Educational Unemployment Factory in 9 Cities of East Java Province

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Abstract

The problem of educated unemployment in 9 cities of East Java Province until 2023 is still quite high compared to uneducated unemployment. There are several factors that cause the high number of educated unemployed in 9 cities of East Java Province, namely, Industrial Sector Investment, Minimum Wage and Economic Growth. This study aims to determine the influence of independent variables on the dependent variable in 9 cities, East Java Province from 2013 to 2022. In this research, linear regression analysis uses panel data using quantitative methods and secondary data at BPS (Central Statistics Agency) of East Java Province in 2013 to 2022 and uses the fixed effect model (FEM) as the best model. The results obtained in this research show that investment in the industrial sector has a positive and significant influence on educated unemployment in East Java Province. Meanwhile, minimum wages and economic growth are known to have no effect on educated unemployment in East Java Province.

Keywords: Educated Unemployment, Industrial Sector Investment, Minimum Wage

Abstrak

Persoalan pengangguran terdidik di 9 kota Provinsi Jawa Timur hingga tahun 2023, masih terbilang cukup tinggi di bandingkan dengan pengangguran tidak terdidik terdapat beberapa faktor yang menyebabkan tingginya jumlah pengangguran terdidik di 9 kota Provinsi Jawa Timur yakni, Investasi Sektor Industri, Upah Minimum dan Pertumbuhan Ekonomi. Studi ini bertujuan untuk mengetahui pengaruh variabel independen terhadap variable dependent di 9 Kota, Provinsi Jawa Timur pada tahun 2013 hingga 2022. Dalam penelitian ini dengan analisis regresi linier data panel menggunakan metode kuantitatif dan data sekunder di BPS (Badan Pusat Statistik) Provinsi Jawa Timur tahun 2013 hingga 2022 serta menggunakan fixed effect model (FEM) sebagai model yang terbaik. Dengan hasil yang di peroleh dalam penelitian ini adalah Investasi Industri memberikan pengaruh positif dan signifikan terhadap

pengangguran terdidik di Provinsi Jawa Timur. Sedangkan Upah Minimum dan Pertumbuhan Ekonomi diketahui tidak berpengaruh terhadap pengangguran terdidik di Provinsi Jawa Timur.

Kata kunci: *Pengangguran Terdidik, Investasi Industri, Upah Minimum, Pengangguran Terdidik*

Introduction

Unemployment is an issue in various countries, both developing and developed. In Indonesia, unemployment is still a serious concern for the central and regional governments. One of its distinctive characteristics is the high number of unemployed people who have higher education, known as the educated unemployed. The definition of educated unemployment is someone who is looking for work or is not working, but has a minimum degree at high school level or equivalent (Mankiw, 2003). The increase in the number of graduates causes educated unemployment because it is not accompanied by an increase in available jobs (Kuncoro, 2010). Based on data from the National Labor Force Survey, unemployment in Indonesia is dominated by the workforce with high school and higher education (bachelor's and diploma).

In East Java Province, the educated unemployment rate tends to be high every year, when compared to those who do not have formal education. Data from the National Labor Force Survey in 2022, in Figure 1.1, the number of educated unemployed people in East Java reached 243,810 people, while the number of unemployed people without formal education was 210,935 people in the same year. This phenomenon creates irony because people who have completed education have a higher probability of being unemployed. This is because someone with education who wants to find work tends to be more selective in looking for work.
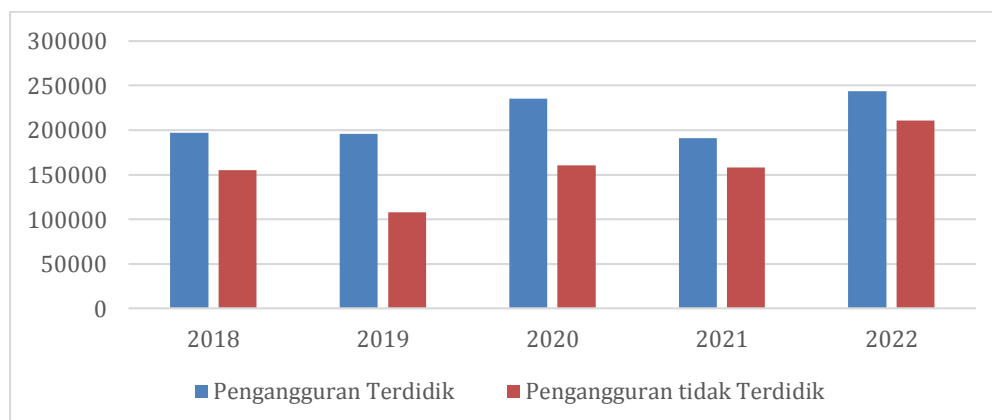
Figure 1.1 Number of educated and uneducated unemployed in East Java Province 2018 – 2022 (people)
Source: East Java Central Statistics Agency (processed data)

