

The Effect of GRDP and Minimum Wage on Open Unemployment Rate in East Java Province

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Article Info	Abstract
Received May 12, 2024	<i>This study aims to determine the effect of gross regional domestic product and minimum wage on the open unemployment rate in East Java province. The data used in this study is panel data of 38 districts / cities from 2018-2022. The data source comes from the official website of Badan Pusat Statistik. The research method used in this research is quantitative method. The results showed that partially the Gross Regional Domestic Product (GRDP) has a significant and negative effect on the open unemployment rate. Meanwhile, the minimum wage has a significant and positive effect on the level of open unemployment. Simultaneously, Gross Regional Domestic Product (GRDP) and minimum wage have a significant influence on the open unemployment rate.</i>
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INTRODUCTION

One of the macro problems that is often faced in an economy is unemployment. Unemployment occurs because of an imbalance between supply and demand in the labor market where the supply of labor is higher than the demand which then causes misallocation of labor so that there are workers who do not get jobs and end up unemployed (Sembiring & Sasongko, 2019). In addition, unemployment can also occur despite the high number of job opportunities but limited information, the difference between the skills possessed and those needed or deliberately choosing not to work or be unemployed (Putong, 2013). According to Sukirno (2016) unemployment is defined as a situation in which a person belongs to the labor force who wants to get a job but has not been able to get it, besides that someone who does not work but is not actively looking for work cannot be

classified as unemployed.

The problem of unemployment must be handled properly and quickly, considering that high unemployment can have an impact on the emergence of new problems. According to Sukirno (2016) if viewed from an individual point of view, unemployment can cause various social economic problems to emerge. In this case, the absence of earned income causes unemployed people to reduce consumption expenditure. In addition, unemployment can also trigger political turmoil and have a negative impact on the welfare or standard of living of the community and development prospects in the long term.

Unemployment is a problem that occurs in various regions in Indonesia, one of which is the province of East Java. Based on data from the Badan Pusat Statistik, it can be seen that the open unemployment rate in East Java province is still quite high. In this case, the open unemployment rate describes the ratio between the unemployed working-age population and the total labor force.

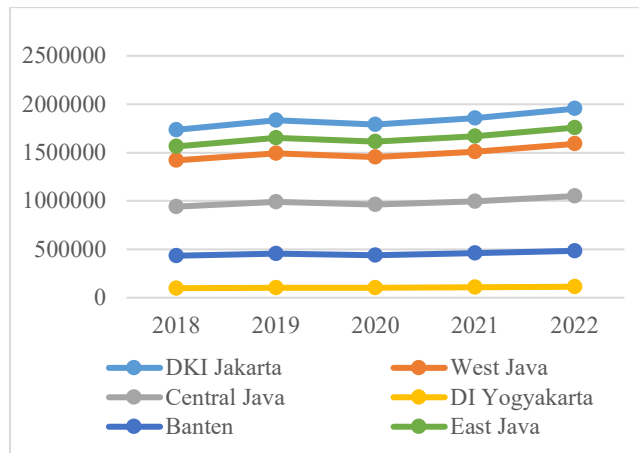


Source: Badan Pusat Statistik (2023)

Figure 1. Open Unemployment Rate of East Java Province

Figure 1 shows that the open unemployment rate in East Java Province in the period 2018-2022 always fluctuates. From the figure above, it can be seen that the open unemployment rate in 2018 - 2019 shows a downward trend, this is because the economic situation in East Java is getting better, which is indicated by an increase in economic growth. In 2020 the open unemployment rate increased to 5.84%. The increase in that year was very significant due to the pandemic which caused layoffs. In 2021 the open unemployment rate decreased to 5.74%, then in 2022 it also decreased. However, the decline was not significant and still showed a fairly high percentage. In 2022, the open unemployment rate in East Java province was recorded at 5.49%. Even though when viewed from the value of gross regional

domestic product (GRDP), East Java province is one of the provinces with the second highest GRDP value on the island of Java.



Source: Badan Pusat Statistik (2023)

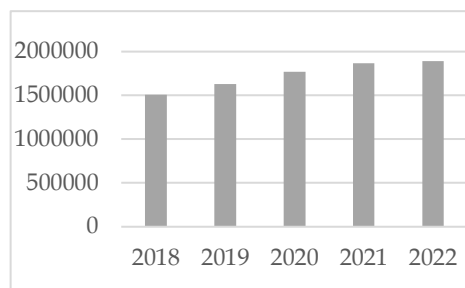
Figure 2. GRDP at Constant Prices of Provinces in Java Island

Figure 2 shows that GRDP at constant prices in East Java province is superior to that of West Java, Central Java, Banten, and DI Yogyakarta. In this case, GRDP at constant prices is used to show economic growth from year to year. In the period 2018-2022, GRDP at constant prices in East Java province increased relatively every year. Although in 2020 it experienced a decline. In 2018 the value of GRDP at constant prices of East Java province amounted to 1563441.8 billion and in 2022 the value of GRDP at constant prices of East Java province reached 1757821.4 billion. The figure above also shows that from 2018-2022 there was an increase of 194379.6 billion. In addition to the increase and the high gross regional domestic product (GRDP) of East Java province, in reality it still cannot fully absorb labor. This is indicated by the open unemployment rate in East Java province which is still high.

