

## Conference Paper

# The Effect of Wages, Economic Growth, and Number of Industries on Unemployment

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## Abstract

The purpose of this study was to determine the effect of minimum wages, economic growth, and number of industries on unemployment in West Java Province. In this study, the number of industries variable also acts as a moderator variable. The method of data analysis in this study is data panel regression. The data used is from secondary data obtained from Badan Pusat Statistik (BPS) in 2013-2015 with 26 districts and cities in West Java Province. The results showed that the minimum wage and the number of industries have positive and significant effects on unemployment, while economic growth has not significant effect on unemployment. The interaction between moderating variable and the minimum wages and economic growth variables have negative and significant effects on the unemployment. The interaction between the moderating variable and two other variables strengthen the influence of independent variables on the dependent variable.

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## 1. Introduction

Industry plays an important role in economic development in many countries. The industrial sector plays a key role as a development engine because the industrial sector has several values of excellence compared to other sectors. Some advantages of the presence of industrial sector are: (1) the capitalization value of capital is very large, (2) the ability to absorb a large workforce, (3) as well as the ability to create added value from each input of processed production (Muhtamil, 2017). Industry as a leading sector is believed to spur and lift the development of other sectors.

Based on table 1, the industrial sector in Indonesia is mostly resided in Java Island. The number of large and medium industries in Java Island are more than 80% of the total number of industries in Indonesia, mainly because the availability of infrastructure in Java is adequate. In 2015, the number of large and medium industries in Indonesia are 26,322 industries. Java Island has a total of 21,460 industries with a percentage of 81.52%. Meanwhile, outside Java there are 4,862 industries with a percentage of 18.47%.

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TABLE 1: The Number of Large and Medium Industries in Java and outside Java in 2010-2015

Year	Java	%	Outside Java	%	Total
2010	19.529 unit	83,65	3.816 unit	16,34	23.345
2011	19.440 unit	83,18	3.930 unit	16,81	23.370
2012	19.554 unit	82,88	4.038 unit	17,11	23.592
2013	19.587 unit	82,65	4.111 unit	17,34	23.698
2014	20.256 unit	82,57	4.273 unit	17,42	24.529
2015	21.460 unit	81,52	4.862 unit	18,47	26.322

Source: Indonesia Central Statistic Agency, 2017a

Based on the data in table 2, West Java Province has the largest number of large and medium industries in Java Island. Meanwhile, the number of industries in Central Java Province is less than West Java Province, but its growth continues to increase. This increase reached 14% in 2014.

TABLE 2: Total of Large and Medium Industries in Java Island 2013-2015

Province	Year		
	2013	2014	2015
Capital Special Region of Jakarta	1.242 unit	1.240 unit	1.323 unit
West Java	6.457 unit	6.633 unit	6.874 unit
Central Java	3.666 unit	3.851 unit	4.378 unit
Special Region of Yogyakarta	322 unit	339 unit	351 unit
East Java	6.288 unit	6.473 unit	6.672 unit
Banten	1.674 unit	1.720 unit	1.862 unit

Source: Indonesia Central Statistic Agency, 2017b

One of the factors that influence the increase in the number of industries and employment is the level of wages. The amount of the minimum wage level is determined by each region, through the wage council. If the minimum wage is high, the companies will get less profit. Therefore, companies mainly prefer to choose regions with low minimum wages. The minimum wages also affect the number of unemployed in regions. Low minimum wages will alleviate costs incurred by the companies. High minimum wages will force companies to reduce the number of workers in order to reduce their input costs.

It is believed that the increasing number of industries can affect the growth of other sectors towards a positive direction (Arsyad, 2010). The existence of industries in an area

has a significant effect on economic conditions. The growth of industries encourages the expansion of employment and increase people's purchasing power. The impact of higher economic growth can be seen by the significant increase of employment and the improved people's purchasing power.

Economic growth is one indicator that is very important in assessing economic performance. Based on table 3, economic growth in Java Island is still above the national economic growth in 2016 which is at 5.03%. The economy of a country or region is increasing growth when the activities in the economy cause the goods and services produced to increase and the prosperity of the community increases. This increase in production capacity is marked by an increase in national income (Meilani, 2014). As the economic growth in Java Island is growing well, the number of unemployment is expected to be reduced. Declining economic growth will increase the number of unemployed due to the decline in employment.

TABLE 3: Economic growth in Java in 2012-2016 (in percent).

