

Analysis of the Influence of Macroeconomic Variables on Labor Absorption in Java Island

Agus Tri Basuki^{1✉}, Defi Ratnawati²

^{1,2}Universitas Muhammadiyah Yogyakarta

Correspondence Author: agustribasuki@yahoo.com[✉]

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Abstract: This study aims to analyze the effect of investment, inflation, minimum wage and gross regional domestic product (GRDP) on employment absorption in Java Island, Indonesia. The analytical tool used to analyze the research objectives is the panel data regression model. The selected regression result of this research is the Random Effect Model. The data used in this study uses data issued by the Indonesian Central Bureau of Statistics (DKI Jakarta in numbers, West Java in numbers, Central Java in numbers, West Java in numbers, East Java in numbers, DIY in numbers, and Banten in numbers) from 2013-2021 years. The results of the study show that domestic investment and GRDP have a positive influence on employment in Java. The Provincial Minimum Wage has a negative effect on employment, while foreign investment and inflation have no effect on employment in Java.

Abstrak: Penelitian ini bertujuan untuk menganalisis pengaruh investasi, inflasi, upah minimum dan produk domestik regional bruto (PDRB) terhadap penyerapan tenaga kerja di Pulau Jawa, Indonesia. Alat analisis yang digunakan untuk menganalisis tujuan penelitian adalah model regresi data panel. Hasil regresi terpilih dari penelitian ini adalah *Random Effect Model*. Data yang digunakan dalam penelitian ini menggunakan data yang dikeluarkan oleh Badan Pusat Statistik Indonesia (DKI Jakarta dalam angka, Jawa Barat dalam angka, Jawa Tengah dalam angka, Jawa Barat dalam angka, Jawa Timur dalam angka, DIY dalam angka, dan Banten dalam angka.) dari tahun 2013-2021. Hasil penelitian menunjukkan bahwa PMDN dan PDRB berpengaruh positif terhadap penyerapan tenaga kerja di Pulau Jawa. Upah Minimum Provinsi berpengaruh negatif terhadap penyerapan tenaga kerja, sedangkan penanaman modal asing dan inflasi tidak berpengaruh terhadap penyerapan tenaga kerja di Jawa.



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INTRODUCTION

Economic development is a way to improve the economy in a country, so that it is expected to improve people's living standards through increased employment opportunities and equitable distribution of income. The level of social welfare in a country can be seen from the number of unemployed people. For developing countries like Indonesia, the number of unemployed is still a major problem in economic development. Employment can provide a place for people to work, so they can meet their own needs. In addition, by

working can create goods and services for the economic sector. As Allah says in QS At-Taubah 105: "And Say: Work you, then Allah and His Messenger and the believers will see your work, and you will be returned to (Allah) Who Knows the unseen and the real, then He will inform you of what you have done."

Indonesia is one of the countries with the 4th largest population in the world. The island of Java, which ranks first in terms of population density in Indonesia, consists of DKI Jakarta Province, West Java Province, Central Java Province, East Java Province, Yogyakarta Special Region and Banten

Province. The dense population on the island of Java has a large workforce potential for economic growth. However, this high population can also cause problems regarding the high number of workers so that it must be balanced with the availability of many jobs (Todaro & Smith, 2009).

Another factor that can affect employment is inflation. High inflation rates have an impact on high unemployment. With an increasing inflation rate, it will make the price of goods and services increase. And in the end the demand for goods and services will decrease. A decrease in demand for goods and services will have an impact on reducing the demand for the required workforce. This will have an impact on increasing the number of unemployed people who are increasing.

Several studies regarding employment absorption, among others, were carried out by Widya Putra et al (2022). This study analyzes the effect of Foreign Investment, Domestic Capital and Minimum Wage on Labor Absorption in Indonesia 1990-2019. The results of this study state that Domestic Investment (PMDN) has no effect on employment, while Foreign Investment (PMA) and wages have a significant effect on employment. Then research was conducted by Prasetyo (2022) regarding the Analysis of the Influence of GRDP, Inflation, Minimum Wage, and Education on Labor Absorption in Java Island in 2004-2020. The results of this study stated that GRDP had a positive influence on employment absorption in Java Island, inflation had a negative and insignificant impact on employment absorption, the Provincial Minimum Wage (UMP) also had a negative and insignificant impact on employment absorption, and the level of education had a positive impact. and significant to employment absorption in Java.

