



EMPLOYED PATTERN LOW-EDUCATED AND HIGH-EDUCATED WORKERS IN INDONESIA: A BINARY LOGISTIC REGRESSION APPROACH

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Abstract

This study aims to analyze the effect of foreign investment, domestic investment, gross domestic product, government spending and the minimum wage on the absorption of low- and high-educated workers in Indonesia and analyze the most influential factors. This study uses secondary data. The data used is provincial panel data in Indonesia for 2007-2019. The tool used for analysis is binary logistic regression. The results of the analysis show that foreign investment and government spending have no significant positive effect, while gross domestic product and minimum wage have a significant positive effect on employment. This shows that foreign investment, gross domestic product, government spending and the minimum wage are likely to have more influence on the absorption of highly educated workers than low ones. Domestic investment has a significant negative effect on employment. So that domestic investment has the opportunity to have more influence on the absorption of low-educated workers. The most influential factor on labor absorption is wages.

Keywords: *employment; foreign investment; domestic investment; gross domestic product; government expenditure; and minimum wage.*

JEL Classification: *E24, I25*

INTRODUCTION

The existence of investment or investment is needed in the economy. Investment is one of the main factors in economic development. Jhingan (1975) defines investment as the formation of capital that is all kinds of real capital that can create productive activities. The formation of this capital is expected to bring utilization to existing sources. Sari (2016) stated that investment could increase economic activities, employment absorption, national income, and living standards for the community. Increasing economic growth will create an increase in the ability of a country to create goods and services (Winarni et al. 2020). Increased investment will remind aggregate demand where aggregate demand can lead to increased production capacity to follow it in the required workforce.

Investment or investment based on financing sources can be divided into foreign direct investment (FDI) and domestic investment. Based on law number I of 1967, Foreign Investment is the investment of foreign payment instruments that are not part of Indonesia's foreign exchange or tools for companies entered from abroad that are not financed by Indonesian foreign exchange. Foreign investment is important for

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Indonesia to boost the pace of economic growth. Foreign investment according to Domestic investment based on Article 1 of Law No. 25 of 2007 concerning Investment Law, namely investment activities to conduct business in the territory of the Republic of Indonesia, made by domestic investors using domestic capital. Domestic investment or foreign investment aims to stimulate the increase of domestic economic growth.

According to Ningrum (2008), two factors can influence the slowdown in growth from investment in Indonesia, namely economic and non-economic factors. Economic factors include interest rates, banking regulation, taxation, and infrastructure. Non-economic factors affect investment outside economic variables such as political stability, the rule of law, criminality level, government commitment, and government bureaucratic services for business licensing. Based on these factors, economic and non-economic conditions are needed to increase foreign and domestic investment activities. Investors will come if there is a potential profit or a high return on capital; this can happen when economic and non-economic factors are stable. Here are the conditions of Foreign Direct Investment (FDI) in Southeast Asia.

Table 1 FDI in Southeast Asia, the Year 2013-2018 (Billion Dollar)

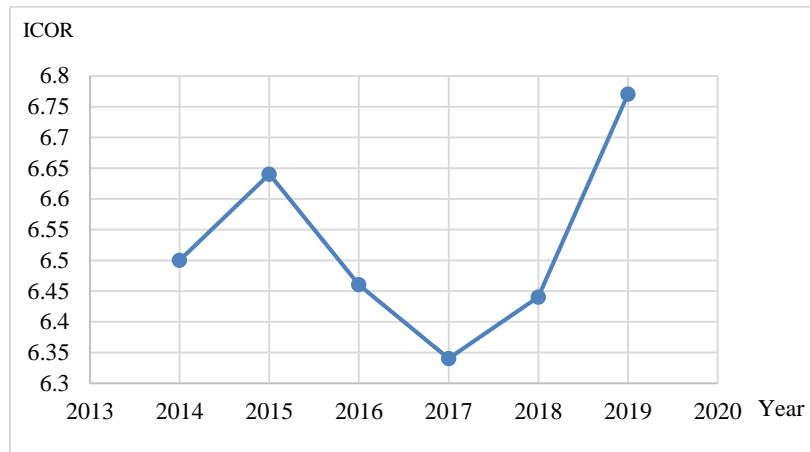
Country	Year						Average
	2013	2014	2015	2016	2017	2018	
Singapore	57,5	73,5	59,7	73,9	75,7	77,6	69,65
Indonesia	18,4	21,8	16,6	3,9	20,6	22,0	17,22
Vietnam	8,9	9,2	11,8	12,6	14,1	15,5	12,02
Malaysia	12,1	10,9	10,2	11,3	9,3	8,1	10,32
Thailand	15,9	5,0	8,9	2,8	8,0	13,2	8,97
Philippines	3,9	5,8	5,6	8,3	10,3	9,8	7,28
Myanmar	2,6	0,9	2,8	3,0	4,0	3,6	2,82
Cambodia	1,3	1,7	1,7	2,3	2,7	3,1	2,13
Laos	0,4	0,9	1,1	1,1	1,7	1,3	1,08
Brunei Darussalam	0,7	0,6	0,2	-0,2	0,5	0,5	0,38

Source: ASEAN Secretariat, ASEAN FDI Database, 2018.

Based on Table 1, FDI conditions in Southeast Asia in 6 years from 2013 to 2018 experienced fluctuations. The highest FDI flow is Singapore, with an average of 6 years reaching 69.65 billion dollars. The lowest FDI current is Brunei Darussalam, with an average of 6 years only 0.38 billion dollars. Indonesia is in the second-highest position after Singapore, with an average of 6 years reaching 17.22 billion dollars. It can be said that the condition of foreign investment flows in Indonesia is better than in neighboring countries except for Singapore.

