A LONGITUDINAL ANALYSIS OF THE EFFECT OF WAGES, INFLATION, ECONOMIC GROWTH ON UNEMPLOYMENT RATE IN MALUKU PROVINCE, INDONESIA

Teddy Christianto Leasiwal, University of Pattimura Maluku

ABSTRACT

This study investigated empirically the relationship between the unemployment rate and wages, inflation and economic growth in Maluku by using the longitudinal data from 2007-2019. The analytical method used in analyzing the data is an econometric model. The data analysis method used is multiple linear functions by integrating existing variables with an ordinary least squares model (ordinary least square/OLS). Furthermore, statistical tests such as coefficient determination (R2) test, F-test, T-test and classical assumption tests of multicollinearity, heteroscedasticity, autocorrelation and normality test were also conducted. The results showed that simultaneously, the independent variable in this case the level of wages, inflation, and economic growth (GRDP) is able to influence the dependent variable, namely the unemployment rate positively and significantly of 74.25%. The wage variable has a positive and significant influence on the unemployment, while the inflation variable affects positively but not significantly the unemployment rate. The variable of economic growth which is proxied by GRDP has a negative relationship with the unemployment rate, so that GRDP growth will directly reduce the unemployment rate. The findings theoretically demonstrated that increased economic growth is more likely to provide new job opportunities and are labor-intensive economic growth reduces the number of unemployed.

Keywords: Wages, Inflation, Economic Growth, Unemployment Rate.

INTRODUCTION

In the last 5 years, Maluku's economic growth has been very volatile, and tends to move above the national average. It is recorded that in 2010 the growth in Maluku reached 6.5 percent, while at the national level the growth was around 6.1 percent. Until 2019 the growth deviation was 0.6 with a national economic growth rate of 4.8 percent, while growth in Maluku was corrected by 5.4 percent. This indicates that the Maluku economy is at a moderate growth rate when compared to other provinces in Indonesia, especially in the Eastern Region of Indonesia (Daud, 2016). The wage level factor is included in this study because theoretically the demand for labor is strongly influenced by the level of wages (Ozturk, 2020; Cengiz, 2019). In terms of wages, insofar the problem that often arises in terms of wages is that there is a difference in understanding and interests regarding wages between employers and workers. So that in this case a government policy is needed to overcome these differences in interests (Boeri, 2012; Fang & Lin, 2015; Brown, 1981). Wage improvement means an increase in people's income and purchasing power. An increase in people's income will increase the demand for goods and services, which in turn encourages companies to grow, resulting in a multiplier effect, namely

the demand for labor, meaning that job opportunities become more open so that the unemployment rate can be reduced (Herr & Kazandziska, 2011; Marceau & Boadway, 1994).

As a specific case, the wage growth in Maluku province continues to increase, but if it is broken down further, the growth of the wage in Maluku each year is below the national average. In 2016 - 2019 the minimum wage for Maluku Province was IDR 1,775,000 - IDR 2,200.00 or still below the national average. Whereas on the other hand the price of people's needs in Maluku is relatively higher than that of the western part of Indonesia, this is also correlated with the average speed of other macroeconomic variables, as in the graph below. Generally, in the Indonesian job market, there is a kind of mismatch between education graduates and the work supply (Di Gropello, 2011; Newhouse & Suryadarma, 2011). This can be seen from the increase in the wage index for educated workers relative to uneducated workers, especially in the last two years. An increase in the index indicates the demand for educated workers is faster than demand for labor as a whole; the demand for educated workers is faster than the supply of educated workers. Implications include increasing wage inequality, unmet demand and scarcity of labor, and what is surprising is that the number of educated unemployed is relatively high, especially in urban areas. Another aspect of labor wages that needs to be examined is that the difference in wage levels between formal and informal workers tended to widen from the first quarter of 2000-2018. This phenomenon seems to resemble the Latin American pattern, a phenomenon that is unfavorable to the interests of workers as a whole.