Another study conducted by Wihastuti & Rahmatullah (2018) states that the Provincial Minimum Wage (UMP) has a negative and significant influence on employment in Java. Another study conducted by Warapsari et al (2020) concerning the Analysis of the Effects of Inflation, GRDP, and Minimum Wage on Labor Absorption in East Java shows the results of the study that inflation has a

negative and insignificant effect on employment absorption. Meanwhile, GRDP and minimum wages have a positive and significant influence on employment. Furthermore, research conducted by Komaludin (2020) regarding Demand for Labor Analysis: A Study of the Role of Foreign Direct Investment on Employment in Indonesia shows that Domestic Investment (PMDN) and interest rates do not affect employment, while Foreign Investment (PMA) has a significant positive effect on labor demand.

The demand for labor in an industry or company is very different from consumer demand for goods and services. Consumer demand is caused by the use value of the goods and services they want, while the demand of an industry or company for labor aims to help produce goods and services to be produced. Then the labor will be given a wage which is usually interpreted as the price of labor. The costs incurred for the salaries of workers or employees can be called wages. Wages greatly affect the demand for and supply of labor (Simanjuntak, 1985). When discussing the demand for labor from the point of view of companies that employ it, it can be interpreted as the relationship between the quantity of labor in a company and the level of wages given to workers.

The demand for labor in a company in the short term cannot increase capital to increase the amount of production, because in the short term capital is constant. Thus, to increase the amount of output, companies can only increase the number of workers (Ramdani et al., 2021). In the long term, companies are more flexible in using the amount of capital input and labor input. In the long term, capital input is not constant or this capital input can be increased or decreased. Then costs for labor inputs or wages can be easily identified, because wages are given every certain period plus the cost of each period for each profit margin. However, capital inputs cannot be identified directly, so to simplify analysis, it is assumed that companies use capital equipment each period by renting and not buying. This assumption is to identify how much capital and labor input is used to

produce each day with limited spending (Ramdani et al., 2021).

The availability of jobs in an area is influenced by several things, one of which is the success of economic development in that area. If economic development goes well, it will increase employment, so that the large number of labor force is expected to be absorbed by the availability of many jobs. Labor absorption reflects the number of jobs filled from the number of working population. The demand for labor affects how much the working population absorbs. In the economic sector, labor absorption will affect how much productivity is produced, so that it will affect national income. Therefore, the amount of demand for an item will affect the employer's demand for employment. That way if there is an increase in demand for goods and services it will increase the demand for labor (Kuncoro, 2018).

Research conducted by Purnomo (2021) shows that economic growth and inflation have no significant effect on employment in Central Java Province in 2014-2019. Meanwhile, the Regional Minimum Wage and the Human Development Index have a positive and significant effect on employment in Central Java Province in 2014-2019. While research conducted by Habanabakize et al., (2019) shows that there is a two-way causal relationship between employment and investment spending; and the one-way relationship between employment and real wages and labor productivity.

The relationship between investment and employment was carried out by Saadah, et al., (2018). The results of the study show that investment has a significant positive effect on employment in small formal industries in the districts/cities of South Sumatra Province. Pertiwi & Islami's research (2022) shows that GRDP has no effect on employment absorption both in the short term and in the long term, while investment has a positive and significant effect on employment absorption in the short and long term.

Based on the description above, it is interesting to conduct a study on the influence of Domestic Investment (PMDN), Foreign Investment (PMA). Inflation, Provincial Minimum Wage (UMP) and Gross

Regional Domestic Product (PRDB) on Labor Absorption on Java Island.

METHODS

Panel data is a combination of time series data and cross section data. According to Widarjono (2013) in using panel data in an observation, there are several advantages. First, panel data can provide more data because it is a combination of two time series and cross sectional data, so it will produce more degrees of freedom. Second, panel data can overcome problems that arise when removing variables because panel data combines information from time series and cross section data. The data used in this study comes from data from the Indonesian Central Bureau of Statistics (DKI Jakarta in numbers, West Java in numbers, Central Java in numbers, West Java in numbers, East Java in numbers, DIY in numbers, and Banten in numbers) from year 2013-2021.

