Analysis of Unemployment Rate and Influencing Factors in East Lombok Regency 2009-2018

Elfan Hidayat*, Prayitno Basuki2, Helmy Fuady3

1,2,3Fakultas Ekonomi Dan Bisnis, Universitas Mataram, Mataram, Indonesia

Email:
1elfanoo21@gmail.com

Abstract
This study aims to determine the influence of population growth, Gross domestic product (GDP), and inflation on the unemployment rate in East Lombok Regency from 2009 to 2018. This research adopts a quantitative approach with a focus on data analysis using statistical methods. Data collection techniques employed in this study include observation and documentation. The data analysis technique used is multiple regression analysis. The study utilizes data on the unemployment rate, population growth, GDP, and inflation from the Central Statistics Agency of East Lombok Regency and the Central Statistics Agency of West Nusa Tenggara Province during the period of 2009-2018. The results of this study indicate that population growth, GDP, and inflation do not have a significant partial effect on the unemployment rate. Simultaneous testing also reveals that population growth, GDP, and inflation do not have a significant effect on the unemployment rate.

Keywords: Inflation, GDP, Population Growth, Unemployment.

1. INTRODUCTION
Unemployment is a macroeconomic problem that occurs in various countries, both developed and developing countries [1]. Indonesia is one of the developing countries in the grouping of countries based on the level of welfare of its people, where one of the macroeconomic problems that has not been resolved to date is unemployment. This problem is very complex because it is influenced by various interacting factors and is not always easy to understand. If unemployment is not addressed immediately, it can cause social insecurity, and has the potential to result in poverty [2].

Table 1 Unemployment, Population Growth, GRDP and Inflation

<table>
<thead>
<tr>
<th>Years</th>
<th>Unemployment Rate (%)</th>
<th>Population growth (%)</th>
<th>GRDP (%)</th>
<th>Inflation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>5.8</td>
<td>1.1</td>
<td>5.73</td>
<td>3.34</td>
</tr>
<tr>
<td>2010</td>
<td>5.15</td>
<td>2.34</td>
<td>5.17</td>
<td>10.08</td>
</tr>
<tr>
<td>2011</td>
<td>5.35</td>
<td>0.98</td>
<td>6.23</td>
<td>6.55</td>
</tr>
<tr>
<td>2012</td>
<td>4.62</td>
<td>0.62</td>
<td>5.43</td>
<td>3.99</td>
</tr>
<tr>
<td>2013</td>
<td>6.09</td>
<td>0.61</td>
<td>5.51</td>
<td>9.51</td>
</tr>
<tr>
<td>2014</td>
<td>7.16</td>
<td>2.07</td>
<td>4.8</td>
<td>7.23</td>
</tr>
<tr>
<td>2015</td>
<td>6.46</td>
<td>0.88</td>
<td>5.93</td>
<td>3.41</td>
</tr>
<tr>
<td>2016</td>
<td>4.98</td>
<td>0.84</td>
<td>5.23</td>
<td>2.61</td>
</tr>
<tr>
<td>2017</td>
<td>3.64</td>
<td>0.8</td>
<td>6.25</td>
<td>3.7</td>
</tr>
<tr>
<td>2018</td>
<td>3.02</td>
<td>0.75</td>
<td>3.4</td>
<td>3.16</td>
</tr>
</tbody>
</table>

Source: Central Bureau of Statistics for East Lombok Regency

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 one indicator to show the level of welfare as a result of economic development. An increasing population followed by an increasing labor force will increase the number of unemployed if it is not matched by an increase in employment opportunities [3], [4].

High population growth creates difficulties for developing countries to increase the level of social welfare. The development of the population which is
getting faster and in very large numbers can cause several new problems and one of these problems is the problem of unemployment. Meanwhile, the population growth is increasing rapidly and the number is getting bigger causing the problem of unemployment to get worse [5].

