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DETERMINANTS OF THE OPEN UNEMPLOYMENT RATE IN THE BESUKI EX-RESIDENCY AREA OF EAST JAVA

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ABSTRACT
Open unemployment has been a major concern in the development of regional autonomy in Besuki Ex-Residency. Based on empirical data, there is an increase in population growth with absolute terms. GRDP and minimum wages are not followed by high productivity and adequate employment opportunities, which ultimately leads to unemployment. This study aimed to find the effect of the Regency Minimum Wage (*Upah Minimum Kota* or UMK) and the effect of the population on the level of open unemployment in Besuki Ex-Residency of East Java. This research used a regression analysis of the Pooled Least Square (PLS) method with a panel data. To get the best model, the Chow test and the Hausman test were used. From the test result, the model used was the Fixed Effect Model. The result of this study showed that the Regency Minimum Wage had a negative and significant effect on open unemployment and population had a positive and significant effect on open unemployment in Besuki Ex-Residency.

KEY WORDS
Open unemployment rate, regency minimum wage, total population.

Unemployment is the result of inadequate productive employment - a kind of employment that can help people to earn enough for their life and desire in accordance with their level of education. Indonesia has been struggling with imbalanced economy indicated by inability of the level of national output and employment to reach a full-employment state (Boediono, 2013).

One of the factors causing open unemployment is technological changes that reduce the demand for workforce. The economic slowdown has led to an open unemployment rate, not to exclude in areas of Besuki Ex-Residency, which covers Jember, Bondowoso, Situbondo, and Banyuwangi. Table 1 presents the data on the open unemployment rate in the region.

Table 1 – The Open Unemployment in Besuki Ex-Residency 2010-2017

YEAR	JEMBER REGENCY (%)	BONDOWOSO\ REGENCY (%)	SITUBONDO REGENCY (%)	BANYUWANGI REGENCY (%)
2010	2.71	1.59	3.13	3.92
2011	3.95	2.84	4.74	3.71
2012	3.91	3.75	3.31	3.40
2013	3.94	2.04	3.01	4.65
2014	4.64	3.72	4.15	7.17
2015	4.77	1.75	3.57	2.55
2016	5.07	3.98	3.57	2.55
2017	5.16	2.09	1.49	3.07

Source: East Java Central Statistics Agency, 2015.

Table 1 shows the open unemployment rate in the four (4) regencies, namely Jember, Bondowoso, Situbondo, and Banyuwangi. The unemployment trend in Jember tended to increase, while in other regencies the rate fluctuated since different factors affecting the rate.

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There have been many factors affecting open unemployment in the region—one of the most affecting factors is population growth increasing every year in absolute terms. The population becomes the gross national product divisor, so the rapid growth of population causes per capita income to be low; conversely, slow population growth causes per capita income to rise and purchasing power to increase.

Population growth can be said as the burden of development. If the ratio decreases, the number of productive population is smaller than the number of non-productive population as a result of consumption expenditure that is greater than investment expenditure. This can be seen from the population pyramid in the region that is not ideal—it has a big base (for the population aged 10 and below) and a big top (for population age 65 and above).

In general, developing countries form populations like pyramids, while developed countries form larger populations above showing high life expectancy and are followed by quality. Populations in developing countries are of high productive age (ages 15 and up to 65), but their education is low; thus, even though the labor force is large, they can only fill employment opportunities at the primary sectors that are less productively than the secondary and tertiary sectors.

The number of the workforce, in terms of the total working age of 15 years old and over who work, or have worked but are temporarily not working, plus the number of unemployed people, in Besuki Ex-Residency in 2015 was 2,856,634 people and the remaining 99,215 people were unemployed. The highest number of employment was in Jember Regency with 1,117,132 people, followed by Banyuwangi Regency with 871,029 people, and the lowest was in Situbondo Regency with only 351,821 people. However, the increase in the number of the workforce is not matched by adequate employment; the impact has been an increase in open unemployment and a decrease in welfare.

