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Analysis of the Influence of Average School Age, Open Unemployment Rate, and Economic Growth on Inequality Income in D.I. Yogyakarta

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Abstract: This study aims to analyze the influence of Average School Age, Open Unemployment Rate, and Economic Growth on Income Inequality in the Special Region of Yogyakarta Province. Income inequality is an important issue in regional development because it reflects the uneven results of development at various levels of society. This study uses a quantitative approach with secondary data sourced from the Central Statistics Agency (BPS) D.I. Yogyakarta during the period 2014–2023. The analysis method used was multiple linear regression with the help of the SPSS version 25 tool. The results showed that the average variable length of school had a positive and significant effect on income inequality, while the open unemployment rate and economic growth had no effect on income inequality in D.I. Yogyakarta. These findings suggest that improvements in educational attainment, labor conditions, and economic growth have not been accompanied by equitable access or a balanced distribution of development benefits, causing the gains to be concentrated among high-income groups in urban areas.

Keywords: Income Inequality, Average School Age, Open Unemployment Rate, Economic Growth

Introduction

A development in a country can be said to be successful if it is able to overcome various problems that are obstacles to economic growth. Development is basically a process that is carried out consciously and continuously, covering various people's lives. The essence of development itself is the effort of man to consciously change the condition of balance from a poor quality level to a new balance with higher quality. Thus, the main goal of development is to realize equity and improve people's welfare, especially in developing countries that make it the main focus (Lestari et al. 2021).

According to Ratnasari, Lia (2017) The main goal of development is to realize justice and improve the welfare of the community. Both of these things can be achieved if development is carried out evenly throughout the region. However, in practice, the implementation of development often causes economic inequality between regions. High inequality in economic development between regions can cause various negative impacts, both from economic, social, and political aspects. From the economic side, this inequality

causes the use of resources to be less efficient and triggers an imbalance in income distribution. This income imbalance is then known as income inequality.

Income inequality is a condition when there is a difference in income levels between community groups, where some people have high incomes while others have low incomes. This difference is one of the economic problems faced by a country because reflects the unequal distribution of income among its population. The level of inequality can be observed through the extent to which income differences occur between groups of people. Based on a 2015 World Bank report, the level of income inequality in Indonesia has increased significantly since 2000. This condition is caused by economic growth that has not been felt evenly by all levels of society, but are more enjoyed by about 20 percent of the high-income group (Oksamulya and Anis 2020).

The very high difference in expenditure between city and village residents in D.I. Yogyakarta makes income inequality occur. In the 2014–2023 period, fluctuations in the Gini ratio in D.I. Yogyakarta can be considered to indicate a significant dynamics of income inequality. The increase and decrease in the Gini ratio can be explained by the fact that the consumption patterns of urban and rural people are always different, where people with high income will have a faster level of purchasing power than people with low incomes. This inequality is exacerbated by the condition of economic concentration that is still concentrated in urban areas, such as Yogyakarta City, which has better access to the services, tourism, and education sectors, while rural areas still rely on the agricultural sector and small industries whose growth tends to be slower (BPS DIY and Bappeda DIY 2020).

The average length of school has a significant role in influencing the level of income inequality in D.I. Yogyakarta. However, in D.I Yogyakarta, although the average length of school is quite high, this is not enough to ensure equal distribution of income at all levels of society. The unequal distribution of access to education also exacerbates income inequality. Although D.I. Yogyakarta has many quality educational institutions, not all people have the same opportunity to access higher education. Lower-middle-class economic groups often face financial barriers to accessing higher education, resulting in them being more likely to be in lower-income jobs. And also the factor of the Yogyakarta area where the distribution of access to urban education and education is uneven (Sukma 2021).

During the period 2014 to 2023, in the Special Region of Yogyakarta Province, the open unemployment rate fluctuated. This condition is caused by various factors, both internal and external. The most significant increase in the unemployment rate occurred during the Covid-19 pandemic in 2019, when there was a wave of layoffs and a decline in economic activity due to social restriction policies. This condition has an impact on declining productivity and disruption of business activities due to widespread global economic shocks (Khoirudin and Musta'in 2020).

Economic growth in Yogyakarta has experienced ups and downs. It can be seen that the highest percentage of economic growth rate in Yogyakarta was the highest in 2019. However, in 2020 it experienced a severe decline to reach a figure of - 2.67%. That year there was a decline due to the covid-19 virus. And it went up again the following year. It is possible that this happened because of the sector of excellence of the city of Yogyakarta which has a superior sector, namely tourism.