Unemployment in urban areas is generally higher than in districts. This is explained by (Central Statistics Agency, 2021) that high unemployment in urban areas is due to the increasing rate of urbanization in big cities and the lack of needed jobs. Based on National Labor Force Survey Data in 2022, educated unemployment is spread throughout East Java Province. In Figure 1.3, there are 9 cities in East Java Province, where the city of Surabaya has

the highest rate of educated unemployment in 2022, increasing significantly from the previous year, reaching 80,718 people. On the other hand, the city with the lowest educated unemployment rate in East Java Province is the city of Blitar, with an educated unemployment rate of 1,138 people. This difference is caused by the different qualification requirements required by the labor market in each region, despite the high demand for labor, which ultimately increases the unemployment rate. This has also resulted in an increase in the number of unemployed people looking for work in big cities.

Table 1. 1 Educated unemployment in 9 cities, East Java Province, 2018 – 2022 (people)

Year	Batu City	Blitar City	Kediri City	Madiun City	Malang City	Mojokerto City	Pasuruan City	Probolinggo City	Surabaya City
2018	1698	669	3492	2024	12415	1652	2256	1783	43826
2019	846	1126	2519	1435	9703	265	1129	2258	28216
2020	3035	1465	3638	2827	11119	1417	2730	3432	55061
2021	1583	1199	4109	2455	11513	1494	2703	3408	49123
2022	2726	1138	3666	4191	16909	1743	2941	3714	80718

Source: East Java Central Statistics Agency (processed data)

Investment can be interpreted as putting in money or funds and hoping to get certain profits through the money or funds that are input. (Umam & Khairul., 2018) This is because investment is an addition to production factors (Umam & Khairul., 2018), where one of the production factors is labor. Thus, the economy as a whole can absorb as much labor as possible and labor force participation will increase, thereby reducing the unemployment rate (Dewi & Puspa, 2019). Investment spending has the opportunity to grow employment opportunities, if demand for goods and services increases, it will lead to an increase in demand for labor which will result in a decrease in the unemployment rate (Kurniawan & Barry, 2014).

The industrial sector is still the favorite for domestic investment with the contribution of industrial sector investment to PMDN. This is because industry is a business field that will continue to develop along with technological advances and improvements in human resources (HR). The industrial sector is the main destination for investors to invest their capital.

In Indonesia there is a Provincial Minimum Wage and a Regency/City Minimum Wage. The difference between the UMP and UMK in regional coverage is that the UMP is set by the governor, while the UMK is set by the regent/mayor and then ratified by the governor. Wages can be defined as compensation given to workers by employers as a reward. (Sukirno, 2010) concluded that "Wages are defined as financing physical and mental services provided by workers to entrepreneurs. Thus, in economic theory there is no distinction between payment for permanent and professional services and payment for the services of manual and temporary workers."

The Provincial Minimum Wage (UMP) in East Java itself is still relatively low, in 2023 the East Java UMP is IDR 2,040,224 and will increase by 6.13% in 2024. Meanwhile for MSEs in East Java in 2022 the highest number of MSEs in Surabaya is IDR 4 ,375,79.19. An increase in wages means there will be an increase in people's income and purchasing power. So that the educated unemployed can get a job commensurate with the level of education they have completed and receive a wage commensurate with their education. However, this is still not able to drastically reduce educated unemployment. Due to the lack of job opportunities which

is not balanced with the educated unemployment rate and the high wages set, there will be more and more competition for educated workers to get jobs with high wages commensurate with their level of education.