Investment is generally one of the factors in increasing production. To see the condition of investment in a country plays an important role in production can be seen from the Incremental Capital Output Ratio (ICOR). According to BPS, ICOR measures macroeconomic parameters that can describe the ratio of capital investment to the results obtained using such investments. The following is data of ICOR Indonesia from 2014 to 2019.

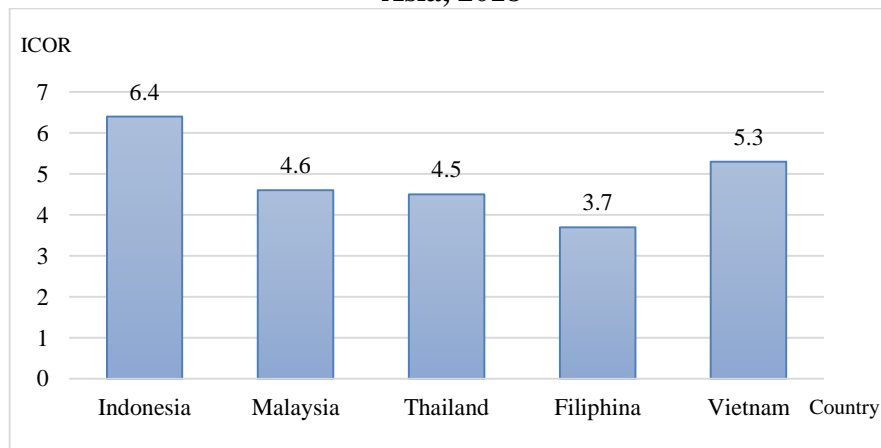
Figure 1 Incremental Capital Output Ratio (ICOR) Indonesia, the Year 2014-2019



Source: Ministry of Finance of the Republic of Indonesia, 2020.

Based on Imelda's research (2015), the value of ICOR can be categorized as good for the economy if the ICOR figure is 3-4; when the ICOR figure is higher, it illustrates the possibility of efficiency in using investment. Based on Table 1 and Figure 1, Indonesia's Foreign Investment is in second place before Singapore. The higher the investment value, the higher the production of goods. However, ICOR Indonesia from 2014-2019 is at an average of 6, so it can be said that the value of ICOR Indonesia does not show good productivity. Here is a comparison of ICOR Indonesia with four countries in Southeast Asia in 2018.

Figure 2 Incremental Capital Output Ratio (ICOR) 5 Countries in Southeast Asia, 2018

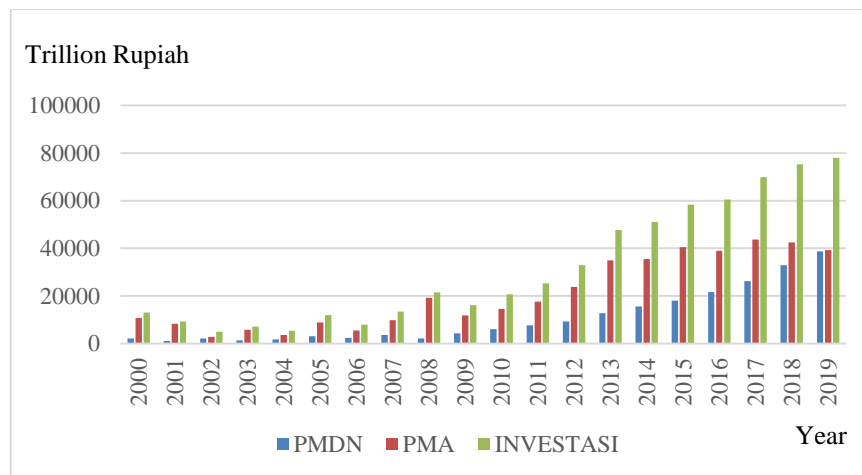


Source: Ministry of Finance of the Republic of Indonesia, 2020.

Based on Figure 2, it can be said that Indonesia had the worst ICOR rating among Filipina, Thailand, Malaysia, and Vietnam in 2018. Whereas Filipina, Thailand, Malaysia, and Vietnam have foreign investments that are still under

Indonesia. To more clearly understand the investment conditions in Indonesia, here are the investment conditions in Indonesia from 2009 to 2019.

Figure 3 Domestic Investment and Foreign Investment in Indonesia, the Year 2000-2019

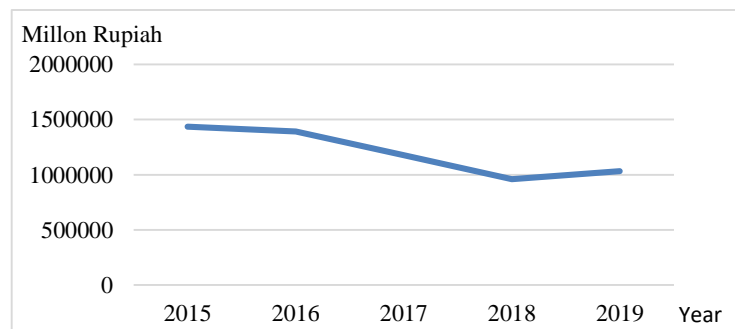


Source: Investment Coordinating Board, 2020.

Investment is the determinant of the economic growth rate of a country, with the investment will encourage a significant increase in output. In addition, this increases input demand due to increased output. Thus, increased output due to investment can increase employment opportunities and reduce unemployment. (Momongan, 2013). Based on Figure 3, investments, in general, have increased from year to year. Seen from 2009 to 2019, investment has always increased, but there is still a decrease in 2001, 2002, 2004, 2006, and 2009.

