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Analysis of the Effect of Economic Growth, Education Level on Open Unemployment Rates in Sumatera

Rizky Dwi Kurniawan[1]*, Sunoto[2]
Development Economics Study Program, Bengkulu University
Corresponding Author: Rizky Dwi Kurniawan rizkydk1212@gmail.com

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A B S T R A C T

This research aims to determine the effect of economic growth and education level on the level of open unemployment in Sumatra. The data used is secondary data, the analysis method used is panel data regression and the model used is random effect. The results obtained are that the Education Level variable has a negative and significant effect on the unemployment rate in Sumatra while Economic Growth has a negative and significant effect on inflation in Sumatra. Based on the results of the analysis, it can be concluded that the Unemployment Rate responds to changes in each variable: Educational Level and Economic Growth.

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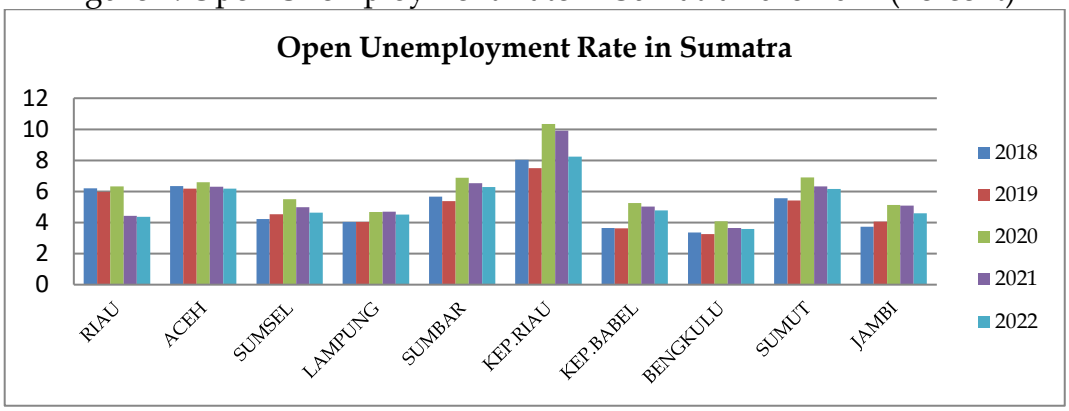
INTRODUCTION

Indonesia is a country that has a very large population and is said to be a country rich in human resources. This should be able to provide benefits to the Indonesian economy. However, the fact is that now, many Indonesian citizens do not have jobs or in other words are unemployed. According to Mankiw (2006: 131), unemployment is someone who wants to work but has not yet found a job and does not play a role in the process of producing goods and services.

Unemployment must be addressed immediately because it can cause a high social burden (Kurniawan, 2013: 4). Every country always wants a low unemployment rate. But in reality, unemployment always appears in the economy, even though the economy is in good condition. If unemployment is not addressed immediately, it can cause social insecurity and potentially lead to poverty (Central Statistics Agency, 2015).

Figure 1. Open Unemployment Rate in Sumatra 2018-2022 (Percent)



Source: Badan Pusat Statistik, 2023

Sumatra is the island that ranks third in terms of unemployment rate at 6 percent after Java at 7.4 percent and Maluku and Papua at 6.3 percent. The largest city on the island of Sumatra, namely Medan, has a fairly good economy in Sumatra, the head offices of several national companies are in Medan. Apart from that, there are other cities which are centers of large economic development on the island of Sumatra, namely Batam City, Pekanbaru, Bandar Lampung and Padang City.

Unemployment in the provinces on the island of Sumatra fluctuates from 2018 to 2022. There are 10 provinces on the island of Sumatra, the Riau Islands Province occupies the highest position in the open unemployment rate at 8.04 percent in 2018 and 8.23 percent in 2022. When viewed from The lowest open unemployment rate was in Bengkulu Province at 3.35 percent in 2018, while in 2020 Riau Province became the province with the lowest open unemployment rate, namely 4.37 percent.

The magnitude of the unemployment rate can be said to be very important in measuring the success of economic development. This is because unemployment is an indicator to show the level of welfare resulting from economic development. Therefore, unemployment is a shared responsibility, especially the government as a supporter of the process of improving people's

lives in a government, to immediately find a solution by formulating systematic and strategic steps as an effort to handle the problem of unemployment (Zulfa, 2016)

The problem of unemployment is very important to discuss, because it is closely related to several other economic variables. Some of these variables include : economic growth and education level (Sirait, 2013: 108).