Linear regression with the ordinary least squares (OLS) approach, it is necessary to test the classical assumptions. The classic assumption test used includes linearity, autocorrelation, heteroscedasticity, multicollinearity and normality tests. In practice, in the linear regression model with the OLS approach, not all classical assumption tests must be carried out. In the OLS method for panel data, the classic assumption test used is the multicollinearity test and the heteroscedasticity test (Gujarati, 2022; Basuki & Prawoto, 2019). In this study using the panel data regression method, namely the following models:

$$\text{LABOR} = f(\text{PMDN}, \text{PMA}, \text{INF}, \text{UMP}, \text{PDRB}) \dots \dots \dots (1)$$

$$\text{LABOR} = \alpha + \beta_1 \text{PMDN}_{it} + \beta_2 \text{PMA}_{it} + \beta_3 \text{INF}_{it} + \beta_4 \text{UMP}_{it} + \beta_5 \text{PDRB}_{it} + e \dots \dots \dots (2)$$

Information:

- LABOR : Labor Absorption
- PMDN : Domestic Investment
- PMA : Foreign Investment
- INF : Inflation
- UMP : Provincial Minimum Wage
- GRDP : Gross Regional Domestic Product

α : Constant

β (1, 2, ..., n) : Regression coefficient of each independent variable

e : Error term
t : 2013-2021
i : Province

The stages in carrying out panel data regression are as follows: 1) carrying out regression with the CEM, FEM and REM models. 2) after the regression is carried out, it is continued with the selection of the best model through the Chow test and Hausman test. 3) Then the selected model is tested for classical assumptions (Gujarati, 2022). After all is fulfilled, it is followed by the interpretation of the research results.

RESULTS AND DISCUSSION

In using panel data, there are three regression model approaches, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. Then in selecting the best model to be used in the regression model, it can be done through the Chow Test and Hausman Test. This test aims to determine which approach is good for this regression model using the Common Effect Model, Fixed Effect Model, and Random Effect Model. The following are the estimation results of the three models:

Table 1: Regression Results of CEM, FEM and REM

LABOR	Regression Model		
	<i>Common Effcet</i>	<i>Fixed Effect</i>	<i>Random Effect</i>
Constant	10,5506	13,7525	10,5506
Standart Error	1,8181	2,1401	1,9817
Probability	0,0000***	0,0000***	0,0000***
PMDN	0,2307	0,3879	0,2307
Standart Error	0,1263	0,1397	0,1251
Probability	0,0741*	0,0083***	0,0713*
PMA	-0,0798	-0,0732	-0,7986
Standart Error	0,0828	0,0895	0,8195
Probability	0,3399	0,4185	0,3347
Inf	0,0264	-0,0542	0,0264
Standart Error	0,0356	0,1293	0,0323
Probability	0,4628	0,6772	0,4177
UMP	-0,2309	-0,3863	-0,2309
Standart Error	0,0709	0,1066	0,0927

LABOR	Regression Model		
	<i>Common Effcet</i>	<i>Fixed Effect</i>	<i>Random Effect</i>
Probability	0,0021***	0,0008***	0,0164**
GDRP (X5)	0,5140	0,3471	0,5140
Standart Error	1,8181	0,1961	0,1835
Probability	0,0074***	0,0844*	0,0073***
R²	0,6706	0,7555	0,6706
F-statistic	19,549	9,5102	19,5491
Probability	0,0000***	0,0000***	0,0000***

Source: Processed Data

The Chow test is a test to determine the selected model to use the fixed effect or random effect in estimating panel data. This can be done by looking at the probability results, if the probability is below 0.05, then H0 is rejected and the correct model is using the fixed effect model. However, if the probability value is above 0.05, then H1 is rejected and the right model is using the random effect (Basuki & Prawoto, 2019). Based on Table 2 above, it can be seen that the probability value is above 0.05 (0.9237 > 0.05). This shows that H1 is rejected, so the right model is using the random effects model.

