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The Effect of Economic Growth, Education Level, and Energy Subsidies on Income Inequality in Indonesia in 2005-2019

Muhammad Bahrudin[1], M. Taufiq[2]

[1,2] Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran East Java, Indonesia

ABSTRACT

Income equality is the ideal of every country, to achieve it requires cooperation between the government and the community. This study aims to determine the effect of economic growth, education level, and energy subsidies on income inequality in Indonesia. This study used secondary data in the form of *time series* in 2005-2019 obtained from the *world bank*, the central statistics agency and the Ministry of Finance. The method used in this study is multiple regression analysis. The results obtained in this study show that the variable level of education and energy subsidies actually increases income inequality due to suboptimal policies, while the economic growth variable does not reduce income inequality due to economic activities focused on the upper class.

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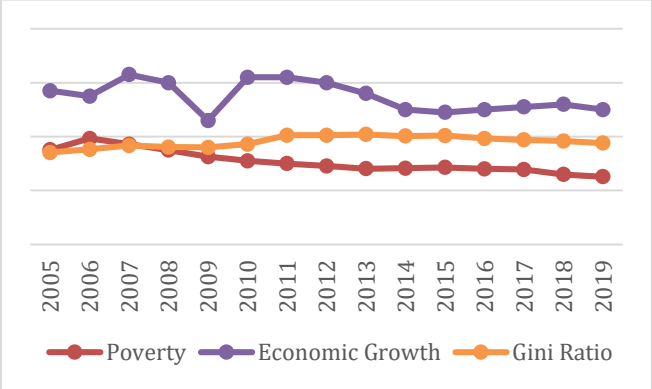
KEYWORDS:

economic growth, education level, energy subsidies, income inequality

INTRODUCTION

Poverty is an obstacle to the success of economic development as well as a long-rooted problem in Indonesia. Poverty and income inequality are two things that are interrelated and continuously suppressed growth by the government through various policies, High income inequality is a homework that is difficult to solve in development in some countries (Arifianto & Setiyono, 2017) .

Graphic 1 Comparison of Poverty, Economic Growth, and Gini Ratio



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Statistically, from 2005 to 2019, the number of poor people in Indonesia tends to decrease and economic growth tends to continue to show positive numbers, but income inequality in this period is classified as moderate to high inequality. It is suspected that there is a *trade off*, where when economic organizations increase, income inequality also increases.

Income inequality can be overcome by improving the quality of human resources, one of which is through improving education through a 12-year compulsory education policy and the existence of Job Training Institutions as a means of improving community skills. However, people who lack money for education tend to educate their children to work immediately and make money. The Indonesian government also issued an energy subsidy policy to meet the needs of underprivileged people. However, the realization was not as expected, the subsidies distributed were even enjoyed by the upper class. This makes the fuel subsidy policy not on target (Yulivia, 2012).

With government policies related to energy subsidies and efforts to improve education, it is expected to improve people's welfare and reduce income inequality The phenomenon is just the opposite, even suspected that economic growth also increases income inequality in Indonesia.

THEORETICAL REVIEW

1. Income Inequality Theory

Income inequality is the relative structure of life in people in an area due to differences in

natural resources and available production factors (Kuncoro, 2004). According to Todaro & Smith (2011), income inequality can be measured by the Lorenz Curve, Size Distribution, and Gini Ratio.

A country's economic inequality is said to be high if it has a Gini ratio between 0.50 to 0.70. Meanwhile, countries with relatively even income distribution if the Gini ratio is between 0.20 to 0.35.

2. ***Economic Growth Theory***

Economic growth is the process of changing the economic condition of a country continuously towards a better condition in a certain period of time (Hasanah, 2016). The theory of Marxism born by Karl Marx has a theory that in the future, when capitalism reaches saturation point, the world community will transform into a world socialist society.

Although both reject capitalism, Neo-Marxist theory is different from Karl Max's theory, Neo-Marxist theory states that since the beginning of development, economic growth has actually caused a widening gap of inequality between upper and lower class society. Neo-Marxist theory which states that income inequality will widen along with increasing economic growth in the development process of a country (Syed Agung Afandi, Muslim Afandi, 2022). The theory of Neo Marxism is in line with research conducted by Pramata Maesza, Guntur Eko Saputro, Panji Suwarno (2022), which states that if economic growth increases, income inequality increases or has a significant positive effect.