The ten of districts/cities in the NTB Province, East Lombok Regency is the district/city with the highest population in the NTB province with a figure of 1,325,240 residents in 2020 [5]. The unemployment rate in 2009 to 2018 in East Lombok district averaged 5.22 percent per year. With the high population in East Lombok Regency, the unemployment rate is also the highest in NTB Province with 25,380 unemployed out of a total of 608,192 in the workforce in 2020.

The development of an area is reflected in the level of economic growth, income and level of welfare of the population. The large unemployment rate indicates that economic growth is not good and is an important factor that must be considered in economic development in an area [6]. Economic growth is a very important indicator in assessing the performance of an economy [7]. Especially to carry out an analysis of the results of economic development that has been carried out by a country or a region. The economy is said to experience growth when 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 a region that continues to show improvement illustrates that the economy of the country or region is developing well.

Based on Okun’s Law, which looks at the relationship between the unemployment rate and Goss Domestic Product (GDP) states that every time there is an increase in the percentage of the unemployment rate in a country, this is equivalent to a decrease in GDP by 2 percent [8]. This indicates that an increase in a country's unemployment rate can be associated with lower growth in the country's GDP [4]. In the last few years, economic uncertainty in Indonesia, which has been marked by increases in the prices of basic necessities and other commodities, has resulted in an increase in the inflation rate. There is a complex relationship between unemployment and inflation, in the short term, sometimes unemployment and inflation have opposite relationships, but in the long term, the relationship between these two variables is more complex and less clear.

One economist who developed this theory was Edmund Phelps. Lestari and Woyangti, argues that there is a positive relationship between inflation and long-term unemployment, which is referred to as the Natural Rate of Unemployment (NRU) [9]. According to Phelps, when the inflation rate increases, the unemployment rate which is considered as the natural or normal level will also increase. This is due to the fact that inflation can create uncertainty in markets and reduce investment, which can affect economic growth and increase long-term unemployment rates.

Based on the background written above, the researcher considers that the need for research is related to the analysis of the unemployment rate and the factors that influence it during a certain period. So the purpose of this study is to analyze the unemployment rate and the factors that influence it in East Lombok district 2009-2018.

2. METHOD

The type of research used in this study is a quantitative method where the research approach used is exposfacto. The location used in this study is East Lombok district which is one of the districts/cities in the Province of NTB. In this study, we will examine the unemployment rate and the factors that influence it in the East Lombok district in 2009-2018.
From the theoretical framework above Figure 1, it can be explained that population growth, GRDP, and inflation simultaneously affect the unemployment rate in East Lombok Regency. In other words, changes in the population growth rate, GRDP, and inflation together will cause changes in the unemployment rate. In addition, the relationship between the dependent and independent variables can be interpreted that population growth, GRDP, and inflation partially affect the unemployment rate in East Lombok Regency. That is, the effect of each independent variable on the dependent variable is analyzed directly without considering the effect of other independent variables.

The method used in data collection is through secondary data. The data used in this study is secondary data obtained in ready-made form from the Central Bureau of Statistics (BPS) for East Lombok and West Nusa Tenggara Provinces. The data obtained are data in annual form for each variable.

According to Juardi et al. the classical assumption test is the initial stage used before multiple linear regression analysis [5]. This test is carried out to be able to provide certainty so that the regression coefficient is unusual and consistent and has accuracy in estimation. The classic assumption test was carried out to show that the tests carried out had passed data normality, multicollinearity, autocorrelation, and heteroscedasticity so that the tests could be carried out to linear regression analysis. Multiple linear regression analysis is a development of simple linear regression where there is more than one independent variable. Multiple regression analysis is used to see the effect of the independent variable (X) on the dependent variable (Y). Multiple regression equation as follows:

\[
Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \epsilon
\]

Information:
Y: Unemployment
\(\beta_0\): Constant
\(\beta_1\): Regression coefficient of population growth variable (X1)
\(\beta_2\): GRDP variable regression coefficient (X2)
\(\beta_3\): Regression coefficient of inflation variable (X3)
X1: Population growth income variable
X2: GRDP Variable
X3: Inflation variable
\(\epsilon\): Error term

Hypothesis testing is a procedure used to test the truth or error of the null hypothesis results from a sample consisting of a t test (Partial), F test (Simultaneous), and the coefficient of determination (R2).