The welfare of the community is seen from the purchasing power of the people coming from their income or wages. Law Number 13 of 2003 regulates minimum wages. The minimum wage is defined as a wage intended for employees who work under one year and are single. All companies must obey the regulation so employees receive income to fulfill a decent living. Wages must be managed as well as possible by considering the structure and scale. The use of the wage management system is expected to create a fair and decent wage system for the workforce. An increase in wages means an increase in the income of workers that will further stimulate the business world and encourage economic growth.

Based on the data from the Central Statistics Agency of East Java Province, the Regency Minimum Wage in Besuki Ex-Residency increased every year. The minimum wage in 2006 increased by an average of 2.9% compared to 2005 and the rate of economic growth increased from 5.2% to 5.4%. However, a decrease in employment took place; this means that to absorb new workers, the economy must grow above 5.4%. Furthermore, the minimum wage in 2015 rose an average of 15% compared to 2014 and it increased employment by 5%. The increase in employment was due to an increase in the absorption of new workers.

Based on the above background, this study focused on the Regency Minimum Wage, the population growth rate, and open unemployment in Besuki Ex-Residency of East Java. This research substantively explained the effect of the Regency Minimum Wage and population growth against the open unemployment rate in the region.

METHODS OF RESEARCH

The study employed a quantitative method. The study was explanatory since it aimed to examine whether a relationship between two or more variables existed. It also aimed to determine the nature of the relationship between two variables, where the dependent variable in this study was the level of open unemployment and the independent variable consisted of the Regency Minimum Wage and population in Besuki Ex-Regency. This study used a regression analysis of the Pooled Least Square (PLS) method with panel data. To get the best model, the Chow Test and Hausman Test were performed. From the test, the model used was the Fixed Effect model.

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The data used in this study was secondary data in the form of panel data, which was a combination of time-series data from 2010 until 2017 and cross-section data of the five (5) regencies (Banyuwangi Regency, Jember Regency, Bondowoso Regency, Situbondo Regency, and Probolinggo Regency).

RESULTS AND DISCUSSION

Panel data analysis was used because the study employed two different data, namely time-series and cross-section data. The time-series data came from third parties on the variables examined from 2010 to 2017. The cross-section data uses data came from Besuki Ex-Residency, consisting of Jember, Bondowoso, Situbondo, and Banyuwangi Regency. The following was the result of the regression analysis using E-views 9 Software.

Determination of the Estimation Model:

- H0: Pooled Least Square (PLS);
- H1: Fixed Effect Model (FEM).

In the Chow Test assumption, if the probability is less than the significance level of 5% or 0.05, then H0 is rejected and H1 is accepted. This condition shows that the Fixed Effect Model (FEM) is more appropriate than the Pooled Least Square (PLS) Model. Table 2 presents the results of the Chow Test using E-views 9 Software:

Table 2 – The Results of the Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.999950	(3,26)	0.0488
Cross-section Chi-square	9.511910	3	0.0232

The Chow Test results above show that the probability of cross-section F is 0.0488. These results indicated that the level of significance was below 0.05 so H0 was rejected and H1 was accepted. This shows that the suitable model in this study was FEM. Since the Chow Test results showed that PLS was not suitable, the second model test, Hausman, was conducted.

The explanation of the Hausman Test:

- H0: Random Effect Model (REM);
- H1: Fixed Effect Model (FEM).

If the probability of the Lagrange Test is less than 0.05, then H0 is accepted and H1 is rejected. Under this condition, FEM is better used than the REM. Table 4 presents the results of the Hausman test using E-views 9 Software.

Table 3 – The Results of the Hausman Test

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.870867	2	0.0322

Panel Regression Model Estimation with Fixed Effect

Based on the results of the Chow Test and the Hausman Test, the most appropriate model to be used was the Fixed Effect Model.