Table 2: Chow Test Results

Effect Test	Statistic	d.f	Prob.
Period F	0,382405	(8,40)	0,9237

Source: Processed Data

The Hausman test is a test to determine whether to use a random effect model or a fixed effect. This can be seen through the probability value, if the probability value is below 0.05, then H0 is rejected and the correct model is the fixed effect. However, if the probability value is above 0.05, then H1 is rejected and the right model is the random effect (Basuki & Prawoto, 2019).

Table 3: Hausman Test Results

Test Summary	Chi-Sq Statistic	Chi-Sq. d.f	Prob.
Period random	0,786618	5	0,9779

Source: Processed Data

Based on the results of the Chow Test and Hausman Test, the results of the selected

model for analyzing the influence of Domestic Investment, Foreign Investment, Inflation, Provincial Minimum Wage, and Regional Gross Domestic Product on employment using the Random Effect Model. This is because the probability value of the independent variable in the Random Effect model has a significantly better level than the Fixed Effect and Common Effect. Therefore the best model used is the Random Effect model. Then, the classical assumption test is performed for the selected model (Random Effect Model). Multicollinearity test is a test used to determine whether or not there is a linear relationship between the variables used in the regression.

Table 4: Multicollinearity Test Results

	PMDN	PMA	PDRB	TK	UMP	INFLASI
PMDN	1.000	0.438	0.826	0.560	0.388	-0.387
PMA	0.438	1.000	0.580	0.337	0.200	0.127
PDRB	0.826	0.580	1.000	0.551	0.413	-0.155
TK	0.560	0.337	0.551	1.000	-0.414	-0.064
UMP	0.388	0.200	0.413	-0.414	1.000	-0.349
INF	-0.3870	0.121	-0.155	-0.064	-0.349	1.000

Source: Processed Data

Based on Table 4 it is shown that the regression results do not contain multicollinearity. This is shown in Table 4 that there is no high correlation between the variables used (values above 0.9). Next, the heteroscedasticity test was carried out. Heteroscedasticity test is a test to determine whether there is an inequality of variance from the residuals of all observations in the regression model.

Table 5: Glejser Test Results

Variable	Prob.
C	0,0326
LOG(PMDN)	0,5089
LOG(PMA)	0,2811
INF	0,2752
LOG(UMP)	0,6974
LOG(PDRB)	0,5489

Source: Processed Data

Based on Table 5 above, it shows that the probability value of the Heteroscedasticity Test results using the Glejser Test for each variable is more than a significance value of

5% (> 0.05). Therefore, the regression model does not contain heteroscedasticity.

Table 6: Regression results of selected REM models

Variable	Coefficient	t-Statistic	Prob
Log(PMDN)	0,230720	1,844242	0,0713
Log(PMA)	-0,079868	-0,974531	0,3347
Inflasi	0,026416	0,817445	0,4177
Log(UMP)	-0,230916	-2,488494	0,0164
Log(PDRB)	0,514060	2,800321	0,0073

Source: Processed Data

Based on Table 6 above PMDN in Java Island has a positive and significant effect with a degree of significance on employment. PMDN increase will increase employment absorption. This is indicated by the PMDN coefficient value of 0.230720 and has a probability value of 0.0713. This means that if PMDN increases by 1% while the other variables remain the same, then there is a change in the labor absorption variable which will increase by 0.230720%. Then the positive coefficient value indicates that there is a positive influence between PMDN on employment. The increase in investors making investments in Java will make many industrial sectors develop their businesses in the form of new businesses or increase their production capacity. The existence of new business fields and also the addition of production capacity at companies will require additional workers who will increase the absorption of existing workers, expand employment opportunities and are expected to be able to absorb a large number of workers and can reduce unemployment.

The results of this study are in accordance with research that has been conducted by Pratama & Anis (2022) that domestic investment has an influence on employment. This is because investment allows people to be able to develop their economic activities and can increase employment so that later it will increase the absorption of the existing workforce.

In addition to domestic capital, there are also many foreign investors who invest in Java. FDI is expected to provide good output so as to increase welfare in the Java region. The existence of FDI in Java Island can increase capital in producing goods and

services. So that it is expected to increase employment absorption.