Research Method

This study is quantitative descriptive with statistical data analysis that aims to test predetermined hypotheses to determine the relationship between variables. This study was conducted to determine the effect of Average School Length, Open Unemployment Rate, and Economic Growth on Income Inequality in D.I. Yogyakarta during the period 2014 to 2023.

The variables used in this study are Average School Age, Open Unemployment Rate, Economic Growth, and Income Inequality. This study uses a descriptive approach technique with secondary data from the Central Statistics Agency for the period 2014-2023 as a data collection technique. The data analysis technique used was multiple linear regression analysis.

The formula for multiple linear regression is generally as follows:

$$\mathbf{Y= \alpha+\beta1X1+\beta2X2+ \beta3X3+ e}$$

Information:

Y = Poverty Rate

α = Constant

β1X1 = Average Length of School Time regression coefficient

β2X2 = Open Unemployment Rate regression coefficient

β3X3 = Economic Growth regression coefficient

e = Variable error (residual)

Results and Discussion

Normality Test

Table 1. Normality Test Results

One-Sample Kolmogorov-Smirnov Test	
	Unstandardized Residual
Asymp. Sig. (2-tailed)	.200c,d

Source: SPSS 25 & Processed by the Author

The significance value of Asymp.Sig (2-tailed) is 0.200, which exceeds the significance limit of 0.05. Therefore, based on the decision-making criteria in the Kolmogorov-Smirnov normality test, it can be concluded that the data is distributed normally.

Multicollinearity Test

Table 2. Multicollinearity Test Results

Variable	Tolerance	VIVID	Conditions	Information
Average School Length (X1)	0,506	1,974	≤ 10	Multicollinearity-free
Open Unemployment Rate (X2)	0,517	1,935	≤ 10	Multicollinearity-free
Economic Growth (X3)	0,950	1,053	≤ 10	Multicollinearity-free

Source: SPSS 25 & Processed by the Author

Based on the results of the multicollinearity test displayed in the table, it can be seen that the variable Average School Length (X1) has a tolerance value of 0.506 and VIF of 1.974, the Open Unemployment Rate (X2) shows a tolerance value of 0.517 with a VIF of 1.935, while Economic Growth (X3) has a tolerance value of 0.950 and VIF of 1.053. All VIF values of the three independent variables were below 10, and the tolerance value was greater than 0.10, so it can be concluded that the regression model in this study is free from multicollinearity problems.

Heteroscedasticity Test

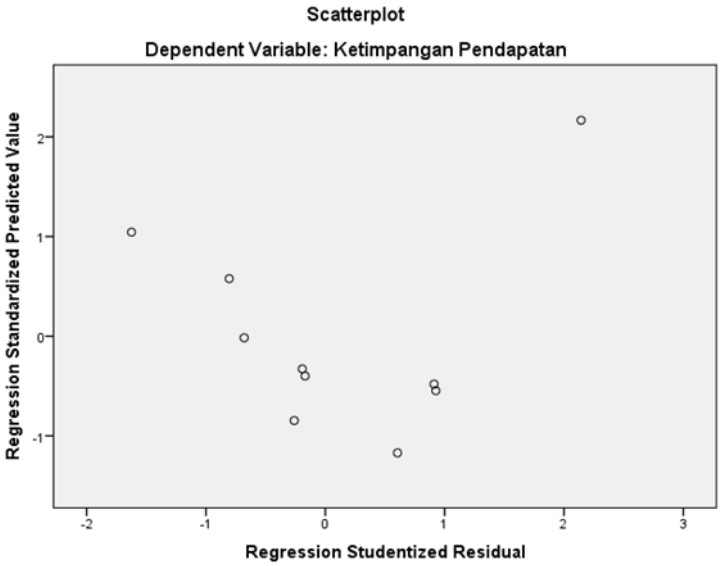

Figure 1. Scatter Plot Graph
Source: SPSS 25 & Processed by the Author

The figure above presents the results of the heteroscedasticity es ton the scatter chart, which shows a graph whose points are uncentered and irregularities in the observed patterns indicate a substantial absence of regularity. Based on this, the conclusion that can be drawn is that the data used do not show signs of heteroscedasticity.

Autocorrelation Test

Table 3. Autocorrelation Test Results

Model Summary[b]					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	.865[a]	.749	.623	.01402	1.904
a. Predictors: (Constant), Economic Growth, Open Unemployment Rate, Average School Length					
b. Dependent Variable: Income Inequality					

Source: SPSS 25 & Processed by the Author

According to Durbin Watson's calculations, the DW test value of 1.904 is between dL and dU and is greater than zero. As a result, the DW test was in a region where there was no autocorrelation, which suggests that there was no indication of autocorrelation in this model test.

