The Influence of Inflation and Economic Growth on Unemployment Rates in Indonesia: 2001-2017 Periods

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Abstract

Unemployment is one of the economic problems faced by every country not unless for Indonesia. Lack of income causes unemployment to reduce their consumption expenditure which causes a decrease in the level of prosperity and welfare. Prolonged unemployment can also have adverse psychological effects on the unemployed and their families. Unemployment rates that are too high can cause political and social security chaos that disrupt economic growth and development. The purpose of this study is to analyze the effects of inflation and economic growth on unemployment in Indonesia (period 2001-2017). The method is used the method of multiple linear regression (ordinary least squares) using time series data from 2001-2017. The software used to process data is the Eviews 6. The results of multiple linear regression analysis indicate that inflation has a positive effect on the unemployment rate in Indonesia in the period 2001-2017. In other words, if inflation rises in value, it will increase the amount of the unemployment rate. While economic growth has a negative effect on the unemployment rate in Indonesia in the period 2001-2017. In other words, if economic growth rises in value, it will reduce the unemployment rate.

keyword: inflation, economic growth, and unemployment rate

1. INTRODUCTION

Economic Development is one of the government's goals for the welfare of the community. Various attempts were made by the government ranging from making policies and various other efforts to improve the standard of living of the people. Development basically has a broad definition that is a multi-dimensional process that includes important changes in accelerating economic growth, social structure, inequality, unemployment and handling poverty (Todaro, 2000). Inflation is a condition where prices of general goods increase continuously (continuously) due to several factors such as the amount of demand for goods (excess liquidity / money as a medium of exchange), meanwhile the production and distribution of goods is lacking (Nopirin, 2004). Based on reports from the Central Statistics Agency (BPS) during the last ten

years, namely 2008-2017, the development of inflation in Indonesia from 2008 to 2017 fluctuated. In 2008 the economic crisis that hit the world and rising fuel prices impacted the inflation rate in Indonesia which reached 11.06%. Similarly, in 2013 the inflation rate was 8.38% and was still stagnant in the following year, which was 2014 at 8.36%. Caused by rising fuel prices.

The economy can be said to experience growth if the production of goods and services increases from the previous year. Economic growth also shows the extent to which economic activity can improve people's welfare (Prasetyo, 2009). The following is a picture of Indonesia's economic growth development, in 2008-2017, the percentage of economic growth in Indonesia from 2008-2017 was 5.22%. Economic growth in 2009 decreased from 1.38% the previous year due to the impact of the global economic crisis that occurred in 2008 (Bank Indonesia Report, 2009). However, in the next period 2008-2012 experienced an increase. Then it declined again in 2013-2016 due to the slowing global economic conditions, which caused a decline in Indonesia's export demand and increased import volumes. Then it rose again in 2017 due to the global economic recovery which contributed to the national economy.

The problem of unemployment is closely related to economic growth. If there is economic growth, it will directly absorb labor. However, if the economic growth every year is only able to absorb a smaller workforce than the number of job seekers, then it can cause the remaining job seekers who do not get work so that the number of unemployed people in Indonesia is increasing (Ariefta, 2014). Based on data obtained from BPS. In general, unemployment in Indonesia has increased this 2017. The following is an illustration of the Unemployment Rate in Indonesia for the past ten years. The unemployment rate in 2008 to 2017 has decreased slowly and continuously. Research from Fakhry (2018) states that the VECM estimation results show that the Phillips Curve in Indonesia only applies in the short term and does not apply in the long term. Meanwhile, research conducted by Indriani (2006) states that using descriptive analysis and inferential analysis to test the significance of the effect of economic growth variables on unemployment results in a negative relationship, meaning that any increase in economic growth will reduce the unemployment rate, or vice versa. This study aims to determine how the influence of inflation on unemployment in Indonesia in the period

2001 to 2017 and the effect of Economic Growth on Unemployment in Indonesia in the period 2001 to 2017.