If rapid population growth can create a potential workforce, it will be able to trigger economic growth. On the other hand, if rapid population growth does not create energy, according to Kurniawan (2013: 7). The relationship between economic growth and unemployment is that increased economic growth in a country has an impact on the influx of capital into that country, thereby providing job opportunities, which is indicated by the large number of new business sectors whose systems are labor-intensive oriented, thereby reducing the number of unemployed in that country.

In simple terms, growth in macroeconomics is an increase in GDP (Gross Domestic Product) which also means an increase in national income (Tambunan, 2003: 41). Economic growth is a very important factor in assessing the performance of an economy, especially for analyzing the results of economic development that has been implemented in a country or region. An economy is said to experience growth if the production of goods and services increases from the previous year. Thus, economic growth shows the extent to which economic activity can generate additional income or social welfare in a certain period. The economic growth of a country or region that continues to show an increase indicates that the economy of that country or region is developing well.

Another factor that influences the unemployment rate is the level of education. According to Elfindri (2001: 239) the relationship between the level of education and the level of unemployment is that the level of education can determine a person's employment status, because with a better level of education a person will tend to get a higher quality job so that they can fulfill their living needs and on the other hand it can also be achieved. reduce the unemployment rate. Apart from that, if someone is highly educated, then the unemployment situation will not be as severe as compared to people with low education. Based on existing data, it shows that education and unemployment are not in accordance with existing theory, in fact in several regions in Sumatra, for example, Riau Islands Province in 2018 became the highest province in terms of education level at 82.86, but also became the highest province in terms of education level. unemployment was 8.04 percent.

One of the causes of the high number of unemployed college graduates is education. Education is an important factor in developing human resources. According to H. Horne, education is a continuous (eternal) process of higher adjustment for human creatures who have developed physically and mentally, who are free and aware of God, as manifested in the intellectual, emotional and human nature of humans. The higher a person's educational attainment, the higher a person's working capacity or productivity at work. Education not only adds ways to carry out good work and also provides knowledge not only directly related to carrying out tasks but also for self-development and the

ability to utilize all existing facilities and infrastructure. The higher a person's completed education, the higher their ability and opportunity to work (Yos Merizal, 2008).

Table 1 . Data on the education level of Sumatra Island for 2018 – 2020.

Provinsi	Tahun				
	2018	2019	2020	2021	2022
Aceh	70,68	69,96	70,07	65,24	52,9
Sumatera Utara	68,34	65,21	70,39	82,62	1,06
Sumatera Barat	65,34	60,32	67,11	75,34	73,67
Riau	63,71	58,78	66,62	63,02	70,87
Kepulauan Riau	82,86	78,14	78,65	49,99	67,8
Jambi	66,06	56,87	63,66	78,54	75,4
Bengkulu	58,86	61,47	57,59	51,22	65,05
Sumatera Selatan	63,94	58,23	65,42	73,09	59,83
Bangka Belitung	55,01	53,84	56,74	67,38	70
Lampung	54,89	54,87	62,73	57,02	56,07

Source: Badan Pusat Statistik

In 2018, the Riau Islands were the province with the highest education level in Sumatra at 82.86 percent, while in 2020 West Sumatra Province was the highest in the education level at 73.67 percent. The lowest position in 2018 was held by Lampung province at 54.89 percent, while in 2020 North Sumatra Province was the province with the lowest position at 1.06 percent. Based on the background that has been described, a formulation of the problem raised in this research was prepared, namely an analysis of the influence of economic growth, education level on the level of open unemployment in Sumatra.

THEORETICAL REVIEW

The relationship between economic growth and unemployment is explained by Okun's Law, that Okun's Law explains the negative relationship between unemployment and GRDP. Every increase in unemployment tends to be associated with a decrease in economic growth, so that, when economic growth decreases, the number of unemployed will tend to increase. Conversely, if economic growth increases, the problem of unemployment can decrease (Suhendra, Indra and Bayu Hadi Wicaksono, 2016). Meanwhile, according to Kort, it explains the negative relationship between unemployment and education. MP (in Sirilius Seran, 2017), education is the right way to improve the quality of human resources. The higher the education, the higher the quality of the workforce, so that it can reduce the level of open unemployment (Todaro, 2006:414).

Unemployment

According to Keynes, unemployment is considered to always exist in the economy because the effective demand that exists in society (aggregate

expenditure) is lower than the ability of the production factors available in the economy to produce goods and services.