Harrod-Dommar's theory states that investment has the dual nature of increasing production capacity and creating demand (Jhingan, 1975). When the production capacity is enlarged, it takes labor as input. So this will be aligned when investment increases, the absorption of labor will also increase. To see the labor absorbed by the investment, it can be seen the realization of investment. The following are the labor conditions absorbed by investment in Indonesia.

Figure 4 Investment Realization in Indonesia, the Year 2015-2019



Source: Investment Coordinating Board, 2020.

Based on Figure 3, investment conditions in Indonesia always increase from 2009 to 2019, increasing labor absorption. However, based on Table 4, the workforce absorbed by investment in 2015 to 2018 decreased and only increased from 2018 to 2019. This indicates that the absorption of labor decreases as investment increases, so it can be said that it can lead to unemployment when labor absorption decreases. In addition to the investment, other factors affect the absorption of labor, namely gross domestic product, government expenditures, and wage levels. The following is the condition of the gross domestic product based on constant prices in 2010 in Indonesia in 2015-2019.

Table 2 Gross Domestic Product based on Constant Prices 2010 and Government expenditures of Indonesia (Billion Rupiah), the year 2015-2019

Year	Gross Domestic Product	Government Expenditures
2015	8,982,517	278,969
2016	9,434,613	264,098
2017	9,912,928	307,039
2018	10,425,397	326,429
2019	10,949,244	382,625

Source: Central Bureau of Statistics, 2020.

Gross domestic product (GDP) can be interpreted as the added value of goods and services provided by the production unit within a certain period. GDP can affect the absorption of labor by assuming that when the amount of value-added output or increase in sales increases, then the number of workers as inputs also remembers (Wasilaputri, 2016) Mankiw (2006) based on the theory put forward by Okun, unemployment will decrease when rill GDP increases. There is a negative link between rill GDP and unemployment. When unemployment declines, it could be due to increased GDP. It can be said that when unemployment decreases, it means that the absorption of labor increases, so the relationship between rill GDP and labor absorption is positive.

Based on Table 2, Indonesia's GDP condition has always improved from 2015-2019. This indicates that the economy is improving, with no negative growth when viewed from the data. Based on the theory of occupancy, when GDP increases, then unemployment will decrease. The government as an economical controller and policymakers can make budget policies according to the goals to be achieved. In this case, the policy can be reflected in the fiscal policy taken by the government. Fiscal policy is a policy used to regulate the state budget. Fiscal policy has a variety of objectives, one of which is the stabilization function. In carrying out the stabilization function, it maintains increased absorption of labor, relatively stable prices, and an adequate economic growth rate (Wilis, 2015). In carrying out fiscal policy, it must be considered fiscal efficiency. Fiscal efficiency will help reallocate existing resources. (Suharno and Badriah, 2011) To see the budget conditions used for government spending, here is a table of the conditions of Indonesian government spending from 2015 to 2019.

Based on Table 2, Indonesia's expenditure conditions from 2015-2019 decreased in 2016 but continued to increase until 2019. As government spending increases, fiscal stimulus continues to be increased as needed in the year. Producers will get fiscal stimulus so that they can expand their production. When production develops, additional labor is needed that can increase the absorption of labor. In addition to GDP and government spending, factors that affect labor absorption are the level of wages.

Wages influence the absorption of labor. Wage levels in each region vary. When the wage rate increases, it will affect the increasing cost of production. So that the company will make efficient by reducing the number of workers (Sari, 2016) is data on the average provincial minimum wage level in Indonesia.

Table 3 National Average Minimum Wage (Rupiah), 2016-2020

Year	National Average Minimum Wage
2015	1,912,174
2017	2,072,605
2018	2,264,676
2019	2,455,245
2020	2,671,651

Source: Central Bureau of Statistics, 2020

In Table 3, the national average wage rate has always increased from 2016-2020. Based on Sari's research (2016), it will decrease labor absorption and cause unemployment when the wage rate increases. The factor influencing unemployment is the decrease in aggregate demand. This is reflected when aggregate demand falls, then producers' output of goods and services will decrease. If sales decline, then revenue will also decrease. So this will affect the reduction of inputs that reduce the number of workers. When the number of workers is reduced then, unemployment will increase.

Increasing production will increase labor and decrease labor, thus creating unemployment (Sukirno, 2006). This increase in production will increase employment opportunities to show the demand for labor in the labor market. (Wani et al. 2020). In the recruitment of labor, there are technical requirements that are completed education. Usually, the accepted workforce has a minimum high school/vocational education. When the labor is not absorbed, it will lead to unemployment. The following are the conditions of the highest number of unemployed based on education completed in Indonesia from 2014 to 2018.

Table 4 Number of Unemployed Based on The Highest Education Completed in Indonesia, the Year 2014-2018

	Year	Low Education	Higher Education	Total
2014	February	3,812,639	3,334,430	7,147,069
	August	3,260,938	3,983,967	7,244,905
2015	February	3,698,276	3,756,491	7,454,767
	August	2,805,976	4,754,846	7,560,822
2016	February	3,184,480	3,839,692	7,024,172
	August	2,773,629	4,258,146	7,031,775
2017	February	3,212,702	3,792,560	7,005,262
	August	2,646,397	4,358,865	7,040,323
2018	February	2,706,242	4,165,022	6,871,264
	August	2,388,095	4,612,596	7,000,691

Source: Central Bureau of Statistics, 2019

Unemployment based on higher education is divided into two, namely higher education and low education. Low-category education consists of no or no school, no or no elementary school, elementary school, and junior high school. In comparison, higher education consists of high school, Vocational High School, Academy or Diploma, and University. This refers to Prajasa's research (2013) on unemployment, stating that the category of educated unemployed is the ratio of the number of job seekers educated at least high school to the size of the labor force in the group.