2. METHODOLOGY/RESEARCH METHODS

The objects in this study are the variables that will be examined. There are two variables in this study, namely the independent variable and the dependent variable. The independent variable is the level of inflation and economic growth while the dependent variable is the level of unemployment. This research is an empirical study conducted at the Indonesian Central Statistics Agency (BPS) through the site www.bps.go.id. Whereas for the time the research was conducted starting in May 2017.

The data to be used in this study is secondary data. According to Bagong and Sutinah (2005) secondary data is data obtained from the institution or office under study. The type of data used is the time series (time series) from 2001-2017. The data sources in this study were obtained from the Central Statistics Agency (BPS) and Bank Indonesia (BI). The data includes; Inflation, Economic Growth and Unemployment.

Data collection in a study is intended to obtain relevant, accurate and realistic materials. Data collection procedures in this study were carried out with documentation techniques. Documentation technique means collecting data by recording data that already exists. Data obtained by carrying out various processes that include secondary data collection from online sources that are reliable and relevant to research and secondary data collection from the Central Statistics Agency and other documents relevant to the issues discussed in the study.

Data analysis method is a method used to process the results of research in order to obtain a conclusion. The analysis technique used in this study is multiple linear regression analysis with the Ordinary Least Square (OLS) method which is formulated as follows:

$$\mathbf{Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \varepsilon} \qquad 1.$$

Dimana :

Υ = unemployment

X_1 = Economic Growth

X_2 = Inflation

α_0 = constant

α_1. α_2 = Regression Coefficient

ε = error term

Ordinary Least Square (OLS) method was first introduced by a mathematician from Germany, namely Carl Friedrich Gauss, OLS method is a method for estimating a regression line by minimizing the number of error squares of each observation of that line (Kuncoro, 2003). According to Gujarati (1995), each OLS estimator must meet the BLUE criteria, namely: Best, the best, Linear is a linear combination of samples if the sample size is added, then the estimated value will approach the actual population parameters, Unmark is an average or value expectation or estimation in accordance with the actual value and Efficient estimator is to have a minimum variance among other guessers who cannot.

To meet the regression analysis classic assumptions and statistical tests need to be tested so that the estimation results can avoid the sassy regression problem. This analysis is carried out with the classical assumption test stages and statistical tests. A model is said to be good for predictors if it has the best linear unbiased properties of an estimator. In addition, a model is said to be quite good and can be used to predict if it has passed a series of classic assumptions that underlie it. Normality Test is used to determine whether the dependent variable and free are normally distributed or not. Using the Jarque-fallow test or J-B test, compare the Jarque fallow count with X tables (Insukindro, 2003).

Multicollinearity is a condition in which there is a relationship between independent variables. If multicollinearity is perfect, then each regression coefficient of the independent variables cannot be determined and the standard error is unlimited. If multicollinearity is less than perfect, even though the regression coefficient can determine, it has a large standard of error (in relation to their own coefficient), which means the coefficients cannot be estimated with precise accuracy. Autocorrelation test in this case is used to test whether there is a correlation between variables. so for autocorrelation testing performed with the Durbin-Watson test. Heteroscedasticity is the variance of data used to make the model inconstant. Testing the presence or absence of heteroscedasticity problems in an empirical model that is being observed is also an important step so that it can avoid the sassy regression problem. White Test Method is used to detect the presence or absence of heteroscedasticity problems in the empirical model (Insukindro, 2003). Statistical tests are performed to determine whether the

independent variables individually and together have a significant influence on the dependent variable. Statistical tests include the F test, the t test and the coefficient of determination (R). F statistical test is used whether all independent variables entered in the model have a joint influence on the dependent variable (Kuncoro, 2003). In this study the F test is used to determine whether the variable inflation and economic growth have a joint effect on the unemployment rate or not. The basis of decision making is based on the probability value: If the probability is <0.05, it can be concluded that the entire independent variable has a joint influence on the dependent variable.