Sadono Sukirno said that the condition of a person/individual who is of working age but has not yet obtained it is called unemployment. In statistical indicators, residents or individuals who are not yet working are trying to find work or are not looking for work because they are considered employed but have not yet started working, so that is called unemployment.

Level of Education

According to the new growth theory, it emphasizes the importance of the government's role in increasing human capital development and development to increase human productivity. Through investment in education, it is hoped that it will be able to improve the quality of human resources which is demonstrated by increasing a person's knowledge and skills. The higher the quality of people, the more knowledge and skills will increase, which will encourage increased work productivity. Companies will obtain more results by employing workers with high productivity, so that increasing the absorption of labor will reduce the unemployment rate (Todaro. 2000).

The research framework is in the form of a diagram, illustrating how the research flow is carried out consistently with the research objectives. The aim of the research is to see the influence of economic growth and education level on the level of open unemployment in Sumatra.

The two independent variabels consist of economic growth (X1) and education level (X2) on the dependent variable, namely the open unemployment rate (Y). in order to make the research more focused, a research framework was prepared as follows :

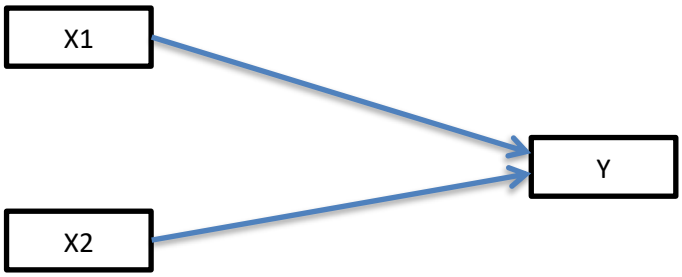


Figure 2. Conceptual Framework

METHODOLOGY

The type of research used is quantitative methods. This type of research is conclusive research , this research is used to test certain hypotheses or relationships. The approach used in this research is a methodological approach Quantitatively, the data used in this research is a series of secondary data in the form of 2018-2022 from the official website *of the Central Statistics Agency* .

The variables used in this research are Economic Growth, Education Level and Open Unemployment Level. The analytical method applied in this research is panel data regression, using the Eviews 12 tool.

RESULTS

There are several initial testing stages that need to be carried out before carrying out the test. There are three analysis models that can be used to analyse panel data in this research, namely *the common effect model, fixed effect model, and random effect model.* In order to find out which analysis model is most appropriate to use in this research, a comparison test will be carried out first, namely the chow test, hausman test, and lagrange multiplier test with *eviews12*.

Chow Test (Chow Test)

The Chow test is a test carried out to find out which model is better, the *Common effect model* or *the Fixed effect model* that will be used in this research. The following is the hypothesis in the Chow Test:

- H0 : *Common Effect Model*
- Ha : *Fixed Effect Model*

error rate (α) is 5%. In the criteria that determine whether a hypothesis can be accepted or not, namely if the Prob value is <0.05 then Ha is accepted and H0 is rejected. Vice versa, if the Prob value is > 0.05 then H0 is accepted and Ha is rejected.

Table 2. Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Cross-section fixed effects test

Effects Test	Statistics	df	Prob.
Cross-section F	24.166025	(9.38)	0.0000
Chi-square cross-section	95.280682	9	0.0000

Source: Eviews 12 , 20 23 (processed data)

Based on the test results in the Chow test, *cross probability results were found chi-square section* , namely 0.00 00 < 0.05 which means Ha is accepted and H0 is rejected. So these results show that the best model in the Chow test is the *Fixed Effect Model* (FEM).

Hausman Test

The Hausman test is a test carried out to find out which model is better, the *Fixed effect model* or *the Random effect model* that will be used in this research. The following is the hypothesis in the Hausman test:

- H0 : *Random Effect Model*
- Ha : *Fixed Effect Model*

error rate (α) is 5%. In the criteria that determine whether a hypothesis can be accepted or not, namely if the Prob value is <0.05 then Ha is accepted and H0 is rejected. Vice versa, if the Prob value is > 0.05 then H0 is accepted and Ha is rejected.

Table 3. Hausman Test Results

Correlated Random Effects - Hausman Test
Equation: Untitled
Cross-section random effects test

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	0.223833	2	0.8941

Source : Eviews 12 , 202 3 (processed data)

random cross-section Prob results were found , namely 0.8941 > 0.05 , so H0 was accepted and Ha was rejected. So these results show that the best model in the Hausman test and at the same time in this research is the *Random Effect Model* (REM) .