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Table 4 – The Results of Panel Data Regression with Fixed Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-68.37845	27.33981	-2.501058	0.0190
MINIMUM WAGE	-2.90E-06	1.24E-06	-2.346173	0.0269
POPULATION	5.59E-05	2.12E-05	2.632631	0.0141

The following is the linear equation for the results presented in Table 4:

Y = -68.37845 -2.90E-06UMK + 5.59E-05J P

The open unemployment rate = -68.37845 -2.90E-06 UMK+ 5.59E-05 JP

The interpretation of the model is as follows (based on the linear equation of the endogenous and exogenous variable):

a. The variable of Regency Minimum Wage shown by the linear equation above has a coefficient value of -2.90E-06. This result shows that every increase in the Regency Minimum Wage by 1% will reduce the open unemployment rate by -2.90E-06 annually in Besuki Ex-Residency, assuming other factors are constant.
b. The variable of population shown by the linear equation above has a coefficient value of 5.59E-05. This result shows that every increase in the Regency Minimum Wage by 1% will reduce the open unemployment rate by 5.59E-05 annually in Besuki Ex-Residency, assuming other factors are constant.

Statistical Tests

Statistical tests help to determine the effect of independent variables on the dependent variable in a study. Statistical tests are also intended to test the hypotheses in accordance with reality. There are three (3) statistical tests done in this study as follows:

a. The Simultaneous Test (F-test)

The F-test shows the relationship between the independent and the dependent variable. The simultaneous test was done on the independent variables (minimum wages and population) and the dependent variable (the open unemployment rate). The F-test compares the probability of the calculated F with a significance level of 5% (α = 0.05). If the calculated F is smaller than the significance level of 0.05, then H0 is rejected and H1 is accepted. These results show that the independent variable (minimum wage and population) has a significant effect on the dependent variable (open unemployment).

Table 5 – The Results of the F-Test

R-squared	0.402368	Mean dependent var	3.559375
Adjusted R-squared	0.287438	S.D. dependent var	1.194754
S.E. of regression	1.008533	Akaike info criterion	3.022230
Sum squared residual	26.44558	Schwarz criterion	3.297056
Log likelihood	-42.35569	Hannan-Quinn criterion	3.113327
F-statistic	3.501001	Durbin-Watson stat	2.501236
Prob (F-statistic)	0.014944		

Table 5 shows the calculated F was of 3.501001 and the probability (F-statistic) result was 0.014944. The probability was smaller than the significant level of 0.05, so H0 was rejected and H1 was accepted, or it can be said that the Regency Minimum Wage and population simultaneously had a significant effect on the number of open unemployment in Besuki Ex-Residency.

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b. The Partial Test (t-Test)

The t-test is used to test the regression coefficient whose independent variable is partially related to the dependent variable. The t-test is used to determine the effect of each regression coefficient. This test measures how far the influence of individual variables on the dependent variable by comparing t-statistics and significance level of 0.05. If the probability value is ≤ 0.05, then H0 is rejected and H1 is accepted. This result shows that each independent variable significantly influences the dependent variable.

Table 6 – The Results of t-Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-68.37845	27.33981	-2.501058	0.0190
MINIMUM WAGE	-2.90E-06	1.24E-06	-2.346173	0.0269
POPULATION	5.59E-05	2.12E-05	2.632631	0.0141

Table 6 shows the effect of the independent variables on the dependent variable as follows:

a. The variable of Regency Minimum Wage had a probability value of 0.0269 or smaller than the significance level of 0.05. These results indicated that the Regency Minimum Wage significantly influenced the open unemployment rate in Besuki Ex-Residency.
b. The population had a probability value of 0.0141 or greater than the significance level of 0.05. This means that the population variable had a significant effect on the open unemployment rate in Besuki Ex-Residency.

c. Coefficient of Determinant (R Test)

R^2 is used in a regression analysis. The test on the coefficient of determination aims to measure the suitability of the regression line to the data used in the study or showing the proportion of the dependent variable with the independent variable or serves to explain the independent variable. The coefficient value usually ranges from 0 to 1, in which if the coefficient value is close to 1 then the model has a strong influence to explain the dependent variable and if the coefficient value is close to 0 then the model has weak influence to explain the dependent variable. Table 7 explains the results of the R test in this study.