T statistical test shows how far the influence of one independent variable individually in explaining the variation of the dependent variable (Kuncoro, 2003). In this case the decision making is based on the probability value that is if the probability value <0.05 then the independent variable significantly influences the dependent variable. And conversely if the probability value> 0.05 then the independent variable has no significant effect on the dependent variable. The coefficient of determination essentially measures how far the model's ability to explain the variation of the dependent variable. In this study is to determine the effect of inflation and economic growth on the unemployment rate. The coefficient of determination is between zero and one, a small R2 value means that the ability of the independent variables to explain the variation of the dependent variable is very limited and a value close to one means that the independent variables provide almost all the information needed to predict the variation of the dependent variable (Kuncoro, 2003).

3. LITERATURE REVIEW

3.1. Unemployment

According to the Central Statistics Agency (BPS) in the employment indicator, unemployed are residents who do not work but are looking for work or are preparing a new business or residents who are not looking for work because they have been hired but have not started working. Unemployment is a macroeconomic problem that affects humans directly and is the most severe. For most people, losing a job means decreasing living standards and psychological partners. So it is not surprising that unemployment is a topic that is often discussed in political debates and politicians often claim that the policies they offer will help create jobs (Mankiw, 2003).

Unemployment is a problem faced by not only developing countries (developing countries), but also by developed countries. In general, unemployment is defined as a situation where someone who is in the labor force category does not have a job and is actively looking for work (Nanga, 2001). Someone who does not work, but actively seeks work cannot be classified as unemployed. In addition unemployment is defined as a condition where someone who belongs to the labor force wants to get a job but cannot get it (Sukirno, 2004).

According to Case and Fair (2004) unemployment can be divided into several types, namely Frictional Unemployment, Seasonal Unemployment, Cyclical Unemployment and Structural Unemployment. Frictional unemployment is unemployment caused by normal employment of the labor market. The term refers to the matching of work or short-term skills. In addition, Frictional unemployment is also a type of unemployment that arises as a result of changes in work conditions, which occur along with developments or economic dynamics that occur. This type of unemployment can also occur due to migration of people from one area to another, or from one job to another, and as a result must have a grace period and be unemployed before getting another job. Unemployment is closely related to fluctuations in short-term economic activity, especially those that occur in the agricultural sector. Seasonal unemployment is unemployment that occurs at certain times of the year. Usually unemployment like this applies at a time when farming activities are decreasing temporarily. Cyclical unemployment or conjuncture unemployment is unemployment caused by changes in the level of economic activity. When economic activity declines, companies must reduce their production activities. In practice this means that working hours are reduced, some production machines are not used, and some workers are laid off. Thus, economic setbacks will increase the number and level of unemployment.

Structural unemployment is due to its fundamental nature. Job seekers are unable to meet the requirements needed for available job openings. This happens in a rapidly developing economy. The higher and more complex the production process or production technology used, demands higher labor requirements. Viewed from its nature, structural unemployment is more difficult to overcome than frictional unemployment. Besides requiring large funding, also a long time. There are two possibilities that cause structural unemployment, namely as a result of slumping demand

or as a result of increasingly sophisticated production techniques. The second factor allows a company to increase production and at the same time reduce workers. Some of the bad effects of unemployment can be divided into two aspects (Sukirno, 2000) where the two aspects are relatively high unemployment rates which do not allow society to achieve robust economic growth. Unemployment can lead to social and political instability. Sluggish economic activity and high unemployment can lead to public dissatisfaction with the government.

There are a lot of factors, most of which are interrelated with each other with very complex patterns that cause slow investment recovery. These factors range from what is often mentioned in the mass media, namely security issues, lack of legal certainty, and poor infrastructure conditions, to worsening labor and labor conditions. In developing countries such as Indonesia does not have sufficient sources of funds to finance the country's development. Limited accumulation in the form of domestic savings capital.

3.2. Inflation

Inflation rate as an indicator of economic stability has always been the center of attention. At least the decline in inflation reflects the economic turmoil in a country. High inflation rate is clearly very detrimental to the country's economy. Experience shows that in the third world, unfavorable economic conditions (bad) have spurred high inflation rates and in turn will be disastrous for the people, especially for those on low incomes.