The amount of labor absorbed by an economic sector can be used to describe the absorption capacity of that economic sector towards the labor force. Throughout history, population growth has been the most important source of increased output enjoyed throughout the world. An increasing population almost always leads to an increase in total output. Observing current and possible future trends, it is estimated that Maluku unemployment will be affected by several classic shocks to the demand and supply of job opportunities such as the growth rate of the workforce, low direct investment, entry of labor from outside, and low formal employment. This shock will still affect the unemployment rate in Maluku for the next few years. Based on time series data to see unemployment trends in Maluku, it is projected that the unemployment figure in Maluku in the 2016-2019 range would be 6-7 percent. This is because national economic growth has been slowing down to date and it is estimated that it will continue to slow down next year. Even though, it is known that the driving force of the Maluku economy is still heavily influenced by national economic growth. Based on the above problems, this paper aims to analyze how much employment opportunities can be increased in the next few years in Maluku and analyze the effect of wages, inflation and economic growth on unemployment in Maluku Province.

LITERATURE REVIEW AND HYPOTHESIS

Relationship between Real Wages and Unemployment

In economic theory, wages can be interpreted as payment for physical and mental services provided by workers to entrepreneurs (Sukirno, 2000). Based on Law No. 13 of 2003 concerning Manpower, the definition of wages is the right of the worker/laborer which is received and expressed in the form of money as a reward from the entrepreneur or employer to the worker/laborer who is determined and paid according to a work agreement, agreement, or laws and regulations, including allowances for workers/laborers and their families for a job and/or

service that has been or will be performed. Classical economists claim that employee labor bases the supply of labor on real wages (W/P). Therefore, an increase in nominal wages will not change the supply of labor if the increase is accompanied by a commensurate increase in the price level. People who feel rich because of increases in nominal wages and increases in the same price level are said to be due to money illusions. Rational people will not experience the illusion of money, because they only want to change the supply of labor when there is a change in real wages. Other studies also have examined the relationship between unemployment and real wages in various countries (Sachs & Gordon, 1983; Gregg et al., 2014; Karaalp-Orhan, 2017) and found that there is effect of wage on unemployment (Poschke, 2019; Cahuc & Michel, 1996; Kim & Lim, 2018).

Zamrowi (2007) found that the wage/salary variable has a significant and negative effect on labor demand. Labor productivity variables have a negative and significant effect on labor demand, capital variables have a positive and significant effect on labor demand, non-wage variables have a negative and significant effect on labor demand, simultaneously or together non-wage variables, capital, wage levels or salary and labor productivity have a positive and significant effect, the dominant variable in influencing labor absorption in the small furniture industry is the capital variable (Zamrowi, 2007). Lestari & Woyanti (2011) stated that the value of investment SMEs has a positive the demand for labor, while the wage has a negative and significant effect on the demand for labor in SMEs. To increase employment opportunities, it can be done by increasing investment to form a new business unit and develop existing businesses.Based on the background and theoretical foundation, a hypothesis is formulated as follows:

H1. There is a significant effect of wage on the unemployment rate in Maluku Province.

Relationship between Inflation Rate and Unemployment

The inflation rate has a positive or negative relationship to the number of unemployed. The Phillips curve illustrates the relationship between the inflation rate and the unemployment rate based on the assumption that inflation is a reflection of an increase in aggregate demand (Rudd & Whelan, 2005; DiNardo & Moore, 1999). With an increase in aggregate demand, according to demand theory, demand will increase, and then prices will also rise. With high inflation, to meet the demand, producers increase their production capacity by increasing labor (labor is the only input that can increase output). As a result of the increased demand for labor, with rising inflation, unemployment decreases. DiNardo and Moore (1999) showed that there is a positive relationship between inflation through the GDP deflator and unemployment that occurs in Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, England and the United Stated (Furuoka, 2007; Mehrotra, 2010). Meanwhile, Amir (2007) showed that there is no significant effect between inflation and unemployment in Indonesia for the period 1980-2005 because the increase in new labor is much greater than the growth in employment that can be provided each year.

