

Determinants of Job Opportunities by Level of Education in Indonesia

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ABSTRACT

This study aims to analyze the effect of investment (PMTB), real wages and GDP on employment opportunities according to the level of education in Indonesia. This study uses panel data regression analysis. Panel data analysis techniques in this study can be done by using the Fixed Effect and Random Effect methods. The period from 2015-2019 covers 34 provinces in Indonesia. The results showed that PMTB investment has a very positive and significant effect on job opportunities according to the level of education in Indonesia. Real Wages have a very negative and significant effect on employment opportunities according to the level of education in Indonesia. GDP has a very positive and significant effect on employment opportunities according to the level of education in Indonesia.

Keywords: Investment, Real Wages, GDP, Job opportunities.

1. INTRODUCTION

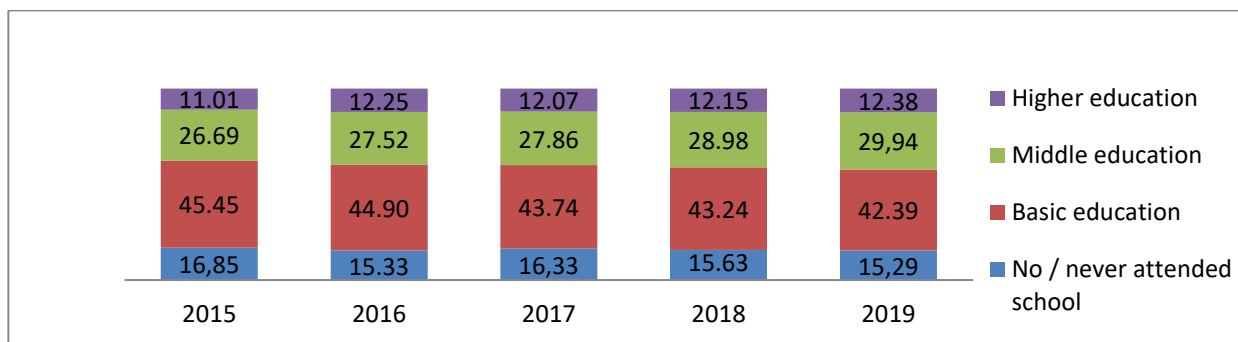
Education is a central element in workforce development. Educational activities provided to acquire knowledge that will improve the performance of the workforce and will help the organization achieve its goals. The educational activities are provided to help the workforce develop capacity and work better in the future [1].

Human capital is an economist's term for the insight and expertise that workers gain through education, training and experience. Human capital increases a country's ability to produce goods and

services. The basic assumption of human capital theory is that a person can increase his income through increased education [2]. Each continuation of one year of schooling means on the one hand increasing the ability to work, but on the other hand delaying the receipt of income for one year in attending the school. So that the increase in education can be said as an investment for human resources [3].

Job opportunities are the number of people who work or people who have got jobs, the more people who work, the wider the job opportunities [4].

The quality of the working population, as reflected in the level of education is seen in the graph below:



Source: BPS Indonesia, 2019

Graph 1. Distribution of Total Working Population Based on Education Completed in 2015-2019

Based on Graph 1.1 above, it shows that in 2015-2019 there was no significant change in the proportion of the number of workers based on the level of

education completed in Indonesia. Thus it can be seen that the number of workers based on the level of higher education and secondary education level is less

than the low level of education consisting of basic education and has not finished elementary school in Indonesia. One can see in 2019 that the level of higher education, namely Diploma and University and the level of secondary education, namely General High School/SMU, Vocational High School/SMK, was 42.32% while the lower education level of basic education was Elementary School, Junior High School and No/not yet. graduated from elementary school by 57.68%. It can be concluded that the number of workers based on the level of education completed does not reflect the quality of job opportunities in Indonesia.

According to [5], explains that job opportunities are business fields or job opportunities that are already available to work as a result of an economic activity, thus job opportunities are jobs that have been filled and opportunities are also participation in development.

Job opportunities can be influenced by several factors according to [6], namely, investment, GDP and wages. According to [7], the amount of investment value will determine the amount of labor demand. The greater the investment, the greater the use of labor. This demand is a market and this affects the number of workers in production activities.

According to [8], investment is a cost made by investors regarding the use of resources such as equipment, buildings, production materials, and other new machines or supplies that are expected to provide a return on investment.

Investment with employment opportunities has a positive relationship. Investment as a factor of production is a very important factor in increasing production capacity or the number of industries [9]. This increase in investment is strongly influenced by the demand for production, both domestic demand [10].

