency Ratio (X1), Government Expenditure (X2), Population Growth (X3), and Job Opportunities (X4) factors are constant, then the Poverty Level in Sumatra will increase by 22,975,418.739 people. This is because the increasing number of people narrows the job opportunities and causes government spending to

decrease, so there is more unemployment, people's welfare decreases, and the poverty level in Sumatra increases.

Table 8. Hypothesis Test Results

| Variable | Regression Coefficient | t count | t table | Partial | r ² Partial |
|--|------------------------|---------|---------|---------|------------------------|
| Dependency Ratio (X ₁) | - 360368.091 | -6.654 | 2.228 | -0.903 | 0.815 |
| Government Expenditure (X ₂) | 0.116 | 1.034 | 2.228 | 0.311 | 0.096 |
| Population Growth (X ₃) | - 179346.814 | -1.022 | 2.228 | -0.307 | 0.094 |
| Employment Opportunity (X ₄) | 13.618 | 2.858 | 2.228 | 0.670 | 0.448 |

Dependent variable: Poverty Level
 Constanta: 22975418.739
 Correlation coefficient (R): 0.925 R²: 0.856

Source: Processed data

- $\beta_1 = - 360368.091$. Shows that the Dependency Ratio (X₁) factor has a negative effect on the Poverty Level in Sumatra, which means that if the Dependency Ratio increases by 1%, the Poverty Level in Sumatra will decrease by 360,368.091 people. This is because the lower the Dependency Ratio, the lower the burden borne by the productive age population. By decreasing the number of people of non-productive age, many productive people will be able to support or finance people who are not yet productive and are no longer productive, so the poverty level in Sumatra will decrease.
- $\beta_2 = 0.116$. Shows that the Government Expenditure factor (X₂) has a positive effect on the Poverty Level in Sumatra, which can be interpreted as if there is an increase in Government Expenditure of Rp. 1 million, the poverty rate in Sumatra will increase by 0.116 people. This is due to the decreasing government spending oriented towards society's welfare, especially for poor people. So that the provision of basic facilities which are expected to help people become more independent also decreases and unemployment increases, resulting in a decline in the population's welfare and an increase in the number of poor people.
- $\beta_3 = - 179346.814$. Showing that the Population Growth factor (X₃) has a negative effect on the Poverty Level in Sumatra, it can be interpreted that if there is a 1% increase in Population Growth, the Poverty Level in Sumatra will decrease by 179,346.814 people. This is because if population growth decreases it will reduce the number of unemployed because there are more job opportunities in society so that it can increase or improve the welfare of society and the poverty rate will decrease.
- $\beta_4 = 13.618$. Showing that the Job Opportunity factor (X₄) positively affects the Number of Poor People, it can be interpreted that if there is an increase in Job Opportunities by one person, the Poverty Level in Sumatra will increase by 13.618 people. This is because if people's employment opportunities increase, the number of unemployed people will decrease and people's welfare will increase. However, with the many job opportunities, it cannot keep up with the increasing growth of the unemployed population and the large number of jobs that do not match their fields.

Model Fit Test

To test the suitability of the independent variable model to the dependent variable, the F-test is used (Table 9)

Table 9. Analysis of Variance (ANOVA)

| Variance | Square Total | df | Mid-Square | F count | F table |
|------------|-------------------|----|------------------|---------|---------|
| Regression | 16355834124004.95 | 4 | 4088958531001.23 | 14.905 | 3.48 |
| Residual | 2743368972566.37 | 10 | 27433687256.63 | | |
| Total | 19099203096571.32 | 14 | | | |

Source: Processed data

Based on Table 9, because F-count = 14.905 > F-table = 3.48, H₀ is rejected and H_a is accepted, which means that overall, the independent variable factors are Dependency Ratio (X₁), Government Expenditure (X₂), Population Growth (X₃) and Job Opportunities (X₄), has a significant (real) effect on the Poverty Level in Sumatra (Y). To find out how much relationship or influence the independent variables have on the dependent variable, it can be seen from the R² (coefficient of determination)

value of 0.856, meaning that 85.6% of all observations show that the independent variable can explain variations in the dependent variable. The remaining 14.4% were influenced by factors outside the research.

Hypothesis Testing

This analysis was carried out to test the influence of the independent variables Dependency Ratio (X1), Government Expenditure (X2), Population Growth (X3), and Job Opportunities (X4). The results of these calculations are shown in Table 10.