H1 = It is suspected that the variable Economic Growth has an influence on Income Inequality

3. ***Human Capital Theory***

The level of education is a long-term process that uses structured procedures, in which students learn conceptual and theoretical knowledge for general purposes (Mangkunegara, 2013). Human Capital Theory (Jhingan, 2011) means that human resource investment is obtained by increasing the number of people who have skills, education, and experience for the development of a country.

In the International Labour Organization, the higher the education a person takes, the higher the wages received, workers with higher education also experience easier income growth than workers with less education (Wahyuni & Monika, 2016). In accordance with research conducted by Istikharoh, Whinarko Juli Prijanto, Rian Destiningsih (Istikharoh et al., 2020) which shows that the level of education has a significant effect on income inequality.

H2 = It is suspected that the variable Level of Education has an influence on Income Inequality

4. ***Theory of Government Spending***

In the book Indonesian Economy by Dumairy (1996) which contains Keynes's theory related to government expenditure states the concept of calculating national income with the following expenditure approach:

Y = C + I + G + X – M

The variable Y represents national income (aggregate supply), while the variables on the right are called aggregate demand. Variable G symbolizes government spending, One form of government expenditure is the provision of subsidies, in Law Number 47 of 2009 concerning the State Budget for Fiscal Year 2010 Energy Subsidies are government policies in the energy sector by lowering energy production costs, increasing prices received by producers, or lowering prices paid by energy consumers. This is according to research conducted by Mustafid Nur Qosthory (2016) which states that energy subsidies have a significant relationship with income inequality.

H3 = It is suspected that the variable Energy Subsidy has an influence on Income Inequality.

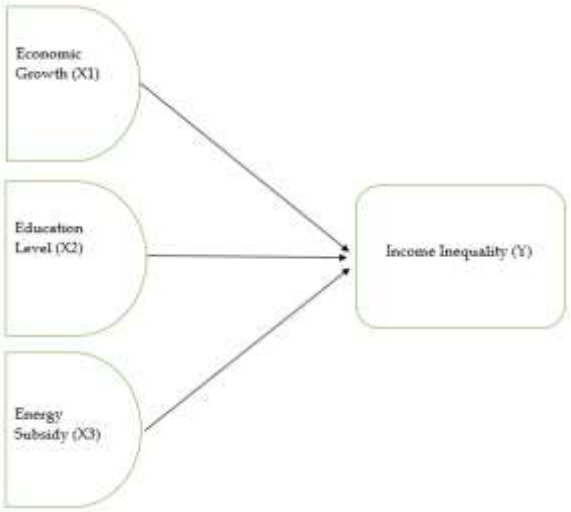


Fig 1. Theoretical framework

METHODOLOGY

Data Types and Sources

This research was conducted based on secondary data obtained from the world bank, the central statistics agency, and the ministry of finance. This study used a quantitative approach with time series data type. The data used is annual data starting from 2005-2019. The variables in this study are income inequality, economic growth, education level, and energy subsidies.

Data Analysis Methods

The analysis test in this study used multiple linear regression analysis. Multiple Linear Regression Analysis is a technique used to measure the effect of two or more independent variables on a single bound variable (Hardani, S.Pd. et al., 2020). The dependent variable in this study is income inequality while the independent variable in this study is economic growth, education level, energy subsidies. Data analysis and processing tools using SPSS 26 software.

The equation of the Multiple Linear Regression model can be seen as follows:

$Y= \alpha+\beta1X1+\beta2X2+ \beta3X3+ e$

Information:

Y	= Income Inequality
α	= Constant
β1, β2, β3	= Regression Coefficient
X1	= Economic Growth
X2	= Education Level
X3	= Energy Subsidy
e	= Residual