Lagrange Multiplier Test

Chow test and *Hausman test* , it was found that the best model chosen was *the Random Effect Model* (REM) .

Table 4. Lagrange Multiplier Results

	Test Hypothesis Cross-section	Time	Both
Breusch-Pagan	66.01952 (0.0000)	1.000651 (0.3172)	67.02017 (0.0000)

Source : *Eviews* 12, 2023 (data processed)

The prob value is 0.0000 < 0.05, so the REM model was selected. Based on the results of the Chow test, thirst test and LM test, the best model in this research is REM.

Classic Assumption Test

In this research, the classical assumption tests carried out were the normality test, multicollinearity test, and heteroscedasticity test.

Normality Test

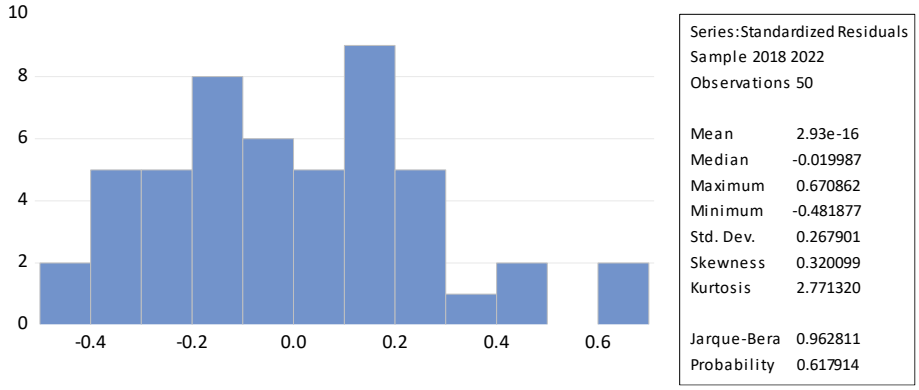


Figure 2. Normality test
Source: Processed data, 2023

Jarque-Bera (JB) must be close to or equal to one and the probability value is above 0.05 . It is known that the prob value from the normality test is 0.617914 > 0.05, so it can be concluded that the variables used are normal or pass the normality test.

Heteroscedasticity Test

Table 5 . Heteroscedasticity Test Results

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	0.708365	0.194895	3.634596	0.0007
X1	-0.001140	0.000567	-2.011006	0.0701
X2	0.029415	0.032409	0.907616	0.3687

Source: Processed data, 2023

The X1 prob value is 0.0701 > 0.05, and the X2 prob value is 0.3687 > 0.05. It is known that the probability value for each variable has a value greater than 0.05 , so it can be concluded that there are no symptoms of heteroscedasticity.

Multicollinearity Test

Table 6. Multicollinearity Test Results

	X1	X2
X1	1,000000	0.046520
X2	0.033204	1,000000

Source: Processed data, 2023

Data from the management results above, the correlation coefficient X1 and X2 is 0.046520 < 0.85 . So it can be concluded that it is free from multicollinearity or passes the multicollinearity test.

Hypothesis Test Results

Hypothesis testing in this research consists of Simultaneous Significance Test (F-Test), Partial Significance Test (t Test) and Coefficient of Determination Test (R^2). Through data processing that has been carried out using the E-Views 12 program.

F Test Results

The F test was carried out in order to see the influence of the independent variables, namely coal export prices , *Gross Domestic Product* and the exchange rate per country simultaneously or as a whole on the dependent variable, namely coal export volume . The significance level used is 5 % (0.05).

Table 7. Multicollinearity Test Results

R-squared	0.951943
Adjusted R-squared	0.930102
SE of regression	0.690512
F-statistic	4.186045
Prob(F-statistic)	0.042301

Source: Processed data, 2023

The calculated f value is 4.186045 > f table, namely 3.195956 and the sig value is 0.042301 < 0.05 , so it can be concluded that the variables of education level and economic growth have an influence on the unemployment rate on the island of Sumatra.