Province	Year				
	2012	2013	2014	2015	2016
Indonesia	6,03	5,56	5,01	4,88	5,03
Capital Special Region of Jakarta	6,53	6,07	5,91	5,88	5,74
West Java	6,50	6,33	5,09	5,04	5,67
Central Java	5,34	5,11	5,27	5,47	5,28
Special Region of Yogyakarta	5,37	5,49	5,09	5,03	5,09
East Java	6,60	6,10	5,90	5,40	5,50
Banten	6,83	6,67	5,51	5,45	5,28

Source: Indonesia Central Statistic Agency, 2017b

One of the goals of economic development through industrialization is the provision of jobs to pursue the growth of the workforce that continues to increase. Business actors with the concept of labor-intensive businesses will look at areas with adequate labor force.

The increasing number of industries will absorb labor. The number of workers can be calculated based on the number of labor force. Workforce that does not work is called unemployment. Unemployment occurs because the existing workforce is not in accordance with the demand for labor, or because of capabilities that are not in accordance with the job. Unemployment itself is a problem faced by Indonesia.

TABLE 4: Number of Unemployment and Unemployment Rate (UR) in Java Island in 2013-2017 (in person).

Province	Year									
	2013		2014		2015		2016		2017	
	Total	UR	Total	UR	Total	UR	Total	UR	Total	UR
Capital Special Region of Jakarta	440.704	8,63 %	429.110	8,47 %	368.190	7,23 %	317.007	6,12 %	346.945	7,14 %
West Java	1.888.667	9,16 %	1.775.196	8,45 %	1.794.874	8,72 %	1.873.861	8,89 %	1.839.428	8,22 %
Central Java	1.054.062	6,01 %	996.344	5,68 %	863.783	4,99 %	801.330	4,63 %	823.938	4,57 %
Special Region of Yogyakarta	63.172	3,24 %	67.418	3,33 %	80.245	4,07 %	57.036	2,72 %	64.019	3,02 %
East Java	878.543	4,30 %	843.490	4,19 %	906.904	4,47 %	839.283	4,21 %	838.496	4 %
Banten	494.170	9,54 %	484.053	9,07 %	509.383	9,55 %	498.596	8,92 %	519.563	9,28 %

Source: BPS 2018

Based on table 4, West Java Province has the highest number of unemployed. In West Java Province there are two main jobs that influence the number of unemployed namely manufacturing and agriculture industries (Mambea et al., 2017). The manufacturing industry sector plays a role in reducing the unemployment rate in West Java Province. The level of unemployment in West Java Province reached 8.22 percent with the unemployment rate of 1.8 million people in 2017. With the unemployment rate continuing to increase, indicating the number of industrial sectors unable to meet the needs of employment in West Java Province.

Indonesia focuses its industrial sector on Java. In Java, the largest number of large and medium industries is in West Java Province. The large number of large and medium industries creates policies that regulate the minimum wage in order to create a balance between labor and employers. The minimum wage in West Java Province also continues to increase every year. With the large number of large and medium industries continuing to grow, economic growth in West Java Province has actually declined over the past few years, in line with the decline in national economic growth. The increase in the number of industries together with the increasing number of workforce in West Java Province. These conditions cause an increase in the number of unemployed people in West Java Province every year, because the workforce is not absorbed by existing employment.

Based on this background, several research questions can be formulated as follows: 1). What is the influence of minimum wages, economic growth, the number of industries on unemployment in West Java Province? 2). What is the influence of minimum wages, economic growth, the number of industries on unemployment in West Java Province with an increase in the number of industries as moderator variables? The objectives of the study are as follows: 1). Analyzing the influence of minimum wages, economic growth and the number of industries on the number of unemployed in West Java

Province. 2). Analyzing the influence of minimum wages and growth on the number of unemployed people in West Java Province with an increase in the number of industries. Based on PP No.24, 2009 concerning Industrial Estates, the definition of industry is an economic activity that processes raw materials, raw materials, semi-finished goods, and / or finished goods into goods of higher value for their use, including industrial design and engineering activities. Furthermore in Arsyad (2010), in terms of employment opportunities created, small industries are the most important industries. In terms of the value of the contribution to GDP, the big industry is the most prominent role. When viewed from the nature of its investment, most small industries are labor intensive, while large industries tend to be capital intensive. According to Prasetyo (2009) open unemployment is individuals who are actually able to work and are looking for work, but they do not get jobs. The natural unemployment rate is the average unemployment rate in a fluctuating economy (Mankiw, 2007). Whereas according to the Central Bureau of Statistics, the open unemployment rate is the percentage of unemployment to the total workforce. Deeper about unemployment is known as the term full employment which is the level of production of an economy when there is no cyclical unemployment. Even in a healthy economy, there will still be frictional, structural and seasonal unemployment. This condition shows that when full employment does not mean there is no unemployment, the unemployment rate is relatively low at 4 to 6 percent.