Test Classical Assumptions

1. Normality Test
   A normality test is performed to test whether the data in the research model is normally distributed or not. The normality test can be done through the kolmogornov-smirnov statistical test (K-S) (Ghozali Imam, 2018).
2. Heterocadicity Test
   Heterocadicity Test Aims to test whether the model experiences variance inequality from residuals in all regression observations. Regression models must avoid symptoms of heterocadisity, heterocadisity tests are carried out by looking at scatterplot graphs that form certain patterns (Ghozali Imam, 2018).
3. Multicollinearity Test
   The Multicollinearity Test aims to see if there is a strong correlation between two or more independent variables in a multiple regression model (Ghozali Imam, 2018).
4. Autocorrelation Test
   The Autocorrelation Test aims to determine whether there is a correlation present in the regression model during time changes (Ghozali Imam, 2018). One way to detect autocorrelation or not is through the Dubin-Watson test with the following conditions:
   a. If $0 < d < dl$ means there is no positive autocorrelation with the rejected decision
   b. If $dl \leq d \leq du$ means that there is no positive correlation with the decision cannot be established
   c. If $4 - dl < d < 4$ means there is no negative autocorrelation and the decision is rejected
   d. If $4 - du \leq d \leq 4 - d$ means that there is no negative autocorrelation with which the decision cannot be established
   e. If a $du < d < 4 - du$ means there is no positive or negative autocorrelation with the decision cannot be established
5. Test F
   Test F is used to determine how much influence the independent variables (Economic Growth, Education Level, and Energy Subsidies) have on the dependent variable (Income Inequality) together (Ghozali Imam, 2018)
6. T Test
   The T test is used to determine how much influence the independent variable (Economic Growth, Education Level, and Energy Subsidies) has on the dependent variable (Income Inequality) partially (Ghozali Imam, 2018).
7. Coefficient of Determination
   The calculation of the determinant coefficient is used to measure how far the independent variable is able to explain the dependent variable. If the value of the coefficient is close to 1, it means that the independent variable is able to explain almost all dependent variables. Meanwhile, if the value of the coefficient of determination is close to 0, it means that the independent variable is less able to explain the dependent variable (Ghozali Imam, 2018).

RESULT

1) Normality test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		15
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.01168632
Most Extreme Differences	Absolute	.147
	Positive	.147
	Negative	-.132
Test Statistic		.147
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Fig 2. Normality Test
Source: Output SPSS

From the test results using SPSS software, the value of Asymp. Sig. (2-tailed) of 0.2 or greater than 0.05, then according to applicable provisions it can be concluded that the data is normally distributed.

2) Heterocadicity Test

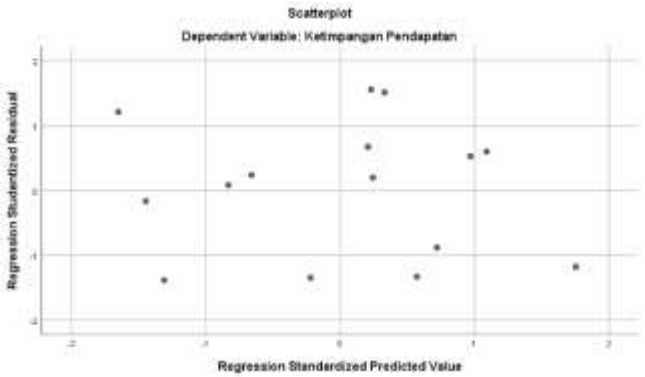


Fig 3. Hetrocadicity Test
Source: Output SPSS

Because there is no clear pattern and the dots spread above and below the number 0 on the Y axis, it can be concluded that the variables in the study did not occur heterocadicity.

3) Multicollinearity Test

Fig 4. Multicollinearity Test
Source: Output SPSS

From the results of the Multicollinearity Test conducted using SPSS 26 software, it is known that:

Table 1. Multicollinearity Test Results

Variabel	VIF	Tolerance
Pertumbuhan Ekonomi	1.924	0.52
Tingkat Pendidikan	1.799	0.556
Subsidi Energi	1.218	0.821

Source: Output SPSS

Because there is no independent variable that has a Variance Inflation Factor (VIF) value of less than 10 and the absence of an indep Table 2 Autocorrelation Test Results endent variable with a tolerance value of less than 0.10, it can be concluded that there are no serious symptoms of multicollinearity between independent variables in the regression model.

4) Autocorrelation Test

Fig 5. Autocorrelation Test
Source: Output SPSS

Table 2. Autocorrelation Test Results

Durbin-Watson	DL	DU	4-DU	4-DL
1.616	0.8140	1.7501	2.2499	3.186

Source: Output SPSS

Based on the results of autocorrelation, the results of $0.8140 \leq 1.616 \leq 1.7501$ ($dl \leq d \leq du$) mean that there is no positive correlation with the decision cannot be determined, therefore it is necessary to test it in another way which can give a definite conclusion, namely the Runs Test.