Suseno and Aisyah (2009) interpret inflation as a tendency to increase prices of goods and services in general and continuously. An increase in the price of one or two items alone is not called inflation, unless the increase extends to (resulting in an increase) a large part of the price of other goods. Inflation is an increase in the overall price level, inflation is one of the monetary phenomena which is the main concern of economists and policy makers (Mankiw, 2000). Inflation occurs if the price increase process continues and influences one another. Inflation is also said to be the best measure for the economy in a country, but that does not mean that if a country is in a condition of high inflation then the country is very good in its economy and its society is prosperous as a whole.

The initial understanding of inflation places more emphasis on the value of money. The overall price level in the economy can be viewed from two sides, namely the price

level as the price of a number of goods and services. When the price level rises people have to pay more to buy goods and services. As an alternative, we view the price level as a measure of the value of money. An increase in the price level means the value of money becomes lower (Mankiw, 2006). From this definition, there are three components that must be fulfilled in order to be said to have occurred inflation (Pratama, 2008), namely as follows: Price increases, are general and ongoing. The price of a commodity is said to rise if it becomes higher than the price of the previous period. An increase in the price of a commodity cannot be said to be inflation if the increase does not cause prices to generally rise. A general price increase will not bring up inflation, if only for a moment. Therefore, inflation is calculated in a minimum monthly period.

Lipsey's analysis of the Phillips curve using labor market theory begins with two statements, namely supply and demand for labor, determine the level of wages, both levels or rate of change in the wage rate are determined by the amount of excess demand for labor. The rate of change in wages has a direct (positive) relationship to excess demand. The greater the excess demand for labor the wage change rate is also greater. While excess demand has an inverse (negative) relationship with the unemployment rate. The greater the excess demand for labor, then unemployment tends to be smaller.

3.3. Economic Growth

Prof. Simon Kuznets in his lecture at the Nobel commemoration defines economic growth as a long-term increase in the ability of a country to provide more and more types of economic goods to its population, this ability to grow in accordance with technological progress and the institutional and ideological adjustments that it needs. According to Sukirno (2008) economic growth means the development of activities in the economy which causes the goods and services produced in the community to increase and the prosperity of the community to increase. The economic growth of a country depends on natural resources, human resources, capital, business, technology, etc. (Jhingan, 2004).

The process of economic growth is influenced by two kinds of factors, namely economic and non-economic factors. Economic factors as the main force influencing growth include natural resources, capital accumulation, organization, technological

progress and division of labor and production scale. Non-economic factors together affect each other's economic progress. Therefore, non-economic factors also have significance in economic growth. Some non-economic factors include Social Factors, human resource factors, political and administrative factors.

Okun's law explains the relationship between economic growth and unemployment. named after Arthur Okun, the economist who first learned it. Which states the empirical influence between unemployment with output in the business cycle. The results of his empirical study show that the addition of 1 (one) point of unemployment will reduce GDP (Gross Domestic Product) by 2 percent. This means that there is a negative influence between economic growth and unemployment and vice versa unemployment on economic growth. A decrease in unemployment shows inequality. This results in distributional consequences.

Unemployment is also related to the availability of jobs, the availability of employment is related to investment, while investment is obtained from accumulation into savings, saving is the residual income that is not consumed. The higher the national income, the greater the hope for opening new production capacities which of course will absorb new labor.

4. RESULTS AND DISCUSSION

Before do the multiple linear regression analysis test then what needs to be done is to test the data to be analyzed so that the data is valid not biased and is a requirement, then the classical test is used. To find out whether the data is normally distributed or not, it is done by comparing the Jarque-Bera value calculated with an alpha level of 5%. If the Jarque-Bera value is greater than 0.05, it can be concluded that the residuals are normally distributed and vice versa. From the results of the normality test above shows that the probability value of Jarque-Bera is 1.197377 greater than 0.05. Which means that the data is normally distributed. So that it can proceed to the next test.