3. RESULT AND DISCUSSION
The normality test results are presented in Table 2.

Table 2 Kolmogorov-Smirnov Test Results
<table>
<thead>
<tr>
<th>N</th>
<th>Kolmogorov-Smirnov Z</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.324</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Based on the Kolmogorov-Smirnov test in table 4.5 above, it shows that the Asymp.Sig. (2-tailed) is greater than 0.05, namely 0.100. Thus, the residual data is normally distributed and the regression model meets the assumption of normality.

Multicollinearity Test Results
The Multicollinearity Test Results are presented in Table 3.

Table 3 Multicollinearity Test Results
<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Beta</td>
<td></td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.106</td>
<td>2.992</td>
<td>-</td>
<td>0.370</td>
<td>0.724</td>
</tr>
<tr>
<td>Population Growth (X1)</td>
<td>0.699</td>
<td>0.867</td>
<td>0.337</td>
<td>0.807</td>
<td>0.451</td>
</tr>
<tr>
<td>GRDP (X2)</td>
<td>0.539</td>
<td>0.519</td>
<td>0.358</td>
<td>1.039</td>
<td>0.339</td>
</tr>
<tr>
<td>Inflation (X3)</td>
<td>0.085</td>
<td>0.187</td>
<td>0.189</td>
<td>0.457</td>
<td>0.664</td>
</tr>
</tbody>
</table>

Based on Table 3 above, it can be seen that the tolerance value of the independent variables (population growth, GRDP and inflation) is > 0.10 and each value is < 10, so it can be assumed that there is no multicollinearity between the independent variables in the regression model.

Heteroscedasticity Test Results
The Heteroscedasticity Test Results are presented in table 1.

Table 4 Glejser Test Result
<table>
<thead>
<tr>
<th>Model</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth (X1)</td>
<td>1.118</td>
<td>.306</td>
</tr>
<tr>
<td>GRDP (X2)</td>
<td>.453</td>
<td>.666</td>
</tr>
<tr>
<td>Inflation (X3)</td>
<td>-.099</td>
<td>.924</td>
</tr>
</tbody>
</table>

Based on the results listed in Table 4, it can be seen that the significance value for the population growth variable is 0.306, which is greater than 0.05.
Therefore, it can be concluded that there is no heteroscedasticity in the model used. Furthermore, looking at the significance value of the GRDP variable of 0.666, it also exceeds the 0.05 significance limit. This shows that there is no heteroscedasticity in the regression model used. Finally, the inflation variable also shows a significance value of 0.924, which is far greater than 0.05. Thus, it can be concluded that there is no heteroscedasticity in the model used for analysis.

**Autocorrelation Test Results**

Based on the results of the autocorrelation test, it is known that the Durbin Watson value obtained is 1.162. Then from these results a comparison of the values of dl and du with a significance level of 5% with values n = 10 and k = 3. From these standards, the values obtained from the Durbin Watson table are dl = 0.5253 and du = 2.0163. The value of the Durbin-Watson that has been carried out is 1.162 which is between the du value of 2.0163 and the 4-du of 4-2.0163 = 1.9837 so it can be concluded that in this regression model there is no autocorrelation or it is free from autocorrelation.