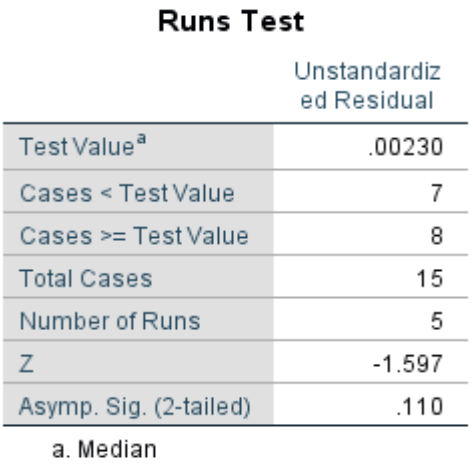


Fig 6. Run test
Source: Output SPSS

Explanation:

Based on the Runs Test, it can be concluded that the value of ASYMP. Sig, (2-tailed) of 0.110 > 0.05 so it can be concluded that there are no symptoms of autocorrelation.

5) Multiple Linear Regression Test

Fig 7. Multiple Linear Regression Test Results
Source: Output SPSS

Income Inequality = 0.2037 + 0.0068 Economic Growth + 0.0019 Education Level + 0.0001 Energy Subsidy

From the equation above, conclusions can be drawn :

a. Constant
   The value of the positive constant of 0.2037 indicates that the independent variable (the effect of economic growth, education level, energy subsidies) increases by one unit, then the dependent variable (income inequality) will increase.
b. Economic Growth
   The regression coefficient of Economic Growth reaches 0.0068, meaning that if economic growth increases by 1%, it will increase the gini ratio by 0.0068.
c. Education Level
   The regression coefficient of Education Level reaches 0.0019, meaning that if the Education Level increases by 1%, it will increase the gini ratio by 0.0019.
d. Energy Subsidies
   The regression coefficient of Energy Subsidies reaches 0.0001. The point is that if energy subsidy spending increases by 1 billion rupiah, it will increase the Gini ratio by 0.0001.

6) F Test

ANOVA[a]

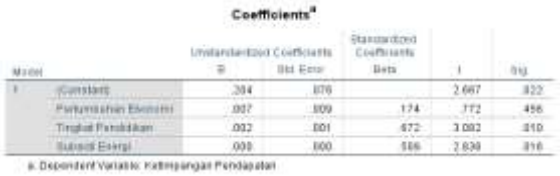
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.005	3	.002	8.950	.003[b]
	Residual	.002	11	.000		
	Total	.007	14			

a. Dependent Variable: Ketimpangan Pendapatan
b. Predictors: (Constant), Subsidi Energi, Tingkat Pendidikan, Pertumbuhan Ekonomi

Fig 8. F Test
Source: Output SPSS

Explanation:
The F test can be done by comparing F count and F table, Because the value of F count 8.950 > F table 3.59 it can be concluded the accepted hypothesis or variables Economic Growth (X1), Education Level (X2), and Energy Subsidies (X3) simultaneously or together affect the variable Income Inequality (Y).

7) T Test



Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.204	.076		2.667	.022
	Pertumbuhan Ekonomi	.007	.009	.174	.772	.456
	Tingkat Pendidikan	.002	.001	.672	3.082	.010
	Subsidi Energi	.000	.000	.586	2.836	.016

a. Dependent Variable: Ketimpangan Pendapatan

Fig 9. T Test
Source: Output SPSS

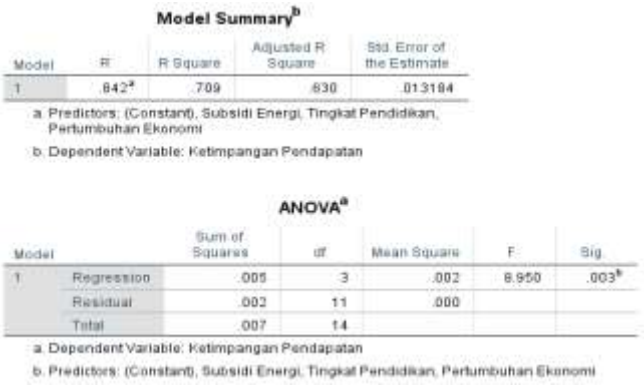
Explanation:
T table = 2,261

Since T table 2.261 > T calculate 0.772 means that the variable Economic Growth (X1) has no effect on the variable Income Inequality (Y).