Economic growth is an increase in the economy's ability to produce goods and services. The definition of economic growth according to (Sukirno, 2010) is the development of activities in the economy which causes the goods or services produced in society to increase and the prosperity of society to increase. According to Kuznet in (Todaro & Smith, 2004) that "Economic growth is an increase in the long-term capacity of the country concerned to provide various economic goods to its population. The increase in capacity itself is determined by the presence of production factors.

The development of economic growth in East Java Province, according to the Central Statistics Agency, East Java experiences fluctuations from year to year. Economic growth in 2016 was 5.57%, until 2019 economic growth in East Java increased 5.53%. Even though the increase in economic growth in that year was not too high. However, this can slowly reduce the level of educated unemployment every year. However, the decline in educated unemployment is still quite high. Meanwhile, if we look at economic growth in 2020, it was -2.33%, from the previous year.

The decline in economic growth in that year resulted in the number of educated unemployed increasing by 9.86%. Meanwhile, in 2022 economic growth in East Java will increase from the previous year, amounting to 5.34%. The increase in economic growth rates is also balanced by a decrease in the educated unemployment rate in East Java in 2022, amounting to 9.29%. This is a strategic issue in the employment sector, by increasing economic growth it can reduce educated unemployment.

Based on data and the phenomenon of the high number of educated unemployed in 2013-2022 which occurred in 9 cities (Batu City, Blitar City, Kediri City, Madiun City, Malang City, Mojokerto City, Pasuruan City, Probolinggo City, Surabaya City) in East Java Province. So researchers are interested in knowing "EDUCATIONAL UNEMPLOYMENT FACORS IN 9 CITIES OF EAST JAVA PROVINCE".

Method

This research uses a type of research method that can analyze data using a quantitative method approach. The quantitative method approach uses statistical formulas to analyze the data and facts obtained. This method approach is a scientific method because it fulfills specific/empirical, objective, measurable, rational and systematic scientific principles. By using this method, various new sciences and technologies can be discovered and developed, so it is also called the discovery method (Nurdin & Hartati, 2019).

The data collection method is the main step in research to find the purpose of research, namely obtaining data. In this research, the type of data used is quantitative data. Quantitative data itself usually consists of numerical data. The data used in this research is secondary data

sourced from the Central Statistics Agency of East Java Province. The type of data used is cross section data for the period 2013 to 2022.

In this research, researchers used a method called panel data regression analysis, which is a combination of time series data and cross section data. The aim is to determine the effect of the independent variable on the dependent variable. Apart from that, the panel data regression analysis method in this research uses the Ordinary Least Square (OLS) method and is supported by the Eviews 10 application. The following is the regression equation using a linear model as follows

$$PT_{it} = \beta_0 + \beta_1 ISI_{it} + \beta_2 UM_{it} + \beta_3 PE_{it} + e_{it}$$

Information:

PT : Educated Unemployment (Person)
e : Error Correction Term
t : Years studied (2013 - 2022)
i : Observation (9 Cities, East Java Province)
β_0 : Constanta
$\beta_1, \beta_2, \beta_3$: Regression coefficient for each variable
ISI : Industrial Sector Investment (Rp)
UM : Minimum Wage (Million)
PE : Economic Growth (Percent)

Result and Discussion

1. Model Determination Test

Model selection is carried out to find out and choose the efficient and best model from the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). What is required is to test each model using the following method:

Table 1.2 Model Estimation Results of Various Methods
Y = Educated Unemployment (log)

Metode Estimasi Variabel	CEM	FEM	REM
c	-9703.020** (0.0123)	6672.351** (0.0030)	3882.969 (0.1355)
Industrial Sector Investment	0.011507** (0.00000)	0.005181** (0.0000)	0.006271** (0.0000)
Minimum wage	5.665956** (0.0007)	0.030200 (0.9736)	0.986256 (0.2710)
Economic growth	495.4355 (0.1056)	-28.04772 (0.8485)	61.71839 (0.6721)
Observation	9	9	9
Year	10	10	10
Multicollinearity Test	Tidak terjadi multikolineritas	Tidak terjadi multikolineritas	Tidak terjadi multikolineritas