Based on table 4, the number of low-educated unemployed in 5 years from 2014 to 2018 decreased. Meanwhile, the number of highly educated unemployed in 5 years from 2014 to 2018 increased. From each year, the number of highly educated unemployed is always higher than the number of low-educated unemployed, only in February 2014 alone the number of low-educated unemployed is higher than the number of highly educated unemployed.

In general, increased investment, GDP, and government spending can create and increase production. Where to achieve increased production is required labor as input. In general, the technical requirement for the workforce is to have at least a high school education or vocational school equivalent, so the small amount of investment, GDP, and government spending will affect the unemployment of higher education. With the increase of labor, it must be balanced by the quality of labor so that the output will be more productive. (Puspasari and Handayani, 2020)

However, based on Figure 3, Table 1, Table 2, and Table 3, the overall investment, GDP, and government spending have always increased. However, the number of unemployed based on higher education shows that the number of unemployment is higher than that of low-educated unemployed. Foreign investment, domestic investment, GDP, and government spending require an educated workforce. However, the number of highly educated unemployed is more than the number of low-educated unemployed. It can be said that this indicates low absorption of labor. Many studies have been conducted to determine how foreign investment, domestic investment, GDP, government spending, and wages affect the absorption of labor but do not see from the background of the highest education that is concluded. Due to

unemployment based on the highest level of education, more unemployment is highly educated than low-educated unemployed. Therefore, research is needed to determine the condition of labor absorption based on the highest level of education that is terminated due to foreign investment and domestic investment. The research method is usually done by multiple regression method, but the researcher will use binary logistic regression method. Based on the description can be identified research questions as follows:

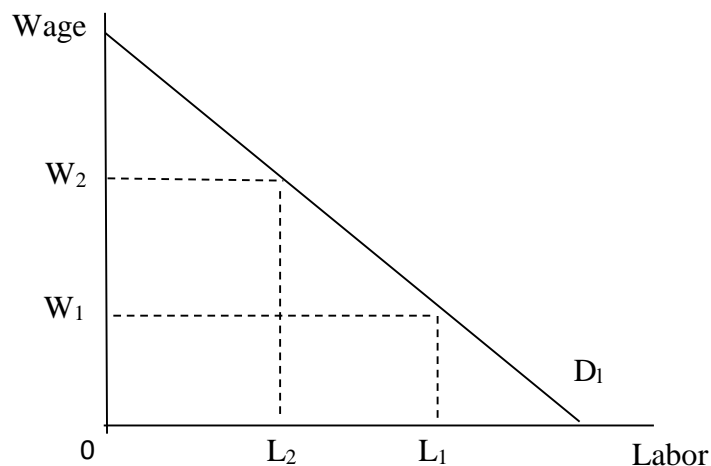
1. How does foreign investment, domestic investment, gross domestic product, government spending, and provincial minimum wage affect the absorption of labor based on high and low education?
2. Which variables have the most effect on the absorption of highly educated and low-skilled workers?

LITERATURE REVIEW

Labor Demand Theory

Demand is a relation between quantity and price. If it matches the workforce, then demand is the relationship between the quantity of labor and wages. In the labor market, the labor demand curve shows the maximum number of workers employed at various possible wage levels in a given period of time. (Arfida, 2003) Below is a picture of the labor demand curve:

Figure 4 Labor Demand Curve



Source: Arfida (2013)

The demand curve for labor has a negative slope. Where when the wage rate increases from W_1 to W_2 , the demand for labor will decrease from L_1 to L_2 . The demand for labor can be influenced by several factors such as changes in wage levels and changes in other factors that affect the demand for production products. (Arfida, 2003)

a. Wages

Changes in wage levels can affect the low and high costs incurred by the company. If we use the assumption that when the wage rate increases, there will be a scale-effect and a substitution-effect. Scale-effect is a decrease in the amount of labor input needed due to the effect of a decrease in production scale. Meanwhile, substitution-effect is a decrease in the number of workers needed due to the addition of high technology in the form of machines.

b. Production

An increase or decrease in a market demand for the output of the company can affect the demand for labor. When the demand for output from production increases, producers will increase their production. So that producers will increase their inputs, one of which is labor as a driver of increasing production.

c. Capital Goods Price

A decrease in the price of capital goods will cause the price of individual goods to decrease. When this happens, producers will increase the production of their goods because demand increases due to falling prices of goods. In addition, the demand for labor will increase due to an increase in the company's activities in producing its goods.

Theory Harrod-Domar

Harrod-Domar's theory is known as the growth theory. According to this theory, investment creates demand and enlarges production capacity. Large production capacity will require greater input demand as well. When the production capacity is enlarged, it requires labor as input. So that when investment increases, then the absorption of labor will also increase (Arsyad, 1999). Investment is an activity that can be regarded as investment in a production or economic activity with the aim of making a profit.

Samuelson (2004) states that investment is an increase in the stock of capital or goods in a certain place or country, such as buildings for production equipment, and inventory items within a certain period. Investment is an important factor, where investment can move the economy of a country. Because investment can increase production capacity, increase national income and create new jobs so that it will increase employment, Todaro (2000). Furthermore, Sukirno (2008) investment is a cost in providing production equipment or buying equipment to increase production capacity.