Because T table 2.261 < T calculate 3.082 means that the variable Education Level (X2) affects the variable Income Inequality (Y)

Because T table 2.261 < T calculate 2.836 means that the variable Energy Subsidy (X3) affects the variable Income Inequality (Y)

8) Coefficient of Determination Test



Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.842[a]	.709	.630	.013184

a. Predictors: (Constant), Subsidi Energi, Tingkat Pendidikan, Pertumbuhan Ekonomi
b. Dependent Variable: Ketimpangan Pendapatan

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.005	3	.002	8.950	.003[b]
	Residual	.002	11	.000		
	Total	.007	14			

a. Dependent Variable: Ketimpangan Pendapatan
b. Predictors: (Constant), Subsidi Energi, Tingkat Pendidikan, Pertumbuhan Ekonomi

Fig 10. Coefficient of Determination Test
Source: Output SPSS

Explanation:
Based on the Anova table, it can be seen that the significance (Sig.) in the F test is 0.003 < 0.05, so it can be concluded that the independent variables together affect the independent variable.

Based on the SPSS output table "Model Summary", it is known that the magnitude of the coefficient of determination (R Square) is 0.709 or equal to 70.9% which means that the variables Economic Growth (X1), Education Level (X2), Energy Subsidies (X3) affect the variable Income Inequality (Y) by 70.9% while 29.1% is influenced by other variables.

DISCUSIION

1. The Effect of Economic Growth on Income Inequality in Indonesia

The variable of partial economic growth does not have a significant effect on income inequality in Indonesia in 2005-2019. This research is in line with research conducted by Dinda Syahri and Yesi Gustiara (2020) which explains that Economic Growth has no influence on Income Inequality.

Economic growth reflects a country continuously moving towards better or worse conditions over a certain period, economic activity does indeed increase economic growth, but economic activity only benefits the upper class. Therefore, the data shows that any increase in economic growth has no effect on income inequality.

2. The Effect of Education Level on Income Inequality in Indonesia

The variable level of education partially has a significant effect on income inequality in Indonesia in 2009-2019. This research is in line with research conducted by Istikharoh, Whinarko Juli Prijanto, Rian Destiningsih (2020), which explains that education level has an influence on income inequality.

The 12-year compulsory education program organized by the government does not fully exempt students from the contribution of education fees, costs that are not borne by the government will be borne by students (Sholikhah et al., 2014). Income inequality cannot narrow because people who can afford more education will receive higher education than individuals who cannot afford education outside government assistance. Residents who cannot afford to pay are directed by their parents to work to help meet the needs of daily life.

3. The Effect of Energy Subsidies on Income Inequality in Indonesia

Based on the tests that have been conducted, the Energy Subsidy Variable partially has a positive and significant effect on Income Inequality in Indonesia in 2005-2019 which means that there is acceptance of the hypothesis, where when energy subsidy spending increases, it will significantly increase income inequality as well. This research is in line with research conducted by Mustafid Nur Qosthory (2016), which explains that Energy Subsidies have an influence on Income Inequality.

Subsidies in Indonesia are given to keep the price of basic necessities stable, reduce inequality, and help the poor (Kristinawati et al., 2018). However, energy subsidies actually increase income inequality because they are allocated not on target, which happens instead of people from the upper class also enjoy these subsidies.. Energy subsidies are highly sought after because they have a role in meeting basic human needs such as food, shelter, health services, and education, as well as contributing to social development (Qosthory, 2016).

CONCLUSIONS AND RECOMMENDATIONS

1. The Economic Growth Variable (X1) has no influence on Income Inequality in Indonesia based on statistical calculations that have been carried out. Economic activities only benefit the upper class, economic growth is increasing, but not accompanied by an increase in welfare for the lower class.
2. The variable Education Level (X2) has a significant influence on Income Inequality in Indonesia based on statistical calculations that have been carried out. Residents who can afford more education fees can get higher education, Finally, graduates from education are from the upper class population only. It is expected that the government will reduce the cost of education through more effective programs or policies because for underprivileged people, existing education programs are still not helpful enough.
3. The Energy Subsidy Variable (X3) has a significant influence on Income Inequality in Indonesia based on statistical calculations that have been carried out. This is due to the provision of energy subsidies that are not right on target, where all groups of society enjoy the allocation of energy subsidies. Energy subsidy policy is better reviewed so that it can be more targeted and tighten the system of allocation of aid to the lower class so that it can reach the right hands.

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