Metode Estimasi Variabel	CEM	FEM	REM
Heteroscedasticity Test	7.325976 (0.000197)	11.52986 (0.000000)	7.325976 (0.000197)
Adj R2	0.690682	0.935510	0.400540
R Squared	0.701109	0.943481	0.420746
Uji F	67.24341 (0.000000)	118.3699 (0.000000)	20.82230 (0.000000)
Test Chow		0.000000	
Hausman test		0.000000	0.000000

***) Significant Level 1%, **) Significant Level 5%, *) Significant Level 10%

( ) = Prob.

Determining the model is carried out through a series of tests as follows:

A. F-stat test or Chow test

The F-stat test or Chow test is a testing model to determine which two models to choose between the Common Effect Model or Fixed Effect Model.

Based on the results of the F-stat test or Chow test. In table 4.9, the Prob value is 0.000 <0.05. It can be concluded that HO is rejected, while HA is accepted. After testing, the results show that the effective and appropriate model for the Chow Test is the Fixed Effect Model (FEM). The next stage involves testing the Hausman Test to determine the choice between the Random Effect Model (REM) and the Fixed Effect Model (FEM).

B. Hausman Test

The Hausman test is used to select the approach method for these two models, namely the Random Effect Model and the Fixed Effect Model.

Based on the results of the Hausman Test value. In table 1.2, the Prob value is 0.000<0.05. It can be concluded that HO is rejected, while HA is accepted. After testing the Hausman Test, the results show that the effective and appropriate model for the Hausman Test is the Fixed Effect Model (FEM). There is no need to carry out Lagrange Multiplier testing to choose between the Common Effect Model (CEM) and the Random Effect Model (REM), because we have found the best model, namely the Fixed Effect Model (FEM).

2. Statistik Test

Statistical tests are used for tests that aim to find out how much the independent variable influences the dependent variable. Statistical tests are carried out as follows:

A. Determination Test (R^2)

The Coefficient of Determination (R2) is a measurement to determine the ability of the percentage of variation in a model to explain the dependent variable explained by the independent variable.

Based on the results of data processing tests carried out by R-squared (R2). In table 1.2, it shows a result of 0.943481 or 94.38%, meaning that the independent variable, namely

the Industrial Sector Investment, Provincial Minimum Wage and Economic Growth variables, is able to explain the dependent variable, namely Educated Unemployment, which is 94.38%. The remainder is 100% - 94.38%. = 5.62% is influenced by other variables that are not studied but can influence the dependent variable..

B. Statistical F Test

The results of the F test can be seen in table 4.1, showing the results of data processing using the F-statistic test which shows that the Prob(F-statistic) value is 0.00000, meaning the Prob(F-statistic) value is smaller than the significant value $\alpha=0.05$ (0.00000 < 0.05). So it is concluded that Ho is rejected and Ha is accepted, so that all independent variables, namely investment in the industrial sector, city minimum wages, economic growth have a simultaneous or simultaneous effect on the dependent variable, namely educated unemployment in 9 cities of East Java Province in 2013 - 2022..

C. Statistical T Test

The results of the t test processing can prove the research hypothesis. The hypotheses in the research are as follows:

- Ho: There is no partial influence of industrial sector investment on educated unemployment in 9 cities of East Java Province in 2013 – 2022
  Ha: There is a partial influence of industrial sector investment on educated unemployment in 9 cities of East Java Province in 2013 – 2022
- Ho: There is no partial effect of the city minimum wage on educated unemployment in 9 cities of East Java Province in 2013 – 2022
  Ha: There is a partial effect of the city minimum wage on educated unemployment in 9 cities of East Java Province in 2013 – 2022
- Ho: There is no effect of partial economic growth on educated unemployment in 9 cities of East Java Province in 2013 – 2022
  Ha: There is a partial effect of economic growth on educated unemployment in 9 cities of East Java Province in 2013 – 2022