Theory Keynesian

This theory describes that the economy's total income in the short term is largely determined by the desire of households, companies, and governments to spend their income. Thus aggregate expenditures can be distinguished into four components: household consumption, private investment, government expenditures, and exports. Government spending has a role to play in achieving economic activities through government policies to overcome the slow pace and economic growth, so that the government needs to increase spending on infrastructure development, ports, and developing education.

Keynesian was introduced by J.M. Keynes. According to Keynes, the total income in the short run economy is determined by households, firms and the government to spend their income. This can also be referred to as aggregate expenditure consisting of the following components, namely household consumption, investment, government spending and export-import. In the economy, one of the elements of aggregate expenditure is government spending. Government spending in this case has a role to overcome unemployment and economic growth. The government as a policy maker can regulate fiscal policy in accordance with the state of the economy. The government can spend its expenditure on development expenditures such as infrastructure, ports and education development. When economic activity increases due to an increase in government spending, economic growth will also increase. It can be said that there is an increase in economic growth. So that with the increase in government spending it can lead to an increase in the level of output. With the increase in output, additional inputs such as labor are needed. So it can be said that government spending can increase employment.

METHODOLOGY

Research Variables and Operational Definitions

This research is a type of quantitative research because it uses data in the form of numbers. The data used is secondary data obtained from the static central agency. The location studied in this study is in Indonesia. The variables used are dependent and independent. Dependent variables in this study are the absorption of labor based on higher and low education, while the independent variables in this study are a foreign investment, domestic investment, GDP, government spending, and wages. The data used is panel data that is data of 34 provinces in Indonesia from 2007 to 2019. Data was obtained from *Badan Pusat Statistik (BPS)*. The operational definition of each variable is used as follows:

a. Absorption Of Labor

The amount of labor measures the variable absorption of labor. What is meant by the workforce in this study is the number of people the age of 15 years and above who are actively working based on the last education completed. These dependent variables of absorption of highly educated and low-educated labor are expressed in units of people. The variable absorption of highly educated labor will be measured by the number 1, and the low educated is measured by the number 0. (Height =1; Low = 0)

b. Foreign Investment

Foreign investment variables are expressed in million dollars.

c. Domestic Investment

Domestic investment variables are expressed in billion rupiah units.

d. Gross Domestic Product

Variable GDP is measured by constant price GDP expressed in billion rupiah units.

e. Government Expenditure

Government expenditure variables are expressed in billion rupiah units.

f. Provincial Minimum Wage

The variable wage of the provincial minimum is expressed with the national average in rupiah units.

Binary Logistics Regression Analysis

The analysis used in this study is binary logistic regression. Logistic regression is chosen because the bound variable is a dichotomy variable, usually consisting of two values representing the occurrence or absence of an event. This logistic regression is usually identical to a variable that is numbered 0 or 1 (dummy). The logit model used in this study can be described as follows (Nachrowi and Usman, 2002):

$$Y = \text{Ln} \left(\frac{p}{1-p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Y : Labor Absorption Based on Higher and Low Education (Y: 1 = Higher Education, 0 = Low Education)

Ln : log *off* odd

P : Probability

X₁ : Foreign Investment

X₂ : Domestic Investment

X₃ : Gross Domestic Product

X₄ : Government Expenditure

X₅ : Provincial Minimum Wage

e : Error

The steps taken in the logistics method are as follows:

a. The Treatment of Classic Assumptions

The Logit model is a non-linear model, both in parameters and in variables. In the logistics model, it has the following similarities:

$$p_1 = \frac{1}{1+e^{-z}} ; \text{ where } ; Z_1 = \beta_1 + \beta_2 X_1$$

Because the logistic model p_1 has a non-linear relationship with Z_1 , so a classic assumption test is not required in logistic methods. (Nachrowi and Usman, 2002).

b. Goodness Of Fit Test

To find out the model's suitability in logistic regression, It can see the Hosmer-Lemeshow test (Nachrowi and Usman, 2002). Hosmer-Lemeshow statistics follow the distribution of Chi-Square with $df = g-2$ where g is the number of groups, with the following formula:

$$X^2_{HL} = \sum_{i=1}^g \left(\frac{(O_i - N_i \pi_i)^2}{N_i \pi_i (1-\pi_i)} \right)$$

information:

N_i : Total observation frequency of the i -group

O_i : Frequency of observation of the i -group

$\hat{\pi}_i$: Average estimated chances of the 1st group

Testing the model match, the Chi-square value obtained should be compared to the Chi-square value in the table with $df = g-2$. If the $X^2_{HL} > X^2_{(g-2)}$ or sig value > 0.05 , then the model can be said to be feasible or able to predict its observation value.

c. Overall Model Test

To see how free variables affect variables bound together on the model, it can use the likelihood ratio test. This likelihood test ratio is obtained by comparing the log-likelihood function of the existence of a free variable without a free variable. Hypotheses are as follows:

$H_0: \beta_1 = \beta_2 = \dots = \beta_p = 0$ (no independent variable affects dependent variables).

H_1 : At least one j with $\beta_j \neq 0$ $j = 1, 2, \dots, p$ (at least one independent variable that affects dependent variables).

Statistical test ratio likelihood G is a function of L_0 and L_1 that distribute 2 (chi-square) with p -free degrees defined as:

$$G = -2 \ln + \left(\frac{L_0}{L_1} \right)$$

Information:

L_0 : Likelihood without independent variables.