Table 10. Hypothesis Test Results.

| Variable | t-count | t-table | Partial | r ² Partial | Conclusion |
|-----------------------------|---------|---------|---------|------------------------|--------------------|
| Dependency Ratio (X1) | -6.654 | 2.228 | -0.903 | 0.815 | H1 accepted |
| Government Expenditure (X2) | 1.034 | 2.228 | 0.311 | 0.096 | H2 rejected |
| Population Growth (X3) | -1.022 | 2.228 | -0.307 | 0.094 | H3 rejected |
| Employment Opportunity (X4) | 2.858 | 2.228 | 0.670 | 0.448 | H4 accepted |

Source: Processed data

Based on the calculations in Table 10, t-count is - 6.654 > t-table is - 2.228. Ho is rejected at a significant level of 5%, so partially, the Dependency Ratio (X1) has a real and negative effect on the Poverty Level in Sumatra (Y). This is also supported by the significance value of the Dependency Ratio (X1) of 0.000, which is smaller than 0.05. The partial r2 value for the Dependency Ratio variable is 0.815, which means that the Dependency Ratio (X1) can partially explain the dependent variable Poverty Level in Sumatra (Y) of 81.5%. In comparison, other variables explain the remaining 18.5%.

Based on the calculations in Table 10, t-count is 1.034 < t-table of 2.228, so Ho is accepted, and Ha is rejected, at a significant level of 5%, so that partial Government Expenditures (X2) have no real and positive effect on the Poverty Level in Sumatra (Y). This is also supported by the significance value of Government Expenditure (X2) of 0.325, greater than 0.05. The partial r2 value for the Government Expenditure variable is 0.096, which means that Government Expenditure (X2) can partially explain the dependent variable Poverty Level in Sumatra (Y) of 9.6%. In comparison, other variables explain the remaining 90.4%.

Based on the calculations in Table 10, t-count is - 1.022 < t-table of 2.228, so Ho is accepted and Ha is rejected, at a significant level of 5%, so that partial Population Growth (X3) has no real and negative effect on the Poverty Level in Sumatra (Y). This is also supported by the significance value of Population Growth (X3) of 0.331 greater than 0.05. The partial r2 value for the Population Growth variable is 0.094, which means that Population Growth (X3) can partially explain the dependent variable Poverty Level in Sumatra (Y) of 9.4%. In comparison, other variables explain the remaining 90.6%.

Based on the calculations in Table 10, t-count is 2.858 > t-table is 2.228, so Ho is rejected, and Ha is accepted, at a significant level of 5%, so that partially Job Opportunities (X4) have a real and positive effect on the Poverty Level in Sumatra (Y). This is also supported by the significance value of Job Opportunities (X4) of 0.017, which is smaller than 0.05. The partial r2 value for the Job Opportunities variable is 0.448, which means that Job Opportunities (X4) can partially explain the dependent variable Poverty Level in Sumatra (Y) of 44.8%, while other variables explain the remaining 55.2%.

To find out which variable has the most dominant influence of the three independent variables on the Poverty Level in Sumatra: Dependency Ratio (X1), Government Expenditure (X2), Population Growth (X3) and Employment Opportunities (X4) can be found by looking at the coefficient of determination the largest partial, which in the calculation is shown by the Dependency Ratio variable with a partial determination coefficient (r2) of 0.815 or 81.5%.

Discussion

Coefficient of Determination

The R2 value (coefficient of determination) is 0.856, meaning that 85.6% of all observations show that the independent variable can explain variations in the dependent variable, the remaining 14.4% is influenced by other factors that are not visible in the model. With a calculated F value of 14.905, this means that the Dependency Ratio (X1), Government Expenditure (X2), Population Growth (X3) and Job Opportunities variables have a significant (real) effect and together on the Poverty Level variable in Sumatra (Y).

Of the four variables analyzed in this research—Dependency Ratio, Government Expenditure, Population Growth, and Job Opportunities—the variable that has the greatest influence on poverty levels in Sumatra is the Dependency Ratio. The analysis results show that the partial r² value for the

Dependency Ratio variable reaches 0.815 or 81.5%, which means that the Dependency Ratio is partially able to explain 81.5% of the variation in poverty levels in Sumatra. Meanwhile, other variables such as government spending, population growth, and employment opportunities have lower partial r^2 values, indicating that their influence on poverty levels is not as great as the Dependency Ratio.