Multiple Linear Regression Analysis Results

Table 4. Multiple Linear Regression Analysis Results

Type	B
(Constant)	.112
Average School Length	.058
Open Unemployment Rate	-.022
Economic Growth	-.024

Source: SPSS 25 & Processed by the Author

The multiple linear regression equation is Income Inequality = 0.112 + 0.058 RLS – 0.022 TPT – 0.024 PE = ei. The value of the variable constant of Income Inequality (Y) (β0) is 0.112. This means that if the variables of Average School Length (X1), Open Unemployment Rate (X2), and Economic Growth (X3) are all zero, then the Income Inequality level increases by 0.112 index. With a value of 0.058, the regression coefficient (β1) shows a direct relationship between the variables Average School Length (X1) and Income Inequality (Y), which indicates that the level of Income Inequality will increase by 0.058 index for every 1% increase in Average School Age. The regression coefficient (β2) had a negative value of -0.022, which indicates an inverse relationship between the variables Open Unemployment Rate (X2) and Income Inequality (Y). This means that a one percent increase in the Open Unemployment Rate (X2) variable will result in a decrease of -0.022 in the index in Income Inequality (Y). The fact that the regression coefficient (β3) has a negative value of -0.024 indicates a negative correlation between Economic Growth (X3) and Income Inequality (Y), meaning that every increase in Economic Growth (X3) by 1% will result in a decrease in Income Inequality (Y) by -0.024%.

Coefficient of Determination Test (R2)

Table 5. Results of the Coefficient of Determination Test (R2)

Model Summaryb					
Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.865a	.749	.623	.01402	1.904

The R-Square (R^2) value of 0.749 indicates that 74.9% of the variation in income inequality can be explained by the independent variables used in the model, namely Average School Age, Open Unemployment Rate, and Economic Growth. Meanwhile, the remaining 25.1% was influenced by other factors outside of this research model.

Simultaneous Hypothesis Test (F Test)

Table 6. F Test Results

NEW ERA		
Type	F	Sig.
Regression	5.953	.031b

Source: SPSS 25 & Processed by the Author

Based on the ANOVA table, the calculated F value = 5.953 with significance = 0.031. Since the F calculation = 5.953 > F table = 4.76 and the significance value is less than 0.05, it can be concluded that this regression model is simultaneously significant. In other words, the variables Average School Age, Open Unemployment Rate, and Economic Growth together affect Income Inequality.

Partial Hypothesis Test (t-test)

Table 7. T-Test Results

Type	t	Sig.
Average School Length	3,753	0,009
Open Unemployment Rate	-1,322	0,234
Economic Growth	-1,741	0,132

Source: SPSS 25 & Processed by the Author

1. Average School Length

H1: Average School Length has a positive effect on income inequality

The information presented on the tabulation shows that the Average School Length has a value of 0.009 less than the probability of 0.05. It can be concluded that the first hypothesis, or H1, is accepted. The implication is that Income Inequality (Y) is affected by the Average School Age (X1). The t-value for the RLS variable, on the other hand, is 3.753 which is greater than the table t-value of 2.447. It can be concluded that H1 is accepted.

The findings of this study indicate that the increase in the average length of school has a positive and significant role in influencing income inequality conditions in D.I. Yogyakarta Province. Higher education allows individuals to access jobs with better productivity as well as higher incomes. This is in line with Human Capital theory which states that investment in education will improve the quality of the workforce so that it has implications for improving the economic welfare of the community. Thus, education can be an important instrument in efforts to encourage more inclusive economic growth.

However, the dynamics of inequality in D.I. Yogyakarta are inseparable from the uneven distribution of educational opportunities. Although this region is known to have

relatively good access to education compared to other provinces, there is still a disparity between regions and social groups in terms of the quality and affordability of education. This condition has the potential to cause welfare polarization, where more financially able groups tend to have better access to education and ultimately enjoy higher incomes.

The findings of this study are not in line with the results of the study (Vionita and Artha 2024) with the title Analysis of Inequality Factors in Java Island which found that the average length of school has a negative and significant effect on income inequality. This difference in the direction of influence is due to the characteristics of different regions. In previous research, the distribution of education in the study area was relatively even, so that improving education was able to reduce inequality. However, in D.I. Yogyakarta Province, the improvement of education is actually more enjoyed by community groups in urban areas who have better access and quality of education than district areas. This inequality of access is what causes an increase in the average length of schooling to have an impact on the widening of income inequality in Yogyakarta, so that the direction of its influence becomes positive and significant.