If the relationship between one independent variable and the other is above 0.8, it can be ascertained that there are symptoms of multicollinearity. Based on it can be seen that the correlation value between the independent variables (inflation and economic growth) is -0.099082. because the value of -0.099082 away from the number 0.8. Then there is no colinierity between independent variables. This informs that the proposed

OLS model can be said to be free of multicollinearity symptoms, so that it can proceed to further testing.

Autocorrelation testing is done to test whether there is a relationship between residuals between times in the research model used, so the estimation is biased. For n = 17; a = 5%; k = 2, obtained dL value of 1.0154 and dU of 1.5361. From the calculation using the Eviews program, the Durbin-Watson (D-W) value is 1.460799. while from the D-W table the dL value of 1.0154 and dU of 1.5361 are obtained so that the 4-dL value is 2.4639 and the 4-dU value is 2.9846. After seeing these numbers it is known that the D-W value is smaller than the dU value and smaller than 4-dU, so it can be concluded that the model is located in a doubtful region where there is a positive autocorrelation. For that reason, the model is no longer located in the area of doubt and there is no longer an autocorrelation problem, it is necessary to do autocorrelation healing. After autocorrelation healing using the Eviews program, the Durbin-Watson (D-W) value was 2.404079. while from the D-W table the dL value is 1.0154 and dU is 1.5361 so that the 4-dL value is 2.4639 and the 4-dU value is 2.9846. After seeing these numbers it is known that the D-W value is greater than the dU value and smaller than 4-dU, so it can be concluded that there is no more autocorrelation problem in the model and can be continued to the next test.

Heteroscedasticity testing is performed to test whether the variables of the two observations in the study are the same (homogeneous) for all variables bound to the independent variables so that the estimation results are not biased. Identification of the presence or absence of heteroscedasticity problems is done through the White Heteroskedasticity test. Based on the results of data processing Eviews can be seen that the probability value for Obs * R-squared is 7.431349. because the value of 7.431349> of the degree of error (α) = 5% (0.05), there is no heteroscedasticity. This informs that the proposed OLS model can be said to be free from heteroscedasticity. So that it can proceed to the next test.

Estimation of the relationship between variables that meet unemployment in Indonesia is done through the OLS approach shown in the following table.

Tabel 4. *1*

Data Analyzing by OLS

Dependent Variable: PENG
Method: Least Squares

Date: 09/29/19 Time: 18:15
Sample: 2001 2017
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.274514	2.990459	2.098177	0.0545
INF	0.257018	0.103881	2.474169	0.0268
PE	-0.053414	0.523133	-0.102104	0.9201

R-squared	0.308413	Mean dependent var	7.803529
Adjusted R-squared	0.209615	S.D. dependent var	1.810628
S.E. of regression	1.609714	Akaike info criterion	3.948775
Sum squared resid	36.27650	Schwarz criterion	4.095813
Log likelihood	-30.56459	Hannan-Quinn criter.	3.963391
F-statistic	3.121646	Durbin-Watson stat	0.682997
Prob(F-statistic)	0.075671		

Source : Output Eviews 6

Based on the table above, the INF variable has a significance value of 0.0268. In this study the alpha used was 0.05. The INF variable has a smaller value than alpha (0.0268 <0.05). Because the significance value is smaller than alpha, the INF variable has a significant effect on the unemployment variable. As for the PE variable, it has a significance value of 0.9201. in this study the alpha used was 0.05. The PE variable has a greater value than alpha, 0.05, then the value 0.9201> 0.05 because the significance value is greater than alpha, the PE variable has no significant effect on the unemployment variable. F-statistic testing aims to see whether there is a significant effect between variable X on the variable Y simultaneously. In the context of this study, concurrent testing is conducted to see whether the inflation and economic growth variables affect unemployment or not. Based on the test results, it shows the results of the significance value is 0.075671. because the value of sig> alpha. Namely 0.075671> 0.05, which means that the independent variable (economic growth and inflation) does not affect the dependent variable (unemployment) in Indonesia during the period 2001-2017.