L_1 : Likelihood with the independent variable.

This G statistic follows the distribution of Chi-squares with a p -free degree, so the hypothesis is rejected if $G^2 > X^2$ (α) or p -value $< \alpha$, which means variable X collectively affects non- Y -free variables.

d. Partial Parameter Test

Partial parameter tests are performed after a signification test, or simultaneous test has been conducted. The purpose of this test is to find out which free variables have a significant effect on non-free variables. This test was conducted with wald test with the following hypothesis:

$H_0: \beta_j = 0$ (free variable to j has no significant effect on non-free variables).

$H_1: \beta_j \neq 0$ (free variable to j has a significant influence on non-free variables).

For $j = 1, 2, \dots, p$. With the following test statistics (Nachrowi and Usman, 2002):

$$W = \left(\frac{\beta_j}{Se(\beta_j)} \right)^2$$

The hypothesis would be rejected if $W > X^2$ or p -value $< \alpha$, meaning the X_j -free variable partially affects non- Y -free variables.

e. Determination Test

Test model compatibility using Nagelkerke R square test. In linear regression methods, R-Square usually explains how much percentage the model matches or can explain how large a free variable can explain a bound variable. The value of the Nagelkerke R-square ranges from 1 to 0. If it is one, then there is a perfect match on the effect of free variables on bounds. On the contrary, if it

gets smaller, especially the σ , there is no relationship between free and bound variables.

f. Odds Ratio

Interpretation of logistic regression can be explained by odds ratio. Odds are a way of presenting probabilities that explain the probability that the event will occur divided by the probability that the event will not occur. Odds are the ratio of the probability of success (π) to the probability of failure ($1-\pi$). Odds are defined as (Nachrowi and Usman, 2002);

$$\frac{p}{1-p}$$

Where p represents the probability of success (event $y = 1$) and $1-p$ represents the probability of failure (event $y = 0$ occurs). The estimators for odds ratio on ordinal logistics regression are given as follows (Nachrowi and Usman, 2002):

$$\Psi = \frac{p(Xa)/1-p(Xa)}{(Xb)/1-p(Xb)}$$

Dominant Test

The dominant test is conducted to find which free variables have the most effect on bound variables compared to some other free variables. The dominant variable can be known by looking at the value of the beta coefficient and the largest value of the wald.

RESULTS OF RESEARCH AND DISCUSSION

Binary logistics is an analysis with independent variables numbered 0 or 1. In this study, the variable independent and the value of 1 is the absorption of highly educated labor while the value 0 is low-educated labor. With five dependent variables, namely foreign investment, domestic investment, gross domestic product, government expenditure, and wages, Here is a table that can show the parameters of each variable:

Table 5 Logistics Regression Results

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)
FDI	.372	.216	2.958	1	0.085	1.451
Domestic Investment	-.462	.167	7.608	1	0.006	0.630
GDP	1.051	.434	5.873	1	0.015	2.861
Government Expenditure	.129	.277	.217	1	0.641	1.138
Minimum Wage	2.714	.643	17.794	1	0.000	15.083
Constant	-35.212	6.433	29.962	1	0.000	0.000

Source: SPSS, processed

Based on the table above, it can be compiled regression model in this study, namely:

$$Y = -35.212 + 0.372 X_1 - 0.462 X_2 + 1.051 X_3 + 0.129 X_4 + 2.714 X_5$$

By using the binary logistic regression method, the results of the research are obtained as follows:

1. Goodness Of Fit Test

Model match test or goodness of fit is used to assess the feasibility of a logistics model. This test was conducted using Chi-Square values on Hosmer and Lemeshow. If the significance value is > 0.05 , then the logistic regression model is said to be feasible to use. Likewise, if the value of < 0.05 , then the model is not eligible for use in subsequent analysis. Here is the model match test table:

Table 6 Goodness of Fit Test

Hosmer and Lemeshow Test				
Step	Chi-square	Df	Sig.	
1	5.221	8	0.734	

Source: SPSS, processed

The table above shows that the value of Chi-square is 5.221, and sig is 0.734. Based on this value, because the sig value of 0.734 is greater than alpha (0.05), then the regression model is declared feasible, or the logistic regression model in this study can predict the observation value to be eligible for the model further analysis.

2. Overall Model Test

Model downsizing test, commonly known as the overall model fit, is a test on logistics method by dissociating the value between -2 Log-Likelihood (-2LL) before a dependent variable is block 0 and after there is an independent variable block 1. The overall test model results in a complete between -2LL end and initial -2LL. Here is a table of the overall model test results:

Table 7 Overall Model Test

Iteration	-2 Log Likelihood
1	221.145
2	176.861
3	162.841
4	160.393
5	160.283
6	160.283
7	160.283
Initial -2 Log-Likelihood	226.825

Source: SPSS, processed

The step taken in determining the overall test is to compare between -2LL block one and -2LL block 0. The table above shows that the initial -2LL value is 226,825 while the final -2LL value is 160,543. So there is a decrease of -2LL. This

decrease could mean that the addition of free variables to the model can overall affect bound variables.