Maravian (2015) showed that the gross domestic product and labor force variables experience significant results on the open unemployment rate in Indonesia. This indicates that the increase in gross domestic product and the number of job hires is in line with the increase in the number of unemployed. Meanwhile, the inflation rate has no effect, this indicates that the inflation rate has no relationship with the number of unemployed. Blanchard & Diamond (1994) stated that with the threat point of wage being a worker with zero unemployment duration, the

wage with ranking is much more sensitive to changes in the tightness of the labor market. The same holds for efficiency wages. Gerlach, (2016) found the difference between unemployment is a significant determinant of inflation (Dolton & O'Neill, 2002). Based on the background and theoretical foundation, a hypothesis is formulated as follows:

H2. There is a negative effect of inflation on the unemployment rate in Maluku Province.

Relationship between Economic Growth and Unemployment

The results highlight that economic development is a multi-dimensional process that involves major changes in social structures, societal attitudes and national institutions, such as accelerating economic growth, reducing inequality and eradicating absolute poverty (Todaro & Smith, 2004). 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 (Amir, 2007). High and sustainable economic growth is the main condition that is a necessity for the continuity of economic development and increased welfare. Because the population increases every year, which means that daily consumption needs also increase every year, an additional income is needed every year (Tambunan, 2009). Apart from the demand side (consumption), from the supply side, population growth also requires growth in employment opportunities (a source of income). Economic growth without being followed by additional employment opportunities will result in inequality in the distribution of the additional income (ceteris paribus), which in turn will create a condition for economic growth with increased poverty and decreased unemployment (Tambunan, 2009).

Economic growth is usually followed by the creation of new jobs. When the economy grows, it means that there is a growth in the production of goods and services. When this happens, the need for labor to produce goods and services will grow. Economic growth and unemployment have a close relationship because the working population contributes to producing goods and services while unemployment does not contribute. Some studies have examined the effect of economic growth on unemployment rate (Kreishan, 2011; Soylu, 2018; Banda, 2016; Özel, 2017; Chang, 2007; Abbas, 2014). Studies conducted by economist Arthur Okun (1983) indicate a negative relationship between economic growth and unemployment, so that the higher the unemployment rates, the lower the economic growth rate. Based on the background and theoretical foundation, a hypothesis is formulated as follows:

H3. There is a negative effect of economic growth on unemployment in Maluku Province

RESEARCH METHODS

This research method is the steps and procedures that will be carried out in collecting data or empirical information in order to solve problems and test the research hypothesis. In this study, the object of research which is the focus is the analysis of the effect of wages, inflation and economic growth on unemployment in Maluku province. The type of data in this study is secondary data in the form of time series data in the period 2003-2015 (12 years) which consists of data on wage levels, inflation and economic growth in Maluku Province. Sources of data in this study were obtained from related agencies such as the Central Bureau of Statistics of Maluku Province, BKPMD Maluku Province and literature and other data related to research.

As for operational definition, some of the operational and measurement variables in this study are proposed. Unemployment is defined as the number of labor force that has not been

absorbed in employment/open unemployment figures from 2007-2019. Wage is the minimum Wage for Maluku Province from 2007-2019, in IDR. Inflation is a general and continuous increase in prices, the increase in prices must include all kinds of goods and services. The data uses the average annual inflation in Maluku province which is expressed in units of the 2007-2019 calendar. Economic growth is interpreted as a process of increasing the production capacity of an economy which is manifested in the form of an increase in national income. The economic growth of a country or province can be measured by comparing the current year's Gross Domestic Product (GRDP) with the previous year, with a percentage unit (BPS) or the movement or economic growth rate of Maluku Province in the 2007-2019 timeframe, in percentage units.