The coefficient value is 6.274514. the direction of the coefficient is positive which means the relationship between the independent variable and the dependent variable is unidirectional. which means, when there is an increase in the value of the independent variable (inflation and economic growth) will also cause an increase in the number of unemployed. T-statistic test shows how far the influence of one independent variable individually in explaining the variation of the dependent variable. In this case the decision making is based on the probability value that is if the probability value <0.05 then the independent variable significantly influences the dependent variable. And conversely if the probability value> 0.05 then the independent variable has no significant effect on the dependent variable.

Based on the test results in Table 4.7 it is known that the probability value is 0.0268 <0.05 with the coefficient value 0.0257018 so it can be concluded that the inflation variable has an influence on the unemployment rate. Based on the test results in Table 4.7 it is known that the probability value is 0.9201> 0.05 with the coefficient value of -0.053414 so it can be concluded that the variable of economic growth has no effect on the unemployment rate.

The results of data processing show that the R2 obtained from the estimation results is 0.308413. This result means that 31% of the variation in unemployment can be explained by variables of inflation and economic growth, while 0.691587 or 69% is explained by other variables outside the model.

The results of research on the effect of inflation on the unemployment rate in Indonesia in the period 2001-2017 shows that inflation has a positive effect on the unemployment rate. This can be seen from the significance value for the X1 variable (inflation), which is 0.0268 with a coefficient of 0.257018. This means that if there is an increase in inflation, it will increase unemployment in Indonesia by 0.257018, and vice versa if there is a decrease in the inflation rate it will reduce the unemployment rate in Indonesia by 0.257018. The occurrence of inflation affects the unemployment rate because it is not due to an increase in demand, but inflation is caused by an increase in production costs such as an increase in the price of fuel oil and electricity tariffs (TDL). In 2010 inflation tended to be high due to government policies that raised TDL by 10% and the increase in fuel prices that increased inflation rates in each region in 2013 and 2014.

Another reason is because the basic theory of the Phillips curve only occurs in the short run, but not in the long run. This is in line with previous research which is the theoretical foundation in this study conducted by Fakhry Hadiyan (2018) which shows that the Phillips Curve in Indonesia only applies in the short term and does not apply in the long term. This is also consistent with criticism from Milton Friedman in 1976 who said that the basic theory of the Phillips curve only occurred in the short term, but not in the long term. Because in the short term sticky prices still apply, whereas in the long run flexible prices apply. In other words, the unemployment rate will somehow return to its natural rate, so the relationship between inflation and unemployment will be positive. This response is also known as the Natural Rate Hypothesis or Accelerationist Hypothesis (Samuelson, 2004).

The results of research on the effect of economic growth on the unemployment rate in Indonesia in the period 2001-2017 showed that economic growth had a negative effect on the unemployment rate. This can be seen from the probability value of 0.9201> 0.05 with a coefficient of -0.053414 so that it can be concluded that the variable of economic growth has no effect on the unemployment rate. The direction of the regression coefficient for variable X2 is negative. That is, the negative value means that the higher the value of the variable X2 (Economic Growth), it will also be followed by a decrease in the unemployment rate. Likewise with the opposite situation, the lower the value of X2 (Economic Growth), the higher the variable Y (Unemployment) will be. This is in accordance with Okun's legal statement, ie if economic growth increases by 2%, the unemployment variable will decrease by more than 1%. With the increase in the rate of economic growth, the output produced becomes more, thus labor can be absorbed and the unemployment rate can decrease.

CONCLUSION

Inflation has a positive effect on the level of Unemployment in Indonesia in the period 2001-2017. This can be seen from the probability value of 0.0268 <0.05 with a coefficient of 0.257018. Which means, when inflation rises, the percentage of unemployment also increases. Likewise, when the percentage of inflation goes down, the percentage of unemployment will also decrease.

Economic Growth has a negative effect on the Unemployment rate in Indonesia in the period 2001-2017. This can be seen from the probability value of 0.9201> 0.05 with

a coefficient of -0.053414. Which means, if economic growth increases, it will affect the decrease in the unemployment rate. Conversely, Unemployment will increase if Economic Growth decreases.

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