Table 7 – The Results of the R Test

R-squared	0.402368	Mean dependent var	3.559375
Adjusted R-squared	0.287438	S.D. dependent var	1.194754
S.E. of regression	1.008533	Akaike info criterion	3.022230
Sum squared resid	26.44558	Schwarz criterion	3.297056
Log likelihood	-42.35569	Hannan-Quinn criteria.	3.113327
F-statistic	3.501001	Durbin-Watson stat	2.501236
Prob(F-statistic)	0.014944		

Table 7 shows the results of the R test. The adjusted R-squared was 0.287433; this result shows that the Regency Minimum Wage and the population influenced 28.74% of the change in the total open unemployment in Besuki Ex-Residency. The remaining 71.26% was influenced by other variables outside of the study.

The Classical Assumption Test

The classical assumption test is used to know whether deviations from the classical assumptions exist in the regression model. This study used three (3) classic assumption tests, namely the multicollinearity test, heteroscedasticity test, and normality test.

a. The Multicollinearity Test

The multicollinearity test is used to see whether a high correlation between the independent variable and the dependent variable in a panel data model exists. If the results

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show a high correlation of the dependent variable, then the relationship between the dependent variable and the independent variable becomes disturbed. If the multicollinearity is perfect, then the dependent variable cannot determine the standard error limit. If the correlation coefficient between variables is greater than 0.80, then multicollinearity occurs; if the correlation coefficient between variables is smaller than 0.80, then multicollinearity does not occur (Ekananda, 2015). Table 8 shows the results of the multicollinearity test of this study.

Table 8 – The Results of the Multicollinearity Test

	MINIMUM WAGE	POPULATION
MINIMUM WAGE	1.000000	0.264437
POPULATION	0.264437	1.000000

Table 8 presents the result of the Multicollinearity Test. The correlation test showed no multicollinearity because the figure was below 0.80. These results confirmed no problem of multicollinearity between independent variables.

b. The Heteroscedasticity Test

A heteroscedasticity test is used to determine whether the variable has a variance that is not constant or changing. This study uses the Park test, which was developed by Park in 1996, to detect heteroscedasticity. The Park test will add one squared residual variable and the new residual variable will be calculated by estimation (regression). If the result of the calculated t is smaller than t-table, heteroscedasticity affects the model.

Table 9 – The Results of the Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.802437	0.419036	1.914959	0.0654
MINIMUM WAGE	2.26E-07	3.54E-07	0.639321	**0.5276**
POPULATION	-2.98E-07	1.63E-07	-1.822672	**0.0787**

Table 9 shows the results of the heteroscedasticity test using the Park Test. The results show the probability of each independent variable is greater than α (0.05), then heteroscedasticity did not occur in this model.

c. The Normality Test

A normality test is used to find out residual behavior in the research model. This study used the Jarque-Berre test with Skewness and kurtosis calculations. The normality hypothesis testing was carried out as follows: H0 = error term normally distributed; H1 = error term not normally distributed.