Dependency Ratio shows the ratio between the number of unproductive residents (children and the elderly) and the productive population (working age). This ratio reflects the economic burden that must be borne by the productive population to support the unproductive population. When the Dependency Ratio is high, the economic burden that must be borne by the productive population increases, which in turn can worsen poverty levels. This is because productive residents have to allocate most of their income to meet the needs of unproductive family members, thereby reducing their ability to save or invest in economic activities that can improve welfare (Nurhafizah & Mafruhat, 2023; Putri, 2024).

Thus, it can be concluded that the Dependency Ratio is the most significant factor in influencing the level of poverty in Sumatra compared to other variables such as government spending, population growth and employment opportunities. This emphasizes the importance of strategies to manage the Dependency Ratio through social and economic policies that support the welfare of the productive population and reduce their economic burden.

The Effect of Dependency Ratio on Poverty Levels

Dependency Ratio has a negative effect on poverty levels in Sumatra. In theory, it is stated that the lower the Dependency Ratio, the lower the burden borne by the productive population to finance the unproductive and no longer productive population (Skirbekk et al., 2022). The results of the research state that the Dependency Ratio has a negative effect on the Poverty Level in Sumatra, or in other words, if the Dependency Ratio decreases, the Poverty Level decreases, this is due to the decreasing number of people of pre-productive and unproductive age. In reality, there are still many people who are not yet and are not productive who work and are of productive age. For example, underage workers (children) and elderly people who are still working.

Policies that can be implemented to reduce the negative influence of the Dependency Ratio on poverty levels are by increasing access and quality of education and vocational training to strengthen a productive workforce (Sulistyanto et al., 2021; Sukandi, 2024). Develop effective health and social security programs to support unproductive populations, especially children and the elderly (Fatkhullah et al., 2022; Poetiray et al., 2023). Increasing economic empowerment programs that focus on providing assistance and access to capital for low-income families for the first goal of SDGs (Fatkhullah et al., 2022).

The Effect of Government Expenditures on Poverty Levels

Government spending does not have a real (significant) effect on poverty levels in Sumatra. This is due to the decreasing government spending which causes the unemployment rate to increase and the level of social welfare to decrease and results in an increasing number of poor people. Government spending is often considered an important tool in reducing poverty by providing essential public services such as education, health and infrastructure. However, research results in Sumatra show that government spending does not have a significant effect on poverty levels. The explanation for this phenomenon can be explained through several deeper factors.

A decrease in government spending can reduce investment in sectors that are very important for improving people's welfare. When budgets for social and development programs are reduced, the impact is immediately felt on the quality and accessibility of public services. For example, reduced budgets for education and health can limit people's ability to get the services they need to improve quality of life and productivity (Liu et al., 2015). One of the impacts of decreasing government spending is an increase in the unemployment rate. When the government cuts the budget, infrastructure development projects that can create new jobs are also reduced. Additionally, reduced funding for job training and economic empowerment programs could make it difficult for more people to find decent jobs. High unemployment reduces family income and increases the risk of poverty. With reduced government spending, welfare programs that typically help vulnerable groups, such as social assistance and subsidies, have become more limited. This can lead to a decline in people's welfare, especially for those who are highly dependent on government support to meet their basic needs. This decline in welfare, in turn, can lead to an increase in poverty levels because more people cannot meet their own living needs (Mulyadi, 2016; Simarmata & Iskandar, 2022)

Effective government spending can help reduce unemployment rates and improve people's welfare, which in turn reduces poverty. In research in Sumatra, the results of this study show that decreasing government spending does not have a significant effect on reducing poverty. On the contrary, this decline can actually worsen conditions by increasing unemployment and reducing people's welfare, which ultimately increases the number of poor people for the first goal of SDGs (Pérez-Peña, et al., 2021).

The Effect of Population Growth on Poverty Levels

Population growth has no real (significant) effect on the number of poor people. This means that if population growth decreases, the poverty level will decrease. This is because the decreasing population growth will result in lower unemployment rates and higher employment opportunities and will result in reduced levels of community poverty. However, according to the research results, if population growth increases, the poverty level decreases, this is because there is no balance between the number of job opportunities and the growth of unemployed people.

Research shows that when population growth increases, poverty levels actually decrease. This appears to contradict the theory described previously. As population growth increases, the government and private sector may not be able to create enough job opportunities to accommodate all the new entrants to the workforce. This causes an imbalance between the number of job opportunities and the number of people looking for work, which can lead to an increase in the unemployment rate. If population growth increases rapidly without a corresponding increase in job creation, many people will be unable to find decent work. As a result, they remain in poverty or fall into poverty due to the inability to support themselves and their families (Setianingsih & Indriantoro, 1998; Mulyadi, 2016; Irlhamni (2017).