T Test Results

The aim of this T test is to determine the effect of each independent variable on the dependent variable. Based on the *Fixed Effect Model* regression results , the probability of each independent variable is known as follows:

Table 8. Multicollinearity Test Results

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	5.676031	0.535454	10.60041	0.0000
X1	-0.000388	0.000742	2.264302	0.0338
X2	-0.078876	0.042153	2.871183	0.0476

Source: Processed data, 2023

The influence of the independent variable on the dependent variable partially is as follows:

a. The results of the t test on the Education Level variable (X1) obtained a calculated t value of 2.264302 > t table, namely 2.010634 and a sig value. 0.0338 < 0.05 , so it can be interpreted that the level of education has an influence on the unemployment rate on the island of Sumatra.

b. The results of the t test on the Economic Growth variable (X2) obtained a calculated t value of 2.871183 < t table, namely 2.010634 and a sig value. 0.0476 > 0.05 , so it can be interpreted that economic growth has no effect on the unemployment rate on the island of Sumatra.

Coefficient of Determination Test Results (R^2)

The coefficient of determination shows a measure that explains the large variation in the dependent variable, namely the unemployment rate , which can be explained by the level of education and economic growth in Sumatra.

Table 9. Multicollinearity Test Results

R-squared	0.861943
Adjusted R-squared	0.950432
SE of regression	0.690512
F-statistic	4.186045
Prob(F-statistic)	0.042301

Source: Processed data, 2023

The adjusted R-Square value is 0.861943 or 86.1943 %. The coefficient of determination value shows that the independent variables consisting of education level and economic growth are able to explain the variable unemployment rate on the island of Sumatra of 86.1943%, while the remaining 13.8057% (100 - adjusted R-Square value) is explained by other variables. which are not included in this research model.

This research was carried out using the panel data regression analysis method using *Eviews 12 software* as a tool for analysis. The following are the equation results obtained from this research:

Y = 5.676031 - 0.038750X1 - 0.078876X2

The analysis of the regression coefficient values can be concluded as follows :

1. of the regression coefficient value
2. The results of the regression coefficient value

DISCUSSION

The Influence of Education Level on the Open Unemployment Rate

After finding the results of the *Random Effect Model* (Rem) regression, it shows that the coefficient of the education level variable is -0.038750 and the probability is 0.0338 . This shows that the education level variable has a negative and significant effect on the level of open unemployment in Sumatra .

This research is in line with research by Roring et al., (2020) which states that education partially influences the open unemployment rate, the higher the level of education, the lower the unemployment rate. Similar research has also been conducted by Kekung et al., (2023) , who used the variable education to have a negative and significant effect on the open unemployment rate.

Likewise, research conducted by Prawita (2018) stated that the level of education has a significant effect on the unemployment rate in Indonesia. In the research carried out, results were obtained which were the same as the estimates in the hypothesis where the level of education had an effect on the level of open unemployment.

The Influence of Economic Growth Rates on Open Unemployment Rates

After finding the results of the *Random Effect Model* (Rem) regression, it shows that the coefficient of the economic growth variable is -0.078876 and the probability is 0.0476 . This shows that the economic growth variable has a negative and significant effect on the level of open unemployment in Sumatra .

This research is in line with research by Nurcholis et al., (2014) which states that economic growth has a significant effect on the unemployment rate. Similar research has also been conducted by Muminin et al., (2017) , who used economic growth to have a significant negative effect on the open unemployment rate. Likewise, research conducted by Taime et al., (2021) states that economic growth has a significant effect on the unemployment rate.

In the research carried out, results were obtained which were the same as the estimates in the hypothesis where economic growth had an effect on the level of open unemployment.

Through the results of research that has been carried out, a long-term equation model is obtained, namely as follows: PE = 4.813417 – 0.001913PP. In the research results, the results obtained are that the agricultural development variable has a constant of 4.813417, in this case the accumulated agricultural development variable has a positive value, with a probability value of agricultural development of 0.9904 > 0.05, so the long-term relationship between agricultural development and economic growth is not significant effect. Agricultural development variables have a long-term negative effect on economic growth in Indonesia.

In the long-term estimation results, if it is estimated that when agricultural development in that year increases by 1 percent, it will reduce economic growth by 0.0019 percent, but if agricultural development is in a constant condition, economic growth will be worth 4.813417 percent.

CONCLUSIONS AND RECOMMENDATIONS

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FURTHER STUDY

This research only examines the analysis of the influence of Education Level and Economic Growth, where there are limitations in the research, therefore future researchers can improve this research by adding other variables that influence the Open Unemployment Rate, adding the number of years, other scopes that can see the influence Open Unemployment Rate in Sumatra, so that later it can produce better results.

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