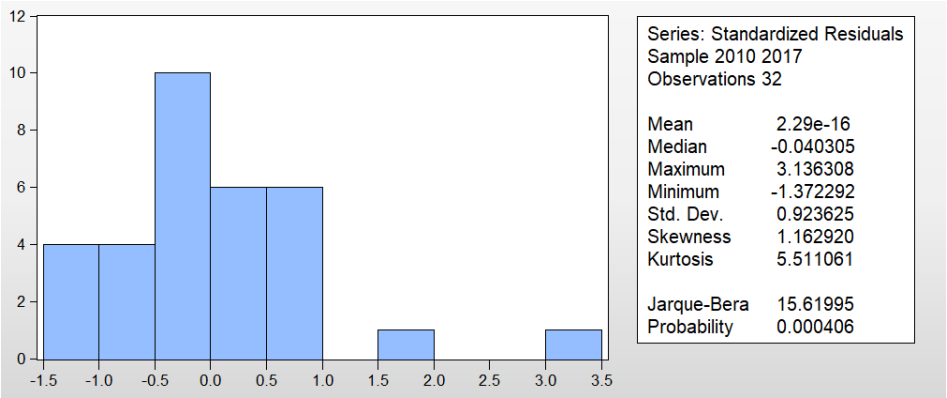

Figure 1 – The Results of the Normality Test

If the probability value is smaller than the significance level of 5%, then H0 is rejected and H1 is accepted, meaning that the error term is not normally distributed. Conversely, if the probability value is greater than the significance value of 5%, then H0 is accepted and H1 is rejected, meaning that the error term is normally distributed.

Figure 1 depicts the results of the normality test for the influence of the Regency Minimum Wage and the total population in 2010 to 2017 towards the open unemployment rate in Besuki Ex-Regency. The normality test is not classified as a BLUE (Best Linear Unbiased Estimator) condition. Many argue that carrying out this test is not a necessity if the minimum requirements are met. In the panel data method, not all classical assumption tests are used. In the OLS method, only two tests are required to be performed in panel data, namely the multicollinearity test and the heteroscedasticity test (Basuki, 2014). If the normality test shows that the results tend to be abnormal, the Central Limit Theorem can be assumed; this assumption states that if the observation data is large (n = >30), then the assumption of normality can be ignored (Gujarati, 2003). In this study, the sample used was 32 and has met the Central Limit Theorem requirements.

DISCUSSION OF RESULTS

In this study, the Regency Minimum Wage had a significant relationship to open unemployment in Besuki Ex-Residency with a coefficient of -2.90E-06, a significance level of 0.0269 < α (0.005). This means a negative and significant relationship occurred between the Regency Minimum Wage and open unemployment. An increase in the Regency Minimum Wage causes the unemployment rate to decrease or employment to increase. The results of the present study contradicted the theory proposed by Stigler that an increase in wages decreases employment absorption. Furthermore, Lewis affirms that the determination of wages in almost all developing countries tends to increase in its absolute and minimal values over time when compared to rural average incomes, despite an increase in open unemployment. According to the labor surplus theory by Fei-Rani, wages do not adjust on the basis of the marginal product of labor, but according to subsistence requirements, or known as minimum wages.

The findings in Besuki Ex-Residency confirmed that although wages increased, many workers still earned below the Regency Minimum Salary because the wage policy issued by the local government did not reach workers in the informal and agricultural sectors when legally all workers should be treated according to the existing regulation. In addition to workers not fulfilling the requirements to receive the Regency Minimum Wages, most companies in this region are informal and have not been able to comply with the regulations set by the labor department. As a result, the Regency Minimum Wage is only applicable to workers in formal companies having fulfilled the requirements of the provisions. For other workers not fulfilling the requirements, they inevitably accept such conditions as they believe there has been no other option—they were thankful to work no matter how much they earned as compared to not having anything to pay for their needs. Wage increase policy for regions is important as a reference for companies in setting their wage level.

Population growth causes the labor force to increase that more people need to find a job. Thus, adequate employment is needed by increasing investment in the region that regulations or policies must support the coming of investors to do business in the region. This way, economic growth increases, and unemployment decrease.

This study also found that the population had a significant effect on open unemployment in Besuki Ex-Residency with a coefficient of 5.59E-05, a significance of 0.0141 < α (0.005). This means that there was a positive and significant relationship between population and open unemployment—that an increase in population causes participation in the labor market to increase, and, consequently, the number of job seekers increase.