Based on UU No.13 2003, wages are workers' rights received and expressed in the form of money as compensation from employers or employers to workers / laborers which are stipulated and paid according to a work agreement, agreement, or legislation, including allowances for workers / laborers and their families for work and or services that have or will be carried out. Furthermore, in PP No. 78, (2015) wage policies are directed at achieving income that meets decent livelihoods for workers / laborers.

Economic growth is a process of increasing output over time which is an important indicator to regulate the success of a country's development (Arsyad, 2010). Economic growth is defined as an increase in GDP or GNP regardless of changes in population growth and whether there is a change in economic structure or an improvement in institutional structure. Economic growth and unemployment are closely related. High economic growth will create a scheme to reduce unemployment. Furthermore, high economic growth is expected to create output growth, so that it takes a lot of labor to pursue this increased output capacity. Okun's law states that 1 additional point of unemployment burdens 2 percent of GDP (Dornbusch, Fischer and Startz, 2004).

The labor force is the number of people at work and unemployed people (Mankiw, 2007). According to the Central Bureau of Statistics, the workforce is those aged 15

years and over, both those who work, have jobs but temporarily do not work, and unemployment. The small number of the workforce depends on the composition of the population. Increasing the number of people, especially those in the working age group, will increase the workforce. The workforce includes an adult population who is working or looking for work. Those who are looking for work are called unemployment. Economic productivity depends on the proportion of adults who enter the workforce, or the labor force participation rate. The level of labor force participation is the number of labor force divided by the adult population. While the unemployment rate is the number of unemployed as a percentage of the workforce.

## 2. Research Methods

This research is a quantitative research that processes data in the form of numbers (Misbahudin and Hasan, 2014). The data analysis technique used in this study is multiple regression, which estimates the bound value based on the value of the independent variable. Multiple regression is an extension of simple regression where the number of independent variables is two or more.

This study uses secondary data, namely data that is already available and collected by other parties. The data was taken from the Central Java Provincial Statistics Agency. The data analysis technique in this study uses multiple regression using the Eviews 9 program.

The dependent variable used in this study is the number of unemployed (Y), while the independent variables used in this study are the minimum wage (X1), economic growth (X2) and the number of industries (X3). Industrial variables in this model also function as moderator variables.

The models used in this study are:

$$Y_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_1 * X_3 + \alpha_5 X_2 * X_3 + e$$

where:  $Y_i$  = unemployment rate

$\alpha_0$  = constant

$\alpha_1, \alpha_2, \alpha_3$  = coefficients

$\alpha_4, \alpha_5$  = interaction term coefficients

$X_1$  = minimum wages

$X_2$  = economic growth

$X_3$  = number of large and medium industries

$X_1 * X_3$  = interaction between minimum wages and number of large and medium industries

$X_2 * X_3$  = interaction between economic growth and number of large and medium industries

e = Error term

### 3. Results and Discussion

After statistical testing, further discussion and analysis of the research results are as follows:

TABLE 5: Random effect estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.08317	8.134915	-1.485347	0.1418
UM	1.292695	0.564753	2.288956	0.0250
PEK	0.344934	0.189065	1.824420	0.0722
IBS	5.614496	1.666719	3.368592	0.0012
UM*IBS	-0.323569	0.113446	-2.852181	0.0057
PEK*IBS	-0.082172	0.035229	-2.332538	0.0225

Source: Eviews 9 Output

Based on table 5, the model is obtained as follows:

$$PGR = -12.08317 + 1.292695 UM + 0.344934 PEK + 5.614496 IBS + -0.323569 UM*IBS + -0.082172 PEK*IBS + e$$

Information:

PGR = income variable

UM = Minimum wage variable

PEK = Variable economic growth

IBS = Variable number of large and medium industries

UM\*IBS = Variable minimum wages influenced by large and medium industrial variables

PEK\*IBS = Variable economic growth influenced by large and medium industrial variables

e = Error

### 3.1. Effect of Minimum Wages, Economic Growth and Industry on Unemployment

Amount Minimum wages have a positive and significant effect on unemployment. The magnitude of the regression coefficient is 1.292695. These variables have a positive and significant effect on the number of unemployed and can be proven by the magnitude of t count of 2.288956 greater than t table of 1.664. The variable is significant with a probability value of 0.0250. The influence of minimum wages here places more emphasis on the behavior of business people in managing their human resources. Business actors in this case play a role as the party that requests labor.