Unemployment is an indicator in employment in measuring the absorption capacity of labor towards employment. In this case, high unemployment indicates that many of the labor force are not absorbed in employment, and conversely low unemployment indicates that many of the labor force are absorbed in employment. Wages are one of the factors that influence the high and low absorption of labor. According to BPS (2023), wages are defined as compensation obtained during one month by employees or laborers in the form of money or goods paid by the company/office/employer. In this case, compensation in the form of goods can be

valued at local prices. In addition, the wage in question is after deducting deductions for mandatory contributions, income tax and others.

The government has set policies related to minimum wages as regulated in the Law of the Republic of Indonesia Number 13 of 2003 Concerning Labor. Government policy on minimum wage aims to prevent employers from paying lower wages to workers. With the establishment of a minimum wage, a worker can achieve decent living needs. In this case, the nominal amount of the minimum wage will have an impact on the number of unemployed. A high minimum wage will benefit workers, but on the other hand it is detrimental to employers. According to Sembiring & Sasongko (2019) the high minimum wage set by the government requires companies to increase production costs, in other words, the determination of the minimum wage policy will affect labor supply as well as demand in the labor market.



Source: Badan Pusat Statistik (2023)

Figure 3. Minimum Wage of East Java Province

Based on Figure 3, it can be seen that the minimum wage in East Java Province in the period 2018-2022 has always increased every year. However, the nominal increase in the minimum wage in East Java province is relatively small. In this case, the increase in wages will affect unemployment through labor demand and supply.

Based on the description above, this study was conducted with the aim of analyzing the effect of Gross Regional Domestic Product (GRDP) and minimum wage on the level of open unemployment in 38 districts / cities of East Java province in 2018-2022.

METHODS

The type of research used in this study is quantitative. According to Sugiyono (2016) quantitative methods are research methods based on the philosophy of

positivism which are used to research on certain populations or samples. The data used in this study is panel data which is a combination of time series and cross section data, namely 38 districts / cities in East Java province within 5 years namely 2018-2022. The type of data used is secondary data obtained from the official website of the Badan pusat Statistik, which was then tested using Stata 13.

In this study, data analysis was carried out using multiple linier regression analysis. Multiple linear regression analysis is used to analyze the effect of various independent variables on the dependent variable (Prawoto, 2022). The regression model used in this study can be formulated as follows:

$$\text{LN_TPT}_{it} = \beta_0 + \beta_1 \text{LN_GRDP}_{it} + \beta_2 \text{LN_WAGE}_{it} + e_{it}$$

Keterangan:

TPT	: Open unemployment rate
GRDP	: Gross regional domestic product
WAGE	: Minimum wage
LN	: Natural logarithm
β_0	: Constant
β_1, β_2	: Regression coefficient
e	: Error term
i	: Object (district/city)
t	: Time (2018-2022)

According to Widarjono (2018) there are three methods used in estimating regression models with panel data. The three approaches include Common Effect, Fixed Effect, and Random Effect. In selecting a model from these three approaches, it is necessary to conduct several tests to determine which model will be selected. The tests are as follows:

1. Chow Test

The Chow test is conducted to select the best model between the Common Effect Model or the Fixed Effect Model (Widarjono, 2018). This test is done by comparing the probability value with the confidence level ($\alpha = 0.05$). If the probability value < 0.05 then the chosen one is the Fixed Effect Model and if the probability value > 0.05 then the chosen one is the Common Effect Model.

2. Hausman Test

The Hausman test is conducted to select the best model between the Fixed Effect Model or the Random Effect Model (Gujarati & Porter, 2012). This test

is done by comparing the probability value with the confidence level ($\alpha = 0.05$). If the probability value < 0.05 then the chosen one is the Fixed Effect Model and if the probability value > 0.05 then the chosen one is the Random Effect Model.

3. Langrange Multiplier Test

This test is used to choose between the Common Effect Model or Random Effect Model (Widarjono, 2018). This test is carried out by comparing the probability value with the confidence level ($\alpha = 0.05$). If the probability value is < 0.05 then the Random Effect Model is selected and if the probability value is > 0.05 then the Common Effect Model is selected.