The population is categorized as a workforce with an age limit between 15-65 years, while non-workforce are those below 15 years and over 65 years. The results of this study are in line and support the results of the study by Supartoyo *et al.* (2010) entitled “The Economic Growth and The Regional Characteristics: The Case of Indonesia” revealing that

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population growth has a positive and significant relationship to the unemployment rate in Indonesia. The study explains that population growth results in an increase in the number of workers that any changes, increase or decrease, in population also results in the growth of the unemployment rate. This is also consistent with the argument of Karl Mark that there is a positive relationship between population growth and unemployment (Bahari, 2010).

Indonesia has such a big population, which is the fourth largest after China, India, and the United States. The increasing population growth is in line with the workforce, as of 1995, the workforce was 44% and it increased to 49% of the total population in 2014 (World Bank, 2016). In terms of manpower, the competition is quite tight since the number of employment opportunities is not large, while at the same time it has to accommodate a large workforce. Economic activities in Indonesia have not been fully able to absorb labor directly because of the low quality of resources and employment has shifted to the needs of the labor market in the primary and secondary sectors, while the available labor is only suitable for the primary or agriculture sector. Therefore, the big population is at risk to bring up or increase the number of unemployment (Manap and Rachmawati, 2013).

Lack of creativity for economic activities is also the cause for limited employment and labor networks. High education and experience are needed to deliver quality human resources, yet in reality, our human resources are only hoping and waiting to be employed by others (Suyanto, 2007). Indonesia has a low level of education compared to some other developed countries. With the number of jobs less than the number of job seekers, not to exclude job seekers who do not have the needed competencies, other unemployment problems emerge. The required working hours are 8 hours a day or 40 hours a week for a person and this has also created a problem where many people do not get enough working hours to receive the minimum wage—and once again, this adds to the growing unemployment. From 2006 onwards, the development of unemployment continued to decline; this decrease is in accordance with increasing population, but moving slowly (World Bank, 2016).

With the condition of the number of jobs that are less than the number of job seekers and job seekers who are not in accordance with the competencies needed, creating some problems in employment. The number of hours worked a day is 8 hours or 40 hours a day, making some other workers do not get part of the work position. Therefore, the impact caused is growing unemployment. From 2006 onwards, the development of unemployment continued to decline. This decrease is in accordance with the state of population growth, which is increasing but moving slowly (World Bank, 2016).

CONCLUSION

Based on the results of the analysis, the following conclusions are presented:

1. The Regency Minimum Wage had a coefficient of -2.90E-06 with a probability value of 0.0269 smaller than the significance level or α of 0.05. This means that the Regency Minimum Wage had a negative and significant effect on the open unemployment rate at Besuki ex-Residency. An increase in the Regency Minimum Wage increases the purchasing power of the community, the production, and the profits that lead to an increase in the number of workers needed. Conversely, if the Regency Minimum Wage decreases due to decreased public purchasing power, production and employment opportunities will reduce that finally lead to an increase in unemployment.
2. The population had a coefficient of 5.59E-05 with a probability value of 0.0141 smaller than the significance level or α of 0.05. This means that the Regency Minimum Wage had a positive and significant effect on the open unemployment rate at Besuki ex-Residency. When the population increases, the unemployment rate will increase and when the population decreases, the unemployment rate will decrease. That is because population growth leads to more workforce. As such, some people at their productive age cannot find a job among the available jobs and finally, the number of unemployed increases. Whereas when the population growth decreases, it

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also reduces the number of workforces, and as such, finding jobs is easy and finally, the number of unemployed decreases.

Recommendations:

- Employment creation is needed in Besuki Ex-Residency. The Regency Minimum Wages must be higher than the increase in inflation each year and the House of Representatives must make precise predictions related to the two variables, inflation, and minimum wage. The minimum wage must be higher than the inflation rate so purchasing power is still high for companies to increase production;
- The large population is the potential in terms of purchasing power and capital development, but it must be followed by improved quality of human resources. This can be done through good education, health services, and nutrition as well as digital economy by increasing work-training centers in accordance with the needs of the global labor market of the industrial revolution era 4.0.

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