This is similar to the research from Kristiyana (2011) that when higher minimum wages will cause an increase in the number of unemployed. This happens because business actors will reduce the amount of labor demand because more costs are needed to pay the salaries of the human resources they have. For this reason, business people tend to choose a quality workforce and will make the number of unemployed increase.

Research from Mitsis (2015) shows that the minimum wage has a negative effect on the number of jobs available. This shows that when the minimum wage increases it will reduce the number of jobs available. For this reason, rising minimum wages are proven to increase the number of unemployed.

The variable economic growth in this study has a positive but not significant effect on the number of unemployed. The magnitude of the regression coefficient is 0.344934. This variable has a positive effect on the number of unemployed. These variables have a partial effect on the number of unemployed, can be seen from the value of t count of 1.824420 greater than t table of 1.664. The economic growth variable has a probability value of 0.0722. The variable economic growth does not significantly influence the number of unemployed if using alpha 5%, but can be considered to have a significant effect when using alpha 10%. If the alpha used 10% of the variable will have a significant effect, but the level of confidence in the influence of the variable decreases to 90%.

Economic growth will increase the number of unemployed if oriented towards the capital intensive sector. This happened because of the replacement of humans with machines. The results of this study are similar to the research of Azizah (2016) which states that economic growth if oriented towards a capital intensive sector will reduce the amount of workforce because it has been replaced by a machine. According to Sirait and Marhaeni (2013), economic growth should reduce the number of unemployed when oriented towards labor-intensive sectors.



According to Nurmawati (2017), it was explained that the quality of human resources in West Java Province had a majority of elementary and junior high school education. This shows that they will be difficult to compete compared to foreign workers who have expertise that is qualified and needed by business actors in the industry. With the quality of human resources which are part of the development process is inadequate, causing economic growth to be hampered. Other considerations come from the study of Lai and Cheung (2016). This research shows that regions with good education do not encourage good economic growth.

Not the significance of these variables can occur due to inequality in economic growth (Arsyad, 2010). The aggregate economic conditions increase but the increase is not experienced by the whole community, but only a certain group. Therapy to overcome the unemployment problem here is to create quality economic growth, namely economic growth that is able to provide employment opportunities by implementing labor intensive systems, not capital intensive. On the other hand, there is a tendency for economic growth to be largely based on consumptive activities.

Variables of the number of large and medium industries have a positive and significant effect. The magnitude of the regression coefficient is 5.614496. These variables have a positive and significant effect on the number of unemployed and can be proven by the magnitude of t count of 3.368592 greater than t table of 1.664. The variable is significant with a probability value of 0.0012. If we use an alpha value of 1%, the variable still has a significant effect on the dependent variable. This means that the variable can even have a confidence level of up to 99%.

These results contradict the research of Andita and Soesaty (2014) which stated that the increasing number of business units would also increase employment. When the number of business units increases, it will increase the chances of job seekers to work in existing companies.

The results of this study are in line with research from Nugraheny and Dewi (2016) which states that the growth of the industrial sector does not have an influence on employment in the formal industry. This can be because the existing workforce is more absorbed into the non-formal industrial sector. It should be noted that in the formal industry, the selection of workers who enter takes into account special skills depending on the business being carried out. This education and experience makes it difficult for job seekers to find the right job according to their abilities.

Joined the workforce into the non-formal industry also led to reduced economic growth. Research from Gohmann, Hobbs and McCrickard (2016) shows that sectors

that are considered less productive are proven to reduce economic growth. This model shows that industry is not considered an economic priority.

According to Arsyad (2010), in terms of employment opportunities created, small industries are the most important industries. On the contrary, in terms of the value of contribution to GDP, the big industry is the most prominent role. The industrial sector also provides the main characteristics of slow labor absorption and increasing unemployment. This happened because capital intensive industries began to develop rapidly. Capital intensive industries replace the role of humans with machines, because they are more efficient.