Based on the hypothesis above, the panel data regression results can be seen using the t-statistical test as follows:

The regression results in panel data in table 1.2 show that the t test in probability values obtained the results of hypothesis testing for each research variable, as follows:

1. The influence of industrial sector investment on educated unemployment
   The results of the hypothesis test in the probability value show that 0.0000 is smaller than $\alpha=0.05$ (0.0000 < 0.05), so Ho is rejected and Ha is accepted, thus getting significant results. It can be concluded that investment in the industrial sector has a significant effect on educated unemployment in 9 cities of East Java Province
2. The effect of the city minimum wage on educated unemployment
   The results of the hypothesis test in the probability value show that 0.9734 is greater than $\alpha=0.05$ (0.9736> 0.05), so Ho is accepted and Ha is rejected so that the results are

not significant. It can be concluded that the city minimum wage has an insignificant effect on educated unemployment in 9 cities of East Java Province

3. The effect of economic growth on educated unemployment

The results of the hypothesis test in the probability value show that 0.8486 is greater than α=0.05 (0.8485> 0.05), so Ho is accepted and Ha is rejected so that the results are not significant. It can be concluded that economic growth has an insignificant effect on educated unemployment in 9 cities of East Java Province

3. Multiple Linear Regression Analysis

a) Multicollinearity Test

The multicollinearity test aims to carry out tests to find out whether there is a correlation between independent variables.

Table 1.3 Multilinearity Test

	Industrial sector investment	Minimum wage	Economic Growth
Industrial sector investment	1.000000	0.589124	-0.022843
Minimum wage	0.589124	1.000000	-0.264359
Economic Growth	-0.022843	-0.264359	1.000000

Source: EViews output, processed data.

Based on the results of the regression test on multicollinearity, it shows. The correlation coefficient X1 and X2 is 0.589124<0.8, the correlation coefficient X1 and So it can be concluded that it is free from multicollinearity or passes the multicollinearity test.

b) Heteroscedasticity Test

The heteroscedasticity test is a testing model to detect whether there is an absence of variance from one observation to another.

Table 1.4 Heteroscedasticity Test

Variable	Prob.	Criteria	Description
Industrial sector investment	0.1929	>0,05	Does not cause heteroscedasis
Minimum wage	0.6375	>0,05	Does not cause heteroscedasis
Economic Growth	0.3114	>0,05	Does not cause heteroscedasis

Source: EViews output, processed data.

Based on the results of the regression test on heteroscedasticity, it shows that the probability value for each independent variable is more than 0.05. So it can be concluded that there is no heteroscedasticity between independent variables or this model is free from heteroscedasticity.

D. Analysis of Panel Data Regression Results (Fixed Effect Model)

Based on the table above, the following regression equation model can be produced:

$$\text{Log PTit} = \beta 0 + \beta 1 \text{LogISIit} + \beta 2 \text{LogUMPit} + \beta 3 \text{PEit} + \text{eit}$$
$$\text{PTit} = 6672.351 + 0.005181 \text{ISIit} + 0.030200 \text{UMit} - 28.04772 \text{PEit} + \text{Ɛit}$$

Based on the regression results in panel data, the Fixed Effect Model (FEM) model approach obtained results from each of the independent research variables shown

1. The constant value of educated unemployment is 6672,351, meaning that without the variables Industrial sector investment (X1), UPM (X2), and Economic Growth (X3), the Educated Unemployment Variable (Y) would increase by 6671,867.
2. The coefficient value of the Industrial sector investment variable (X1), is 0.005181, if the values of other variables are constant and variable X1 increases by 1%, then the educated unemployment variable (Y) will experience an increase of 0.005181. Vice versa, if the values of other variables are constant and variable X1 experiences a decrease of 1%, then variable Y will experience a decrease of 0.005181.
3. Minimum wage coefficient value (X2), has no effect on educated unemployment
4. The value of the Economic Growth coefficient (X3) has no effect on educated unemployment

Discussion

1. The Effect of Industrial Investment on Educated Unemployment

Based on the results of the panel data regression test, the calculated t value was 6.671973 and the probability value was 0.0000, so it was stated that $0.0000 < 0.05$. Thus, Industrial sector investment has a significant positive effect on educated unemployment in 9 cities of East Java Province, meaning that when industrial investment increases by 1 percent, educated unemployment also increases.