After selecting the best model in the study, the next step is to conduct a classical assumption test consisting of a multicollinearity test and a heteroscedasticity test.

1. Multicollinearity Test

The multicollinearity test aims to test whether there is a linear relationship between the independent variables. According to Widarjono (2018) as a rough rule of thumb, if the correlation coefficient is high enough above 0.85, it is suspected that there is multicollinearity in the model. Conversely, if the correlation coefficient is relatively low or below 0.85, it is suspected that there is no multicollinearity element in the model.

2. Heteroscedasticity Test

The heteroscedasticity test aims to test whether the disturbance variable has a variant that is not constant Widarjono (2018). Heteroscedasticity can be seen from the probability value, if the probability value is less than 0.05 then there is heteroscedasticity and vice versa if the probability value is more than 0.05 then there is no heteroscedasticity.

After testing the classical assumptions, then testing the research hypothesis is carried out. Hypothesis testing is done by partial testing (T test), simultaneous testing (F test) which is then continued with testing the coefficient of determination (R^2).

1. Partial Test (T Test)

According to Ghozali (2014) the T test basically shows how influential the

independent variable is on the dependent variable partially. In this test, the independent variable partially can be said to have an effect on the dependent variable if the significant probability value is < 0.05 and $T\text{-count} > T\text{-table}$. Conversely, the independent variable is partially said to have no effect on the dependent variable if the significant probability value is > 0.05 and the calculated $T\text{-count} < T\text{-table}$.

2. Simultaneous Test (F Test)

According to Ghozali (2014) the F test basically shows whether all independent variables in the model simultaneously or jointly affect the dependent variable. In this test it can be said that the independent variables can simultaneously be said to have an effect on the dependent variable if the significant probability value is < 0.05 and $F\text{-count} > F\text{-table}$. Conversely, the independent variables are simultaneously said to have no effect on the dependent variable if the significant probability value is > 0.05 and $F\text{-count} < F\text{-table}$.

3. Coefficient of Determination (R^2)

According to Ghozali (2018) the coefficient of determination is basically used to measure how much the model's ability to explain the variation in the dependent variable. The coefficient of determination is between zero and one. In this test, a small coefficient of determination indicates that the ability of the independent variables to explain the dependent variable is very limited. A coefficient of determination value close to one indicates that the independent variables are able to provide almost all the information needed to predict the dependent variable.

RESULTS AND DISCUSSION

RESULTS

In the selection of panel data regression capital, it must go through several tests to ensure that the best model can be used in regression capitalization.

1. Chow Test

Table 1. Chow Test Results

Test Name	Probability	Interpretation
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Chow Test	0.0000	Fixed Effect Model
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Source: Data Prossed Using Stata 13 (2023)

Based on this test, the probability value is 0.0000, which is less than the confidence level ($\alpha = 0.05$). Then the selected model is the Fixed Effect Model (FEM).

2. Hausman Test

Table 2. Hausman Test Results

Test Name	Probability	Interpretation
Hausman Test	0.0000	Fixed Effect Model

Source: Data Prossed Using Stata 13 (2023)

Based on this test, the probability value is 0.0000, which is less than the confidence level ($\alpha = 0.05$). Then the selected model is the Fixed Effect Model (FEM).

Based on the results of the chow test and hausman test, it shows that the best model chosen is the Fixed Effect Model (FEM). Then continued with panel data regression testing using this model, with the following results:

Table 3. Regression Test Results

R-sq: within	= 0.4125	F (2, 150)	= 52.65	
		Prob > F	= 0.0000	
LN_TPT	Coefficient	Std. Err.	t	P> t
LN_GRDP	-1.608971	.537357	-2.99	0.003
LN_WAGE	2.324826	.242259	9.60	0.000
C	-16.22425	4.310167	-3.76	0.000

Source: Data Prossed Using Stata 13 (2023)

Based on the table above, the regression model equation results are as follows:

$$LN_TPT_{it} = -16.22425 - 1.608971LN_GRDP_{it} + 2.324826LN_WAGE_{it} + e_{it}$$

Based on the regression equation above, it can be interpreted as follows:

a) The constant value obtained is -16.22425, meaning that if all independent variables, namely gross regional domestic product and minimum wage, are considered constant, the open unemployment rate will decrease by -16.22425.

b) The coefficient value on the Gross Regional Domestic Product (GRDP) variable is -1.608971, meaning that every 1% increase in GRDP, the open unemployment rate will decrease by -1.608971.

c) The coefficient value on the minimum wage variable is 2.324826, meaning that every 1% increase in the minimum wage will increase the unemployment rate by 2.324826.

After estimating the regression results, the next step is to conduct a classical assumption test consisting of multicollinearity and heteroscedasticity test.