2. Open Unemployment Rate

H2: Open Unemployment has a positive effect on income inequality

The information presented on the tabulation shows that the Open Unemployment Rate has a value of 0.234 greater than the probability of 0.05. It can be concluded that the second hypothesis, or H2, is rejected. The implication is that Income Inequality (Y) is not affected by the Open Unemployment Rate (X2). The t-value for the TPT variable, on the other hand, is -1.322 which is smaller than the table t-value of 2.447. It can be concluded that H2 is rejected.

The results of the study show that the open unemployment rate in D.I. Yogyakarta Province does not have a significant influence on income inequality. This indicates that the dynamics of inequality in the region are more determined by other factors outside of unemployment, such as differences in education levels, labor skills, and the distribution of economic opportunities between regions. In other words, although unemployment remains an important issue in development, its contribution to inequality in D.I. Yogyakarta is relatively small in the context of this study.

In addition, D.I. Yogyakarta has unique demographic characteristics with a high proportion of students and temporary migrants. The presence of this group also affects the open unemployment rate without necessarily reflecting the economic conditions of the local community as a whole. For example, students who are looking for part-time jobs or recent graduates who are still in the transition period are often included in the category of open unemployed. This has implications for unemployment statistics, but it is not always directly

proportional to the level of income inequality.

This study is in line with the study conducted by (Hindun et al. 2019) with the title The Influence of Education, Unemployment, and Poverty on Income Inequality in Indonesia. With the result that unemployment does not affect income inequality in Indonesia.

3. Economic Growth

H3: Economic Growth Negatively Affects Income Inequality

The graph shows that the calculated t-value is smaller than the table's t-value, which is -1.741 < 2.447. Thus, the region is included in the region that receives H0. This resulted in a statistically significant H3 revenue of 5%, which reflects that Income Inequality in D.I. Yogyakarta Province is not substantially affected by Economic Growth.

Based on the results of the partial test, economic growth is proven to have no significant influence on income inequality in Yogyakarta Province. This reflects that although the regional economy has improved over time, the benefits of this growth have not been fully distributed evenly across all levels of society. In other words, accelerating economic growth does not necessarily have implications for reducing the income gap between community groups. This phenomenon is in line with the concept of growth without equity, where macroeconomic achievements are not always followed by equitable distribution of development results.

Theoretically, the results of this study indicate that Kuznets' hypothesis regarding the inverted U-curve theory has not fully applied in D.I. Yogyakarta Province. Within this framework, initial growth usually increases inequality, but at a certain stage it will decline along with the equitable distribution of development. Facts on the ground show that D.I. Yogyakarta is still in a phase where growth has not been able to significantly reduce inequality. This is an important basis for local governments to formulate more inclusive development policies, so that economic growth not only increases GDP, but also narrows people's income inequality.

This research is in line with a study conducted by (Yoertiara and Feriyanto 2022) with the title The Influence of Economic Growth, HDI, Open Unemployment Rate on Provincial Income Inequality on the island of Java, with results stating that economic growth has no significant effect on the income inequality of the provinces on the island of Java.

Conclusion

Research shows that the average length of school has a positive and significant effect on income inequality in D.I. Yogyakarta. These findings indicate that improving education has not been followed by equal access and quality, so that urban groups benefit more than suburban areas. This inequality makes the increase in the average length of school actually

widen income inequality. Meanwhile, the open unemployment rate has no significant effect on inequality. This is influenced by the dominance of the informal sector and the phenomenon of underemployment, so that the unemployment rate cannot reflect the overall income condition. In addition, economic growth also does not have a significant effect on income inequality. The growth supported by the tourism, education, and services sectors is more enjoyed by high-income groups in urban areas. This is in line with Kuznets' theory that growth at a certain stage can widen inequality if the benefits are not evenly distributed. Based on these findings, local governments are advised to expand the equitable distribution of access and quality of education, especially for low-income groups and marginalized areas, so that the function of education as a tool to reduce inequality can run effectively. Improving the quality of the workforce also needs to be strengthened through training and strengthening the informal sector, while encouraging the creation of more productive formal jobs. In addition, the direction of economic development should be made more inclusive by strengthening MSMEs and improving people's work skills so that the benefits of growth can be felt more evenly.

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