Changes in the level of wages will affect the level of the company's production costs. An increase in

wages will result in a decrease in the quantity of labor demanded. If the wage level rises while the price of other inputs remains, then the price of labor is relatively more expensive than other inputs. This encourages entrepreneurs to replace relatively expensive labor with other cheaper inputs in order to maintain profits [11].

According to [12], Wages or salaries are a very important factor for workers or employees, because after all wages for workers are the main source of their survival. Wages are very basic and vital for workers. With a wage or salary, an employee wants to work. The problem is how to give the wages they receive and the results given by workers or employees to the enterprise in accordance with the expectations and goals of the enterprise.

GDP is an economic problem in the long run. Which means the physical development of the production of goods and services that apply in a country, such as the upgrade and the amount of output. With the increase in the capacity of the production process, it will trigger an increase in existing job opportunities. Because the demand for output will also increase, so the need for more labor will be needed in accordance with the increasing demand for output. The increase in the use of labor indicates the existence of job opportunities as a result of the increase in output [13].

According to [14], GDP is the value of goods and services in production domestically in a certain year. According to [15], economic growth continues to increase, which means that the value of output or goods produced increases and pen producers require additional workers for employees, so that economic growth has effect on job opportunities. Economic growth also plays a role in expanding job opportunities in an area. Economic growth has a significant influence on the development of job opportunities [16].

Table 1. Investment Data, Real Wages, GDP in Indonesia 2015-2019

Year	Investment (IDR)	Growth %	Real Wage (IDR)	Growth %	PDB (IDR)	Growth %
2015	8.982.517	4,88	1.486.748	6,43	9.033.169	4,99
2016	9.434.613	5,03	1.602.486	7,78	9.498.833	5,16
2017	9.912.928	5,07	1.655.737	3,32	9.995.225	5,22
2018	10.425.397	5,17	1.698.895	2,61	10.526.928	5,31
2019	10.949.243	5,02	1.784.638	5,05	11.052.884	4,99

Source: BPS Indonesia 2019

Seen in table 1. above, during the 2015-2019 period the growth of the PMTB investment variable,

real wages and GDP fluctuated, in 2019 the value of PMTB and GDP investment experienced lower

growth compared to the previous year. a different condition occurred in real wages, where in 2019 real wages experienced higher growth than the previous year.

Previous research on job opportunities [17], [18], [15] [19]. It tends to cover employment based on sectors, so it does not differentiate employment opportunities based on education level. Based on job opportunities by education level, it is important to analyze because the results obtained are very useful as a basis for formulating policies on planning for expansion of employment opportunities and synchronization and compatibility between job opportunities and planning in the field of HR. Therefore, this study aims to fill the current gap in analyzing job opportunities based on education level.

From the problems above, the authors are interested in conducting research with the title "Determining Job Opportunities by Education Level in Indonesia".

2. METHODS

This study uses panel data regression analysis. Panel data analysis techniques in this study can be done by using the Common Effect, Fixed Effect and Random Effect methods. Panel data analysis or pool data is a combination of time series data with cross section data using the eviews 9 application. Time series data is from 2015-2019 while cross section data is 34 Provinces in Indonesia. The basic equation for panel data regression is as follows:

$$\begin{aligned}
 Y_{totalit} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} \\
 Y_{1it_1} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} \\
 Y_{2it_2} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} \\
 Y_{3it_3} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it}
 \end{aligned}$$

Table 2. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.255361	0.277586	11.72739	0.0000
LOG(PMTB)	0.403755	0.150066	2.690522	0.0079
LOG(URIIL)	-1.537273	0.126829	-12.12082	0.0000
LOG(PDB)	0.344100	0.102122	3.369512	0.0009

Source: Data Processed

$$\text{Log}Y_{it} = \alpha + \beta_1 \text{Log}X_{1it} + \beta_2 \text{Log}X_{2it} + \beta_3 \text{Log}X_{3it} + \varepsilon_{it}$$

Based on the panel data regression equation above, in order for the coefficient value to be obtained directly in the form of an elasticity value, the model is transformed in logarithmic form so that it becomes as follows:

$$\begin{aligned}
 \text{Log}Y_{totalit} &= \alpha + \beta_1 \text{Log}X_{1it} + \beta_2 \text{Log}X_{2it} + \beta_3 \text{Log}X_{3it} + \varepsilon_{it} \\
 \text{Log}Y_{1it_1} &= \alpha + \beta_1 \text{Log}X_{1it} + \beta_2 \text{Log}X_{2it} + \beta_3 \text{Log}X_{3it} + \varepsilon_{it} \\
 \text{Log}Y_{2it_2} &= \alpha + \beta_1 \text{Log}X_{1it} + \beta_2 \text{Log}X_{2it} + \beta_3 \text{Log}X_{3it} + \varepsilon_{it} \\
 \text{Log}Y_{3it_3} &= \alpha + \beta_1 \text{Log}X_{1it} + \beta_2 \text{Log}X_{2it} + \beta_3 \text{Log}X_{3it} + \varepsilon_{it}
 \end{aligned}$$