The analytical method used in analyzing the data is an econometric model. The data analysis method used is multiple linear functions by integrating existing variables with an ordinary least squares model (ordinary least square/OLS) (Damodar, 1995). According to Moleong (2003) data analysis is the process of organizing data into patterns, categories, and basic description units so that themes can be found and then hypotheses can be formulated as projected by the data. In this study, the data analysis used was quantitative analysis. Quantitative analysis is an analysis that uses analytical tools in the form of mathematical models, statistical models, and econometric models. The results of the analysis are in the form of numbers which are then interpreted and explained in descriptions. Determinants of unemployment in Maluku Province, expressed in functions:

$$Y = f (X_1, X_2, X_3 \, Xt_{-1})$$

From function (1) it can be specified using the autoregressive model as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 - \beta_3 X_3 + \mu$$

Information: Y= Unemployment; A= Intercept; X1= Wage Rate; X2= Inflation; X3= Economic Growth; μ= Term of Error.

Furthermore, statistical tests such as determination of coefficient (R2) test, F-test, T-test and classical assumption tests of multicollinearity, heteroscedasticity, autocorrelation and normality test were also conducted.

RESULTS

The normality test aims to see whether the data for the independent variable and the dependent variable are normally distributed. This normality test is carried out using the normal probability plot analysis. Based on the results of the Kolmogorov-Smirnov test, it can be concluded that the data has a normal distribution. If the significance of the Kolmogorov Smirnov value is greater than α (0.508850> 0.1), it can be stated that the data has a normal distribution.

The results of multicollinearity test showed that there is no multicollinearity problem in the equation in question. This is because the Correlation Matrix value of all variables is less than 0.8 (Table 1).

Table 1 CORRELATION MATRIX RESULTS			
	Log(wage)	**Log(inflation)**	**Log(pdrb)**
Log(wage)	0.18916	-0.0246	-0.094
Log(inflation)	-0.0246	0.01285	0.01155

| Log(pdrb) | -0.094 | 0.01155 | 0.05035 |

Furthermore, heteroscedasticity test aims to test whether in the regression model there is an inequality (variance) between one observation to another. From Figure 1, it can be seen that the dots spread out randomly and do not form a certain or irregular pattern. This indicates that there is no heteroscedasticity in the regression model so that the regression model is feasible to use.
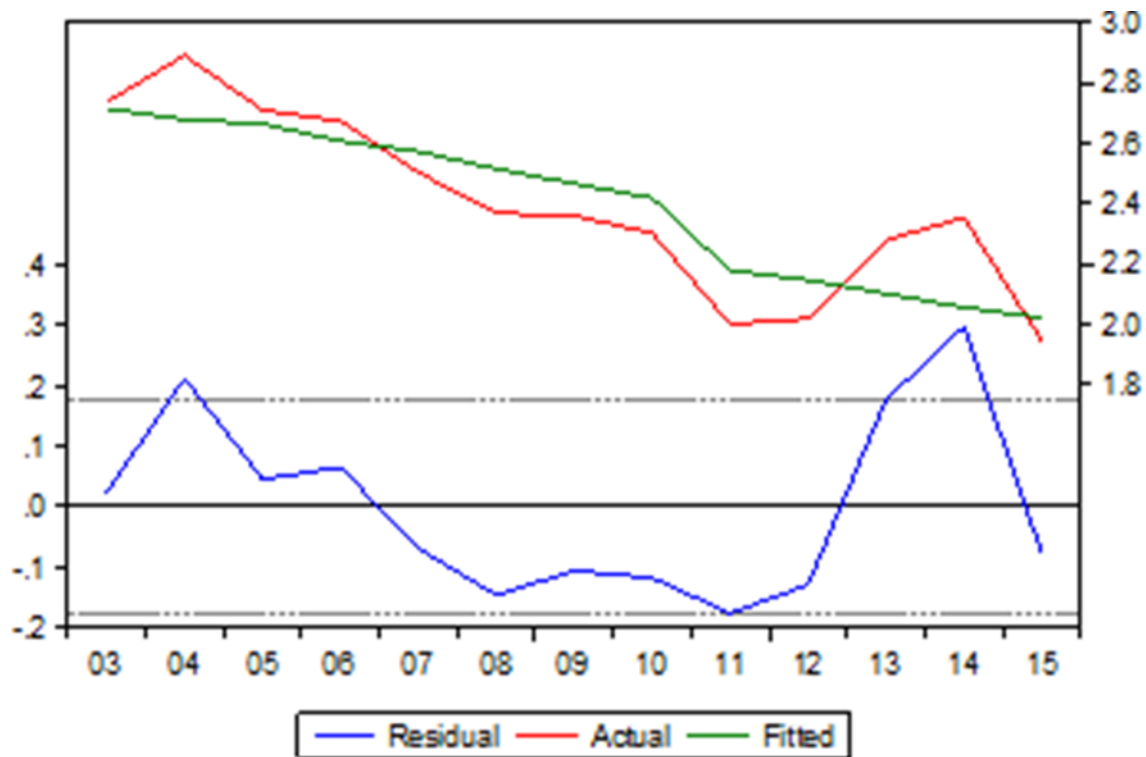