Based on the results of this research in Sumatra, population growth does not show a real influence on the number of poor people. If population growth decreases, the poverty rate tends to decrease due to reduced unemployment and increased employment opportunities. However, if population growth increases without being balanced by sufficient job creation, the poverty rate may actually decrease, indicating that the balance between population and employment opportunities is key in determining the impact of population growth on poverty for the first goal of SDGs (Pérez-Peña, et al., 2021; Filho et al., 2021).

The Effect of Job Opportunities on Poverty Levels

Job opportunities have a significant and positive influence on poverty levels. This is because the more job opportunities there are, the higher the level of social welfare will be with decreasing unemployment so that the poverty level will also decrease. When job opportunities increase, more people can find work, which directly reduces the unemployment rate. Low unemployment means more individuals have a steady source of income, which can improve families' economic well-being and reduce poverty. Work provides income that can be used to meet basic needs such as food, shelter, education and health (Nuraniah 2019). With more job opportunities, overall household income increases. Increased income allows families to improve their standard of living, reduce dependence on social assistance, and increase the ability to save and invest in productive economic activities. Higher income also increases access to health and education services, which can improve quality of life and social mobility (Putra & Arka, 2018). Adequate employment opportunities empower individuals to become part of an active economy. By working, individuals can contribute to economic growth and development. This economic empowerment increases social stability and reduces income inequality, which can have a positive impact on reducing poverty (Mulyadi, 2016).

More job opportunities have a significant and positive influence on reducing poverty levels. By increasing access to decent work, people can earn sufficient income to meet their basic needs, which in turn increases economic prosperity and reduces poverty. Therefore, policies that support job creation must be a priority to effectively address poverty for the first goal of SDGs (Pérez-Peña, et al., 2021).

CONCLUSION

This research aims to analyze the influence of dependency ratio, government spending, population growth and employment opportunities on poverty levels in Sumatra. Based on the results of the analysis that has been described, it can be concluded that firstly, if the Dependency Ratio decreases, then the Poverty Level will increase; this is due to the increasing number of people of unproductive and

unproductive age. In reality, there are still many people who are not yet and are not productive who work and are of productive age. For example, underage workers (children) and elderly people who are still working. Second, government spending has no effect on the level of poverty in Sumatra. This is due to the decreasing government spending which causes the unemployment rate to increase and the level of social welfare to decrease and results in an increasing number of poor people. Third, population growth has no effect on the level of poverty in Sumatra. This is because there is no balance between the number of job opportunities and the growth of unemployed people. Fourth, employment opportunities have a positive effect on poverty levels in Sumatra. If employment opportunities increase, it will result in poverty levels decreasing. This is because the more job opportunities there are, the higher the level of social welfare will be with decreasing unemployment so that the poverty level will also decrease.

This research has several limitations. The data used is limited to a certain period and may not cover all relevant variables. The focus of this research is only on the Sumatra region, so the results may not be generalized to other regions or countries. Additionally, quantitative methods with certain statistical analyzes may not fully capture the complexity of relationships between variables. Based on the findings of this research, the government needs to increase the effectiveness of budget allocations, especially for programs that can directly reduce poverty. In addition, the government and private sector need to create more job opportunities to reduce unemployment and improve people's welfare. Policies that support the creation of adequate job opportunities and improving the quality of education and health are also very important.

This research enriches the literature regarding the influence of dependency ratio, government spending, population growth and employment opportunities on poverty, especially in the context of Sumatra. These findings increase understanding of the importance of dependency ratio and employment opportunities in reducing poverty, especially for the first goal of SDGs. From a practical perspective, the findings of this research provide insight to decision makers in government and the private sector regarding the importance of creating more job opportunities and managing dependency ratios to reduce poverty. This research also encourages policy makers to review government expenditure allocations and ensure that the allocated budget is right on target, as well as develop policies that support the creation of adequate job opportunities and improve education and health to manage the dependency ratio. Thus, the results of this research provide a significant contribution both in the realms of theory, practice and policy for the first goal of SDGs.

Abbreviations

Sustainable Development Goals (SDGs), Central Statistics Agency (BPS), State Revenue and Expenditure Budget (APBD), Statistics Program for Social Science (SPSS).

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Conflict of Interest

The authors declare no conflict of interest.

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Availability of data and materials

The data and materials might be requested via email to the corresponding author.

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