In addition to comparing -2LL can also see from the value of the significance of the omnibus test. Omnibus tests are conducted to test independent variables affecting dependent variables. This study means variables of foreign investment, domestic investment, gross domestic product, government spending, and the minimum wage, whether it simultaneously absorbs labor based on low and high education. Measurement can be done by looking at the significance value; if the significance value indicates a value of < 0.05 , then the free variable together has a significant effect on the dependent variable, but if the significant value indicates a value of > 0.05 , then the free variable together has no significant effect on the dependent variable. The following is a table of simultaneous test parameters:

Table 8 Simultan Parameter Test

		Chi-square	Df	Sig.
Step 1	Step	66.542	5	.000
	Block	66.542	5	.000
	Model	66.542	5	.000

Source: SPSS, processed

In the table above, the significance level of 0.000, the value is below 0.05. So it can be said that jointly foreign investment, domestic investment, gross domestic product, government spending, and the minimum wage jointly affect the absorption of low and high educated labor.

3. Determination Test

A determination test is used to see how much variability of independent variables can explain dependent variables. The logistic regression of the value of the coefficient of determination can be seen in Nagelkerke R Square. Here is a table on the coefficient of determination.

Table 9 Determination Test

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	160.283 ^a	.155	.355

Source: SPSS, processed

The Nagelkerke R Square value in this model indicates the number 0.355, which means the variability of the free variable that can be described is 35%. In comparison, other variables outside the model explain 65%. This means foreign investment, domestic investment, GDP, government spending, and the provincial minimum wage can account for 35% of independent variables.

4. Partial Parameter Test

Partial tests on the logistic model were conducted by looking at the significance value of the wald ratio. This test was conducted to see if variables of foreign

investment, domestic investment, gross domestic product, government spending, and the minimum wage partially affect the absorption of labor based on low and high education. Measurement can be seen from the significance value of the wald ratio, and if the significance value indicates a value of < 0.05 , then the dependent variable has a significant influence on the independent variable. The following is the serving table for partial test parameters:

Table 10 Partial Parameter Test

Variable	Wald	Df	Sig.
FDI	2.958	1	.085
Domestic Investment	7.608	1	.006
GDP	5.873	1	.015
Government Expenditure	.217	1	.641
Minimum Wage	17.794	1	.000
Constant	29.962	1	.000

Source: SPSS, processed

Based on Table 11, the significance value shows that the variables PMDN, GDP, and wages show a significance value of less than 0.05. It can be interpreted that the variable has a significant influence on the absorption of labor. In addition to these variables, FDI and government expenditures have a significant value above 0.05, so that the variable can be said to have no significant effect on the absorption of labor.

5. Odds Ratio

Interpretation of coefficients in the logistic regression model is made with an odds ratio (risk ratio) or adjusted probability (probability). The odds ratio value is provided in the "variable in the equation" table in the Exp column (B); here is the odds ratio interpretation table:

Table 11 Odds Ratio

Variable	Exp(B)
FDI	1.451
Domestic Investment	.630
GDP	2.861
Government Expenditure	1.138
Minimum Wage	15.083
Constant	.000

Source: SPSS, processed

Based on the table above, it can be interpreted odds ratio as follows:

a) Exp (B) Foreign Investment

Foreign investment has a 1,451 times higher probability of absorbing highly educated labor than the absorption of low-educated labor.

b) Exp (B) Domestic Investment

Domestic investment has a 0.630 times higher probability of absorbing a low-educated workforce than highly educated labor.

c) Exp (B) Gross Domestic Product

Gross domestic product has a 2,861 times higher probability of absorbing highly educated labor than low-educated labor.

d) Exp (B) Government Expenditures

Government expenditure has a 1,138 times higher probability of absorbing a highly educated workforce than the employment of a low-educated workforce.

e) Exp (B) Provincial Minimum Wage

The provincial minimum wage has a 15,083 times higher probability of absorbing highly educated labor than low-educated labor.

Dominant Test

Based on the table, determining the variables that have the most effect on the absorption of low and high educated labor is seen through the highest beta coefficient value and the lowest significance value of wald ratio and the highest odds ratio value then the most influential is the wage variable. This wage variable has a beta coefficient value of 2,714, which is the highest beta coefficient value compared to other variables. In addition to the highest beta coefficient value, the value of variable wage significance is the most significant value of 0.000. In comparison, the odds ratio is 15,083 highest among other variables. So it can be said that wage variables are the variables that most affect the absorption of low and high educated labor.

The Effect of Foreign Investment on Labor Absorption

The results of this analysis are in line with Wilis's research (2015), where foreign investment has no significant effect on the absorption of educated, trained, and uneducated workers. Meanwhile, with Momongan's research (2013), the results of this analysis are not in line because foreign investment has a significant effect on the absorption of labor.

The results of the analysis showed no significant effect was caused by the replacement of human labor with machines. The improvement of machine technology can replace labor so that the absorption of labor will be reduced. The realization of overseas investment focuses on projects such as the base metal industry, metal goods, chemical industry, pharmaceutical industry, and others that certainly require high technology in the production process so that machines can replace human labor. It also indicates that the amount of labor required from the realization tends to a highly educated workforce with expertise in their fields.

The Effect of Domestic Investment on Labor Absorption

Domestic investment is projected in the natural logarithm of domestic investment. Table 4.1 presents a negative regression coefficient of -0.462 with a significance value of $0.006 < 0.05$, which means H2 is accepted. It can be said that domestic investment has a significant effect on the absorption of low and high educated workers. A negative coefficient of -0.462 means that if domestic investment rises by 1percent, then the logit function decreases by -0.462. Thus the greater the

investment in the country, the lower the chances of absorbing a highly educated workforce.

To see the large opportunities of domestic investment towards the absorption of low and high educated workers. The opportunity value can be seen from the value $\text{Exp}(B) = 0.630$. Due to the negative value of parameters, it can be interpreted that the absorption of labor caused by domestic investment tends to be more likely to the application of low-educated labor 0.630 times greater than the absorption of highly educated labor.