FIGURE 1
ACTUAL, FITTED, RESIDUAL GRAPH

In addition to using the actual, fitted, residual graph above to determine whether or not heteroscedasticity exists, the author also uses the white test to see whether or not there is a heteroscedasticity element in the model (Table 2). As the results showed the p-value (Obs*R-squared) < from α of 0.2254>α= 0.01, and with a confidence level of 99%, there is no heteroscedasticity in this model.

Table 2 WHITE TEST OF HETEROSKEDASTICITY			
Heteroskedasticity Test: White			
F-statistic	3.246028	Prob. F (9.3)	0.1809
Obs*R-squared	11.78936	Prob. Chi-Square (9)	0.2254
Scaled explained SS	3.390443	Prob. Chi-Square (9)	0.9468

In addition, to detect auto-correlation problems, the LM test test is used. This test is very useful to identify auto-correlation problems not only in the first degree (first order) but also used at the degree level. If the LM test results are from the null hypothesis (Ho), namely the calculated chi squares value (χ^2) <than the critical value of chisquares (χ^2), then the estimation model does not have auto correlation and the LM test obtained (Table 3).

Table 3 AUTOCORRELATION TEST (BG-SERIAL CORRELATION LM TEST)			
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.886121	Prob. F (2.7)	0.2212
Obs*R-squared	4.552363	Prob. Chi-Square (2)	0.1027

From the regression results, it can be seen that the calculated Chi square value (χ^2), amounting to 4.552363 at indolence 2 we accept the null hypothesis because the significance level of α is greater than 5%, namely 10.27%. Based on the LM test, this means that the model does not contain autocorrelation.

The results on testing the hypothesis showed that when wages, inflation, and growth are zero, the unemployment value is 7.63. While simultaneously or collectively the dependent variable is able to influence unemployment by 74.25%, this showed that other variables outside the model still have the potential to affect regional spending even though the value is not too significant, namely 25.75% (Table 4).

Table 4 REGRESSION RESULTS				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LOG(WAGE)	0.062665	0.434922	0.144082	0.0006
LOG(INFLATION)	0.016518	0.113378	0.145693	0.8874
LOG(PDRB)	-0.273531	0.224394	-1.218975	0.0008
C	7.633944	2.497468	3.056674	0.0136
R-squared	0.742594	Mean dependent var		2.39382
Adjusted R-squared	0.656792	S.D. dependent var		0.29982
S.E. of regression	0.175646	Akaike info criterion		-0.393027
Sum squared resid	0.277665	Schwarz criterion		-0.219196
Log likelihood	6.554674	Hannan-Quinn criter.		-0.428757
F-statistic	8.654745	Durbin-Watson stat		1.241545
Prob (F-statistic)	0.000008			