**Multiple Linear Regression Analysis**

Based on Table 3, it can be formulated the equation model in this study is as follows:

\[ Y = 1.106 + 0.699X_1 + 0.539X_2 + 0.085X_3 + e \]

The interpretation of the regression equation model above is as follows:

1. **Constant (C)**, This coefficient shows the value of Y when all the independent variables are 0. In this case, if all the independent variables are 0, then the value of Y is 1.106.
2. **Population growth (X1)**, this coefficient shows a change in the value of Y when the independent variable (X1) increases by 1 unit, while the other independent variables remain constant, then the value of Y will increase by 0.699. Vice versa, if population growth decreases by 1 unit, unemployment will decrease by 0.699.
3. **GRDP (X2)**, this coefficient shows a change in the value of Y when the independent variable (X2) increases by 1 unit, while the other independent variables remain constant, then the value of Y will increase by 0.539. Vice versa, if the GRDP decreases by 1 unit, unemployment will decrease by 0.539.
4. **Inflation D(X3)**, this coefficient shows a change in the value of Y when the independent variable D(X3) increases by 1 unit, while the other independent variables remain constant, then the value of Y will increase by 0.085. Vice versa, if inflation decreases by 1 unit then unemployment will decrease by 0.085.

**Hypothesis Test Results**

Hypothesis testing will be carried out through the t test, F test and test the coefficient of determination with a 95% confidence level or α = 0.05.

1. **Partial Significance Test (t test)**

The t test was conducted to determine whether or not the partial effect of each variable was significant. The value of t table can be calculated with df = n-k, where n is the number of samples and k is the number of independent variables. Then df = 10 - 3 = 7, with a df value of 7 and α = 5%, a t table of 2.365 is obtained.

Based on Table 3, the results of the t test can be obtained as follows:

a. In variable X1 (population growth), the t-count value is 0.807 with a t-table of 2.365, so the t-count < t-table. Meanwhile, the significant value of the population growth variable is 0.451 > 0.05. So it can be concluded that H0 is accepted and H1 is rejected, meaning that population growth has no significant effect on the unemployment rate in East Lombok Regency in 2009-2018.

b. In variable X2 (GRDP), the t-count value is 1.039 with a t-table of 2.365, so the t-count < t-table. While the significant value of the population growth variable is 0.451 > 0.05. So it can be concluded that H0 is accepted and H1 is rejected, meaning that GRDP has no significant effect on the unemployment rate in East Lombok Regency in 2009-2018.

c. In variable X3 (inflation), the t-count value is 0.457 with a t-table of 2.365, so the t-count < t-table. While the significant value of the population growth variable is 0.457 > 0.05. So it can be concluded that H0 is accepted and H1 is rejected, meaning that inflation has no significant effect on the unemployment rate in East Lombok Regency in 2009-2018.

2. **Simultaneous Significance Test (F Test)**

The F test was carried out to see whether there was any influence of the independent variables (population growth, GDP and inflation) on the dependent variable (unemployment) simultaneously (together). Variables are said to have an effect simultaneously if the Fcount value > Ftable and the Sig value <0.05. The Ftable value is calculated with the conditions df1 = k - 1 and df2 = n - k, where k is the number of independent variables while n is the number of samples. Df1 = 3 - 1 = 2 and the value of df2 = 10 - 3 = 7, with df1 = 2 and df2 = 7, then the Ftable value is 4.74.
In Table 5, the obtained F-statistic (0.943) is much smaller than the obtained f-table (4.74). Therefore, it can be concluded that H0 is accepted and H2 rejected, which means that the regression coefficient is not statistically significant at the commonly used significance level (α=0.05).

**Test the Coefficient of Determination (R2)**

The coefficient of determination has a function to explain how far the ability of the independent variables (population growth, GRDP and inflation) to the dependent variable (income) by looking at R Square. The results of the coefficient of determination can be seen in the following table:

The results of data analysis in table 4.8 show that the R-squared value is 0.320 indicating that only about 32% of the variation in the dependent variable, namely unemployment, can be explained by the independent variables, namely population growth, GRDP and inflation in the regression model. That is, most of the variation of the dependent variables cannot be explained by the independent variables in this regression model. In other words, the independent variable is influenced by the dependent variable by 32%, then the rest of the R Square value, which is 68%, is the influence of other variables not included in this study.