Increased investment will absorb existing unemployment, but labor absorption does not only come from educated unemployment. This is proven by data on industrial investment in 9 cities in East Java, namely Batu City, Blitar City, Kediri City, Mojokerto City, Madiun City, Malang City, Pasuruan City, Proboinggo City and Surabaya City from 2013 to 2022, which has not consistently increased and in several cities tend to experience a decline, while educated unemployment in these 9 cities tends to increase every year. So increasing investment will still have an effect on increasing the number of educated unemployed in 9 cities in East Java. Thus, industrial investment has a significant positive effect on educated unemployment.

The results of this research are in line with research conducted by (Luh Made Arisusanti and Prof. Dr. I Komang Gde Bendesa, 2022) stating that investment has a significant positive effect on the unemployment rate of educated college graduates in Indonesia. The reason why investment has a positive coefficient value on the level of educated unemployment in Indonesia is that high investment but no jobs is the result of capital intensification caused by money coming in.

2. The Effect of Minimum Wage on Educated Unemployment

Based on the results of the panel data regression test, the calculated t value was 0.033412 and the probability value was 0.9736, so it was stated that 0.9736 > 0.05. So, the city minimum wage has no effect on educated unemployment in 9 cities of East Java Province, meaning that when the city minimum wage increases by 1 percent it has no effect on educated unemployment.

The increase in the minimum wage every year will of course be followed by an increase in the number of workers supplied. This explains that in this research minimum wage is not a factor that causes educated unemployment in East Java. People no longer see the minimum wage as a reference for entering the labor market, because currently finding work is so difficult while the number of workers registering for one job vacancy is so large.

This research is in line with research (Ilhami & Yeniwati, 2022) which states that the minimum wage has an insignificant relationship with educated unemployment in Indonesia. In this case, researchers estimate that when wages increase every year it can reduce the incidence of unemployment. This can happen because if wages get higher it will become a magnet to attract the unemployed to look for work. That way, unemployment will decrease. However, the main cause is the number of workers exceeding the available jobs.

3. The Effect of Economic Growth on Educated Unemployment

Based on the results of the panel data regression test, the calculated t value was -0.191602 and the probability value was 0.8485, so it was stated that 0.8485 > 0.05. So, Economic Growth has no effect on educated unemployment in 9 cities of East Java Province, meaning that when Economic Growth increases by 1 percent it has no effect on educated unemployment.

Economic Growth has no influence on the educated unemployment variable. This explains that high or low Economic Growth is not a factor that causes educated unemployment in East Java. The Economic Growth variable is not a variable that has a direct effect on unemployment. So there are other variables that can better explain educated unemployment in East Java.

The opinion according to Todaro (1997:155) is in line with this research because Economic Growth without being accompanied by additional employment opportunities will result in inequality in the distribution of additional income which will then create a condition for Economic Growth (Basrowi et al., 2018).

Conclusion

The results of research on 9 cities in East Java in 2013-2022 stated that Industrial sector investment had a significant positive effect on the number of educated unemployed in 9 cities of East Java Province, meaning that when industrial investment increased by one percent, educated unemployment also increased. Because the absorption of labor by investment does not come from educated unemployment alone, investment growth also influences the increase in educated unemployment.

The results of research on 9 cities in East Java in 2013-2022 stated that the minimum wage had no effect on the number of educated unemployed in 9 cities in East Java Province. Because people tend not to look at the minimum wage to get a job because of the imbalance between labor and job vacancies.

The results of research on 9 cities in East Java in 2013-2022 stated that Economic Growth had no effect on the number of educated unemployed in 9 cities in East Java Province. Because Economic Growth is not the only variable that has a direct impact on educated unemployment.

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