From the regression results, it can be said that the increase of wages by 1% is more likely to increase unemployment by 0.0626. One of the factors affecting labor absorption is the availability of wide job opportunities. Based on the definition obtained from the Big Indonesian Dictionary, job opportunities can be interpreted as job vacancies provided by both the government and the private sector. The job vacancies themselves depend on the demand for labor by the company. According to Octivaningsih (2006), if the company's revenue from sales of output produced by labor (MPVL) exceeds the costs that must be incurred by the company (w), then the company maximizes profits through labor acceptance. Structural unemployment arises because companies fail to reduce wages due to an excess supply of labor. For most workers, this minimum wage has no effect, because they enjoy wages above the minimum wage. For some, especially the uneducated and inexperienced, the minimum wage raises their wage above its equilibrium level. Economists believe that the minimum wage has the greatest impact on youth unemployment. Wages that balance the supply of young workers with their demand are low. Therefore, minimum wages often affect youth more than others in the labor force. Causes of wage rigidity include: minimum wage regulations, trade unions and wage efficiency (Mankiw, 2006).

The results showed that the increase of inflation by 1 percent is more likely to increase unemployment by 0.0165, and the increase of inflation by 1 percent will likely to decrease unemployment by 0. 273. This shows that inflation is not the main factor affecting unemployment in Maluku Province 2003-2015. This is in line with the study by Pitartono & Hayati (2012) which shows that the unemployment rate is not influenced by inflation. The occurrence of an increase in the prices of goods and services in general (inflation) is not due to an increase in demand for goods and services but rather due to an increase in fuel prices. Amir (2007) explains the negative relationship between the inflation rate and unemployment in the Phillips curve. An increase in inflation will lead to a decrease in unemployment. Meanwhile, the increase in aggregate demand is a reflection of inflation, which shows the relationship between inflation and unemployment. When aggregate demand increases, it will be in accordance with the demand theory. The results also is in line with Rizka (2007), stating an increase in GDP growth is followed by a decrease in open unemployment. The theory of the relationship between GRDP and open unemployment is expressed in Okun's law. This is in accordance with Okun's legal theory which states that if there is an increase in the open unemployment rate in a country, it is equivalent to a decrease in GDP growth of 2 percent.

The results highlighted the important role of wage in decreasing the unemployment. According to Mankiw (2000), wages are one of the factors that affect the unemployment rate. In addition, wages are also compensation received by a unit of labor in the form of the amount of money paid. The determination of wages by the government in a country will have an effect on the amount of unemployment that exists. The greater the wages set by the government, the more it will result in a decrease in the number of people working in the country (Kaufman & Hotchkiss, 2000). According to Kaufman & Hotchkiss (2000), the theory of wage fixing in a free market is actually a special case and a general theory of value. Gilarso (2003) stated that there are two important aspects of wages or remuneration for workers. For producers, wages are production costs that must be kept as low as possible. On the other hand, for workers, wages are a source of income for themselves and their families, and thus also a source of public spending. The level of wages or salaries directly concerns the human person, self-respect, and status in society, and is an important factor that determines the standard of living of society as a whole.

CONCLUSION

This study investigated empirically the relationship between the unemployment rate and wages, inflation and economic growth in Maluku. Based on the discussion using the 2007-2019 period, the following conclusions can be drawn. Statistical analysis showed that simultaneously the independent variable in this case the level of wages, inflation, and economic growth (GRDP) is able to influence the dependent variable, namely the unemployment rate positively and significantly of 74.25%. The wage variable has a positive and significant relationship with the unemployment rate so that if there is an increase in the wage level, it will also linearly increase the unemployment rate.

The inflation variable affects the unemployment rate positively but not significantly, this is because the structure of the Maluku economy is still not strong so that inflation is not influenced by internal factors in the Maluku economy, but the most influential external is of course the increase in the price of fuel oil, in which every government the central government implements a policy to raise fuel prices followed by an increase in inflation. The variable of economic growth which is proxied by GRDP has a negative relationship with the unemployment rate, so that GRDP growth will directly reduce the unemployment rate, this is because increased economic growth will provide new job opportunities and are labor-intensive economic growth reduces the number of unemployed.

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