### **3.2. Effect of Minimum Wages and Economic Growth on the Number of Unemployed Affected by Variables in the Amount of Large and Medium Industries**

The minimum wage variable has a negative and significant effect on the number of unemployed. The magnitude of the regression coefficient is equal to -0.323569. This variable has a negative and significant effect on the number of unemployed. The value of t arithmetic is 2.852181 which is greater than t table of 1.664 showing the effect partially on the number of unemployed. This variable is significant with a probability of 0.0057. Based on the results of the regression output using random effect models, the results obtained that when there is an increase in the amount of the minimum wage and accompanied by an increasing number of large and medium industries, it will reduce the number of unemployed in West Java. The existence of large and medium industries in West Java Province proves that the workforce will receive the existing wage level and can reduce the number of unemployed people in West Java Province.

This result is similar to the study from Kuntiarti (2018) which states that minimum wages have a negative influence on unemployment. With the increasing level of wages, individuals will find it easier to choose existing jobs. Conversely, when the minimum wage falls will trigger workers to switch to better jobs in a better place. When that happens, not necessarily every individual will get a job so that unemployment is created.

Other options coming from Groisman (2016) research show that the effect of minimum wages on unemployment does not have a negative effect. This happens because of the modification in the system of applying the minimum wage. Many of the workforce enter the informal sector. The informal sector itself still applies minimum wages but with its own adjustments from related business actors.

The increasing number of minimum wages makes the company considerations in reducing input costs in its production, but this is also an option for workers. Referring back to the Zulaili (2017) study, the magnitude of the wage rate does not affect the condition of the workforce, because they continue to work even though they are not in the formal sector. Basically all returns to the choice of the workforce itself, whether to choose to work in the formal sector or work outside of that choice.

Variable economic growth has a negative and significant effect on the number of unemployed. The magnitude of the regression coefficient is -0.082172. This variable has a negative effect on the number of unemployed. The value of t count is 2.332538 greater than t table 1.664 shows that these variables significantly influence the number of unemployed. The variable is significant with a probability value of 0.0225.

According to Arsyad (2010), economic growth has a negative influence on unemployment in accordance with the legal laws put forward by Arthur Okun. High economic growth is expected to create output growth so that it takes a lot of labor to pursue the increased output capacity.

Research from Economou and Psarianos (2016) shows that the law itself has different levels of power depending on each region. The effect of changes in output on the unemployment rate will be longer for regions with good labor market protection policies. While these effects will be striking when applied in areas that implement weak protection policies.

## 4. Conclusion

Based on the descriptions that have been disclosed in the discussion, some conclusions can be drawn, namely: 1). Minimum wage variables have a significant positive effect on unemployment in West Java Province. This phenomenon occurs when companies choose to reduce the number of employees because the costs incurred for salaries increase. The variable of economic growth does not significantly influence the number of unemployed in West Java Province. Large and medium industrial variables have a positive and significant effect on the number of unemployed in West Java Province. This happens because of the increasing number of large and medium industries which are more focused on increasing production output and more capital intensive oriented; 2). In variables that have been influenced by moderation variables, the wage variable shows a negative and significant effect on the number of unemployed in West Java Province. When wage rates increase, individuals will find it easier to choose jobs. These results indicate that the variable number of industries is large and is weakening existing

theories. Growth variables have a negative and significant effect on the number of unemployed in West Java. This shows that economic growth can reduce the number of unemployed. The addition of moderator variables improve the previous model for the better, with the change in the probability value of the minimum wage variable and the economic growth variable which in the previous model had no significant effect on the dependent variable.

Suggestions given regarding the results of the study are: 1). The government must continue to play an active role in determining minimum wages and oversee their application to large and medium industries so that the implementation of minimum wage setting policies can reduce of unemployed, but does not burden business actors with the minimum wage given. Business actors are required to pay above the minimum wage applied. Meanwhile, the workforce is expected to be able to receive the minimum wage set in order to achieve a minimum wage balance. Increasing economic growth also does not mean unemployment will decline. It's better if economic growth provides more employment opportunities than only concentrated in the capital intensive sector and from consumptive activities; 2). The increasing of industries will be better if it's accompanied by increased employment opportunities. The government is expected to be able to make regulations so that the workforce is able to be absorbed into the industrial sector so that it can reduce of unemployed. The community is encouraged to improve their skills to find the criteria needed by existing employment.

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