The results of this estimate are not in line with Momongan's research (2013) domestic investment has a significant positive effect on the absorption of labor. Meanwhile, with Wilis's research (2015), the results of this analysis are in line because domestic investment has no significant effect on the absorption of educated and trained workers. The results of the analysis showed a significant negative influence in the regression of logistics opportunities from the influence of domestic investment on the absorption of labor would lead to the absorption of low-educated workers.

The results show that domestic investment is more likely to absorb low-educated labor than absorb highly educated labor. This is due to domestic investment absorbed into relatively less needy sectors such as the food industry itself, the trade and reparation sector, the food crop sector, plantations, and livestock. So the opportunity of absorption of labor tends to be more likely to the absorption of low-educated labor.

Effect of Gross Domestic Product on Labor Absorption

Gross domestic product is projected in the natural logarithm of gross domestic product. Table 4.1 presents a positive regression coefficient of 1,051 with a signification rate of $0.015 < 0.05$, which means that H3 is accepted. Thus, this shows that gross domestic product has a significant effect on the absorption of low and high educated workers. A positive coefficient of 1.051 means that if gross domestic product increases by 1percent, then the logit function increases by 1,051. Thus the greater the gross domestic product, the higher the likelihood of absorbing a highly educated workforce.

To see the huge opportunities of gross domestic product to the absorption of low and high educated labor can be seen with odds ratio. The opportunity value can be seen from the value $\text{Exp}(B) = 2861$. It can be interpreted that the absorption of labor caused by GDP is likely to be more likely to be the absorption of highly educated labor by 2,861 times greater than the absorption of low-educated labor.

The results of this analysis are in line with Wasilaputri's research (2013) PDRB has a significant positive effect on the absorption of labor on the island of Java. In addition, the results of this analysis are also in line with Sari's research (2016), where GDP has a significant negative effect on educated unemployment in East Java, it can be said that when GDP increases, it will decrease educated unemployment which means that on the other hand GDP can increase the absorption of educated workers.

The estimation explains that GDP has a significant positive impact on employment. This suggests that gross domestic product is more likely to absorb highly educated labor than absorb low-educated labor. This is due to the largest contribution to GDP, namely by the industrial sector. The sector in 2019 contributed 19.70 percent

to GDP. This contribution is higher than the agricultural sector, which contributes 12.72 percent to GDP. The industrial sector consists of textile, chemical, pharmaceutical, metal, computer, electronic, optical, and electrical equipment industries. To meet the input of the workforce of this industry requires a highly educated workforce or have special skills.

Effect of Government Expenditure on Labor Absorption

The results of this analysis are not in line with Wilis's research (2015) that government spending has a significant positive effect on the absorption of educated, trained, undated, and trained workers. The results that show this insignificant can be said that the influence of government spending has not been adequately explained on the absorption of labor.

The results showed insignificant because indirect expenditures consisting of employee spending, interest, subsidies, grants, financial assistance, social assistance, unexpected expenditures are always higher than direct spending consisting of employee spending, the administration of goods and services, and capital expenditures. It can be said that direct spending that can absorb labor has a lower contribution than indirect spending that cannot absorb labor.

Effect of Provincial Minimum Wage on Labor Absorption

The provincial minimum wage is projected in the natural logarithm of the provincial minimum wage. Table 4.1 presents a positive regression coefficient of 2,714 with a signification rate of $0.000 < 0.05$, which means that H_5 is accepted. So this shows that UMP has a significant effect on the absorption of low and high educated workers. A positive coefficient of 2,714 can be interpreted if the UMP score increases by 1 percent, then the function of labor absorption logit will increase by 2,714 percent. Thus the higher the minimum wage, the higher the likelihood of absorbing a highly educated workforce.

To see the huge opportunities of UMP towards the absorption of low and high educated workers can be seen with the odds ratio. The opportunity value can be seen from the value $\text{Exp}(B) = 15.083$. It is thought that wages will have a higher chance of impacting the absorption of low-educated workers. The results of the analysis stated that the absorption of labor caused by UMP is likely to be more likely to be the absorption of highly educated labor by 15,083 times greater than the absorption of low-educated labor.

The results of this analysis are in line with the research of Atiyatna et al. (2016). The provincial minimum wage has a significant positive effect on the absorption of labor in South Sumatra. However, the results of the analysis are not in line with Efendi's research (2014) wages have a significant negative effect on the absorption of labor. In addition, the results of the analysis are also not in line with the research of Wilis (2015) where wages hurt the absorption of educated, trained, and undated and trained workers.

The results of the estimates explain that the provincial minimum wage has a significant positive effect on employment. This suggests that the provincial minimum

wage is more likely to absorb highly educated workers than absorb low-educated labor. This is because increasing wages increases people's purchasing power. When the purchasing power of the community increases, the demand for an item will also increase so that the company will increase the output produced by adding inputs, one of which is labor.

CONCLUSION

1. The absorption of labor is influenced by several factors: foreign investment, domestic investment, gross domestic product, government expenditures, and the provincial minimum wage. Foreign investment has an insignificant positive influence, domestic divestment has a significant negative influence, GDP has a significant positive influence, government spending has an insignificant positive influence, and the provincial minimum wage has a significant positive influence.
2. The analysis tool used is binary logistics regression can then see the opportunities of dependent variables against independent variables. Foreign investment, gross domestic product, government spending, and the provincial minimum wage are more likely to affect the absorption of highly educated workers than low education. In comparison, domestic investment has a higher chance of affecting the absorption of low-income workers than higher education.

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