**The Effect of Population Growth on the Unemployment Rate**

Based on the results of this study, the calculated t value was 0.807 with a t table of 2.365, so the t calculated value <t table. While the significant value of the population growth variable is 0.339 > 0.05. So it can be concluded that the relationship between population growth and the unemployment rate is not always linear and is influenced by other factors.

**The Influence of GRDP on the Unemployment Rate**

Based on the results of this study, the calculated t value was 0.519 with a t table of 2.365, so the t calculated value <t table. Meanwhile, the significant value of the population growth variable is 0.451 > 0.05. So it can be concluded that H0 is accepted and H1 is rejected, meaning that GRDP has no significant effect on the unemployment rate in East Lombok Regency in 2009-2018. This is in line with the views of several experts who have previously researched the same topic. For example, a study conducted by Kurnia and Septiani found that GRDP has no significant effect on the unemployment rate in Kudus Regency [15]. The results of this study also support the findings of several previous studies which show that economic growth does not always have a positive impact on reducing the unemployment rate.

This is in line with the results of other studies that have examined the same topic. One of them is research conducted by Geli et al. which shows that GRDP has no significant effect on the unemployment rate in Pangandaran Regency [2].

**The Effect of Inflation on the Unemployment Rate**

Based on the results of this study, the calculated t value was 0.187 with a t table of 2.365, so the t calculated value <t table. Meanwhile, the significant value of the population growth variable is 0.664 > 0.05. So it can be concluded that H0 is accepted and H1 is rejected, meaning that inflation has no significant effect on the unemployment rate in East Lombok Regency in 2009-2018.

Several previous studies have shown similar results to the results of this study, namely that inflation has no significant effect on the unemployment rate. One of them is research Wahyunii and Amrawati concerning the relationship between inflation and the unemployment rate in Indonesia in the 1990-2015 period found that inflation had no significant effect on the unemployment rate [16]. Likewise, research by Dewi concerning the effect of inflation on

Table 5 F test results

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4.541</td>
<td>3</td>
<td>1.514</td>
<td>0.943</td>
<td>0.477</td>
</tr>
<tr>
<td>Residual</td>
<td>9.629</td>
<td>6</td>
<td>1.605</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14.170</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[13]. Another study by Silaban et al. also found similar results in Bogor Regency, West Java [14].
unemployment in Indonesia shows similar results, namely that there is no significant effect between inflation and unemployment [17].

**Effect of Population Growth, GRDP, Inflation on Unemployment Rate**

Based on the results of this study, the obtained F-statistic (0.943) is much smaller than the obtained f-table (4.74). Therefore, it can be concluded that H0 is accepted and H2 is rejected, which means that the regression coefficient is not statistically significant at the commonly used significance level (α=0.05).

Several previous studies have discussed the relationship between population growth, GRDP and inflation with the unemployment rate. One of the relevant studies is that conducted previous research shows that population growth and inflation are not significant to the unemployment rate in Indonesia [17]. Likewise, research conducted by Musa et al. shows that economic growth, inflation, and population do not have a significant effect on the unemployment rate in Indonesia [10].

4. CONCLUSION

Based on the results of research conducted regarding the analysis of the unemployment rate and the factors that influenced it in East Lombok Regency during the 2009-2018 period, using multiple linear regression analysis several conclusions can be drawn. Based on the results of the analysis, the independent variables consisting of population growth, GRDP, and inflation have no partial effect on the unemployment rate in East Lombok Regency during the period studied. This shows that these factors are not the direct causes that affect the unemployment rate in East Lombok District. The results of the analysis also show that simultaneously, the independent variables consisting of population growth, GRDP, and inflation have no effect on the unemployment rate in East Lombok Regency during the period studied. This means that together, these factors do not affect the unemployment rate in East Lombok Regency.

**Author declaration**

**Author contributions and responsibilities**

The authors made major contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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**Availability of data and materials**

All data is available from the author.

**Competing interests**

The authors declare no competing interests.

5. REFERENCES