1. Multicollinearity Test

Table 4. Multicollinearity Test Results

	LN_GRDP	LN_WAGE
LN_GRDP	1.0000	
LN_WAGE	0.6395	1.0000

Source: Data Prossed Using Stata 13 (2023)

The test results show that the value between variables is below 0.85. Therefore, it can be concluded that the data used in this study does not contain elements of multicollinearity.

2. Heteroscedasticity Test

Table 5. Heteroscedasticity Test Results

Chi2 (1)	= 2.42
Prob > chi2	= 0.1201

Source: Data Prossed Using Stata 13 (2023)

The test results show that the probability value of 0.1201 is more than 0.05. It can be concluded that the data used in this study are free from symptoms of heteroscedasticity.

After testing the classical assumptions, the next step is to test the hypothesis which consists of partial testing (T test), simultaneously (F test), and the coefficient of determination (R^2).

1. Partial Test (T Test)

Based on the partial test that has been carried out, it can be concluded that:

a) Gross Regional Domestic Product (GRDP)

From the test above, it can be seen that the probability value is $0.003 < 0.05$ and the value of T-count is $- (2.99) > T\text{-table} (1.97)$. So it can be concluded that in this study the GRDP variable has a significant effect and has a negative correlation with the open unemployment rate.

b) Minimum Wage

From the test above, it can be seen that the probability value is $0.000 < 0.05$ and the value of T-count is $(9.60) > T\text{-table} (1.97)$. So it can be concluded that in this study, the minimum wage variable has a significant effect and has a positive correlation with the open unemployment rate.

2. Simultaneous Test (F Test)

Based on the test results, the probability value is $0.0000 < 0.05$ and the value F-count is $52.65 > F\text{-table} 3.04$. So it can be concluded that in this study, the independent variables, namely Gross Regional Domestic Product (GRDP) and minimum wage, simultaneously and significantly affect the dependent variable, namely the open unemployment rate.

3. Coefficient of Determination (R^2)

Based on the Fixed Effect Model regression results, it shows that the R-Square value is 0.4125 which means that the open unemployment rate can be explained by GRDP and minimum wage by 41.3% and the remaining 58.7% can be explained by other variables.

DISCUSSION

The test results show that the GRDP variable has a significant and negative influence on the open unemployment rate. The results of this study are in line with Okun's Law theory. This theory explains the relationship between unemployment and economic growth. In this study, economic growth is shown by GRDP at constant prices. According to Prachowny in Kuncoro (2015) Okun's Law explains the negative and linear relationship between unemployment and economic growth: 1% increase in the unemployment rate will cause a decrease in economic growth by 2%.

The results of this study are also in line with research conducted by Prayitno & Kusumawardani (2021) which states that GRDP has a negative and significant relationship with the open unemployment rate variable. Likewise, Suhadi & Setyowati (2022) state that GRDP has a significant effect and has a negative

correlation with the open unemployment rate. Research conducted by Arizal & Marwan (2019) also states that gross regional domestic product has a negative and significant effect on the level of open unemployment. Further research conducted by Sari & Pangestuty (2022) shows that gross regional domestic product has a negative and significant influence on the open unemployment rate. This shows that an increase in GRDP will certainly be followed by an increase in labor demand. An increase in labor demand indicates that the number of workers absorbed in employment will increase. Thus, the more labor that is absorbed, the lower the unemployment rate will be.

The test results show that the minimum wage variable has a significant and positive influence on the open unemployment rate. The results of this study are in line with the theory of the minimum wage curve in a competitive market (Mankiw, 2018). This theory shows that the minimum wage will affect the supply and demand in the labor market. In this case, an increase in wages above the equilibrium level will cause an increase in the amount of labor supply and a decrease in the amount of labor demand.

The results of this study are also in line with research conducted by Fatimah & Utomo (2023) which states that the minimum wage has a positive effect on the open unemployment rate. Likewise, Leasiwal (2021) which states that wages have a positive and significant effect on the open unemployment rate. Research conducted by Suhadi & Setyowati (2022) also states that the minimum wage has a significant effect and has a positive relationship with the open unemployment rate. Further research conducted by Helvira & Rizki (2020) shows that partially the minimum wage has a positive and significant effect on the open unemployment rate. In this case, the increase in wages will certainly have an impact on the increase in production costs in a company. In response to this, it is necessary to make efficiency by reducing the amount of labor demand.

CONCLUSION

Based on the results of the research that has been conducted, several conclusions can be drawn. The Gross Regional Domestic Product (GRDP) variable has a significant and negative effect on the open unemployment rate variable. This shows that an increase in GRDP will cause a decrease in the unemployment rate in East Java. In addition, the minimum wage variable has a significant and positive

effect on the open unemployment rate. This shows that an increase in the minimum wage will cause an increase in the open unemployment rate in East Java.

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