Where:

Y = Job opportunities

Employment opportunities according to education level, education level is divided into three groups, namely 1) Elementary Education Level (Elementary School and Junior High School 2) Secondary Education Level (Senior High School (SMU) and SMK). 3) Higher Education Level (Diploma I II III and University).

- α = Constant
- β_1 = Regression Coefficient of X1
- β_2 = Regression Coefficient of X2
- β_3 = Regression Coefficient of X3
- X1 = Investment (PMTB)
- X2 = Real Wages
- X3 = PDB
- ε_{it} = Term of error

3. RESULTS AND DISCUSSION

The regression analysis that has been carried out aims to determine the measurable effect of all independent variables on the dependent variable. The following table summarizes the relationship that occurs in the independent variables that affect the dependent variable.

Analysis of the Variable Relationship PMTB, Real Wages and GDP on Job Opportunities according to General Level of Education in Indonesia

$$\text{Log}Y = 3.255361 + 0.403755 + -1.537273 + 0.344100 + \varepsilon_{it}$$

The results of the analysis show that the effect of PMTB on job opportunities in general (Y) is positive and significant with the coefficient value of the PMTB variable is 0.40% and a probability of $0.00 < \alpha 5\% (0.05)$ then rejecting H_0 and accepting H_a . This means that if PMTB increases by 1%, the general job opportunity (Y) will increase by 0.40%, assuming *ceteris paribus*. The effect of real wages on job opportunities according to education level (Y) is negative and significant with the coefficient value of the Real Wages variable of -1.54% and a probability of $0.00 < \alpha 5\% (0.05)$ then rejecting H_0 and accepting H_a . This means that if the real wage

increases by 1%, then the job opportunity according to education level decreases by -1.54% with the assumption that *ceteris paribus*. And the effect of GDP on employment opportunities according to the level of education (Y) is positive and significant with the coefficient value of the GDP variable of 0.34% and a probability of $0.00 < \alpha 5\% (0.05)$ then rejecting H_0 and accepting H_a . This means, if GDP increases by 1%, employment opportunities will increase, the level of education will increase by 0.34%, assuming *ceteris paribus*.

Analysis of the Influence of Variables PMTB, Real Wages and GDP on Job Opportunities according to the Level of Basic Education in Indonesia

Table 3. Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.578304	0.357605	10.00632	0.0000
LOG(PMTB)	0.570354	0.205870	2.770452	0.0062
LOG(URIL)	-1.879859	0.161703	-11.62536	0.0000
LOG(PDB)	0.280585	0.140222	2.001006	0.0470

Source: Data Processed

$$\text{Log}Y_{1it} = \alpha + \beta_1\text{Log}X_{1it} + \beta_2\text{Log}X_{2it} + \beta_3\text{Log}X_{3it} + \varepsilon_{it}$$

$$\text{Log}Y_1 = 3.578304 + 0.570354 + -1.879859 + 0.280585 + \varepsilon_{it}$$

The results of the analysis show that the effect of PMTB on job opportunities according to the level of basic education (Y1) is positive and significant with the coefficient value of the PMTB variable is 0.57% and the probability is $0.00 < \alpha 5\% (0.05)$ then rejecting H_0 and accepting H_a . This means statistically shows that the PMTB variable has a significant effect on job opportunities according to the level of basic education (Y1) in Indonesia. That is, if PMTB decreases by 1%, then job opportunities according to education level will increase by 0.57% with the assumption that *ceteris paribus*. The effect of real wages on job opportunities according to the level of basic education (Y1) is negative and significant

with the coefficient value of the Real Wages variable of -1.87% and a probability of $0.00 < \alpha 5\% (0.05)$ then rejecting H_0 and accepting H_a . This means that if the real wage increases by 1%, the job opportunity according to the basic education level decreases by -1.87% with the assumption that *ceteris paribus*. And the effect of GDP on employment opportunities according to the level of basic education (Y1) is positive and significant with the coefficient value of the GDP variable of 0.28% and a probability of $0.04 < \alpha 5\% (0.05)$, then rejecting H_0 and accepting H_a . This means, if GDP increases by 1%, employment opportunities according to basic education level will increase by 0.28%, assuming *ceteris paribus*.

Analysis of the Influence of Variables PMTB, Real Wages and GDP on Job Opportunities by Secondary Education Level in Indonesia.

Table 4. Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.265632	0.361982	6.258959	0.0000
LOG(PMTB)	0.500076	0.201956	2.476167	0.0143
LOG(URIL)	-1.201034	0.164574	-7.297832	0.0000
LOG(PDB)	0.396860	0.137502	2.886216	0.0044

Source: Data Processed

$$\text{Log}Y_{2it} = \alpha + \beta_1\text{Log}X_{1it} + \beta_2\text{Log}X_{2it} + \beta_3\text{Log}X_{3it} + \varepsilon_{it}$$

$$\text{Log}Y_2 = 2.265632 + 0.500076 + -1.201034 + 0.396860 + \varepsilon_{it}$$

The results of the analysis show that the effect of PMTB on job opportunities according to the level of secondary education (Y2) is positive and significant with the coefficient value of the PMTB variable is 0.50% and a probability of 0.01 <alpha 5% (0.05) then rejects H0 and accepts. Ha. This means, if PMTB increases by 1%, then job opportunities according to secondary education level will increase by 0.50% with the assumption of ceteris paribus. The effect of real wages on job opportunities according to the level of secondary education (Y2) is negative and significant with the coefficient value of the Real Wages variable of -1.20% and a probability of 0.00 <alpha 5% (0.05) then rejecting H0 and accepting Ha . This means, if the real wage increases by 1%, then the job opportunity according to secondary education level

decreases by -1.20% with the assumption of ceteris paribus. And the effect of GDP on employment opportunities according to the level of secondary education (Y2) is positive and significant with the coefficient value of the GDP variable of 0.39% and a probability of 0.00 <alpha 5% (0.05) then rejecting H0 and accepting Ha. This means, if GDP increases by 1%, then job opportunities according to secondary education level will increase by 0.39% with the assumption of ceteris paribus.

Analysis of the Influence of Variables PMTB, Real Wages and GDP on Employment Opportunities according to Higher Education Levels in Indonesia

Table 5. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.159892	0.317244	6.808298	0.0000
LOG(PMTB)	0.761030	0.172150	4.420732	0.0000
LOG(URIL)	-1.297283	0.145104	-8.940348	0.0000
LOG(PDB)	0.207026	0.117092	1.768052	0.0789

Source: Data Processed

$$\text{LogY3}_{it} = \alpha + \beta_1 \text{LogX1}_{it} + \beta_2 \text{LogX2}_{it} + \beta_3 \text{LogX3}_{it} + \varepsilon_{it}$$

$$\text{LogY3} = 2.159892 + 0.761030 + -1.297283 + 0.207026 + \varepsilon_{it}$$

The results of the analysis show that the effect of PMTB on job opportunities according to the level of higher education (Y3) is positive and significant with the coefficient value of the PMTB variable is 0.76% and a probability of 0.00 <alpha 5% (0.05) then rejects H0 and accepts. Ha. This means, if PMTB increases by 1%, then job opportunities according to higher education level will increase by 0.76% with the assumption of ceteris paribus. The effect of real wages on job opportunities according to the level of higher education (Y3) is negative and significant with the coefficient value of the Real Wages variable of -1.29% and a probability of 0.00 <alpha 5% (0.05) then rejecting H0 and accepting Ha. This means, if the real wage increases by 1%, then the job opportunity according to higher education level decreases by -1.29% with the assumption that ceteris paribus. And the effect of GDP on employment opportunities according to the level of higher education (Y3) is positive and insignificant with the coefficient value of the GDP variable is 0.20% and a probability of 0.07 > alpha 5% (0.05) then rejects Ha and accepts H0. This means that if GDP increases by 1%, employment

according to higher education levels will increase by 0.20%, assuming ceteris paribus.

4. CONCLUSION

The results of research and analysis that have been carried out on Determinants of Employment Opportunities by Education Level in Indonesia, that there is between PMTB investment, real wages and GRDP have different effects on job opportunities according to education level in Indonesia. PMTB has a positive and significant effect on employment opportunities by education level in Indonesia. This means that the higher the gross fixed investment (PMTB) or investment, the more job opportunities according to the level of education in Indonesia will increase. Real Wages have a very negative and significant effect on employment opportunities by education level in Indonesia. This means that if wages increase, it can reduce the number of workers based on the level of basic education in Indonesia. GDP has a very positive and significant effect on employment opportunities by education level in Indonesia. This means that when employment opportunities according to the level of education in Indonesia increase, it can encourage economic growth in Indonesia.

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