Based on the research above, it shows that FDI has a negative and insignificant effect with a significance degree of 5%. The results showed that FDI had no effect on employment in Java. This is because many of the sectors that are the destination for investment are capital-intensive sectors. So even though it increases productivity in a company, it is not significant in absorbing labor. In addition, sometimes foreign investment invested in the Java region also brings its own workforce from the country of origin of the investment. This is the case with research conducted by Ulfa (2021) which states that foreign investment has a negative effect on employment in Java because many of the sectors that are investment destinations are capital-intensive sectors.

In general, inflation will make the prices of goods increase because the amount of money in circulation at that time is more than needed. So that it is very influential on an economy of each region. Based on the results of the research above, it shows that inflation has no effect on employment. The results of this study can be concluded that, the increase in inflation on the island of Java is still in a reasonable condition (under 2 digits). Bank Indonesia manages inflation in two ways, namely by controlling rising prices for goods and services in the country, and maintaining the rupiah exchange rate against foreign currencies, especially the world's main currency, the United States dollar.

This contradicts a theory known as the Phillips curve of A.W. Phillips, who stated that the inflation rate has a relationship with the trade off with unemployment. When it is assumed that inflation is a reflection of an increase in aggregate demand, where based on demand theory, when demand increases, prices will also increase. When prices rise (inflation) accompanied by high demand, companies will increase their production capacity so that they will add workers and reduce unemployment.

Inflation in Java Island occurs from the supply side, where inflation is caused by rising input costs, and can be caused by government policies on prices, for example regarding the elimination of subsidies on

fuel oil (BBM) which causes an increase in the price of these goods. Inflation sometimes also occurs on the supply side, for example when natural disasters occur, delays in the distribution of goods thereby hampering the distribution of stocks that are not smooth. This disruption will result in an increase in the price of goods due to the large number of requests, while the distribution of goods experiences problems so that this can lead to inflation (Nurhardiansyah et al., 2017). The results of this study are the same as Purnomo's research (2021) in his research, namely "Analysis of Labor Absorption in Central Java Province" which states that inflation has no significant effect on employment in Central Java Province.

The Provincial Minimum Wage (UMP) is the minimum wage received by workers which is determined based on government regulations. Every year the minimum wage always increases, even if only by a few percent. The greater the wages received by workers, the greater the ability of a worker to be able to meet his daily needs. Based on the research above, it shows that the UMP has a negative and significant effect on employment absorption. The results of this study can be concluded that, with the increase in UMP, the energy absorption also decreases. This is indicated by the UMP coefficient value of -0.230916 and has a probability value of 0.0164. An increase in UMP by 1% will reduce employment by 0.027540%.

Determination of the amount of wages in each province is determined by the local government concerned, and the amount of the minimum wage in each province is different. This makes business people or manufacturers recruit workers according to needs. However, as is the case with the theory of labor demand, if workers' wages increase, the number of workers employed will decrease and vice versa. David Ricardo's theory also states that the level of wages is in accordance with the conditions of the worker, if the cost of living increases, the wages paid must also increase. This is because, if workers' wages are high, it will affect the welfare of employees and their families. If the assumption is used when rising wages will affect the costs of a company, then it will affect production costs.

When production costs rise will result in rising prices of goods, consumers will respond by reducing consumption. As a result, many goods are not sold, and producers will reduce the amount of production. Therefore, producers will lower their production targets and reduce the workforce, and producers will tend to replace them with capital-intensive production (Putri & Soelistyo, 2018). This is in accordance with research conducted by Jaya (2020), in his research the minimum wage has a negative and significant effect on employment in Java.

Provinces in Java Island are also said to have the greatest contribution to GRDP. GRDP is the result of how much goods and services are produced in an area at a certain time. So that each region will have a GRDP level in accordance with the conditions of each region. The better a region is in utilizing and managing its regional resources, it will affect the GRDP value in that area. Based on the research above, it shows that GRDP has a positive and significant effect on employment absorption. GRDP which has a positive influence on employment in accordance with the hypothesis in this study. The results of this study can be concluded that, with the increase in GRDP, the absorption of labor has also increased. This is indicated by a coefficient value of 0.514060 and a probability value of 0.0073. An increase in GRDP of 1% will increase employment by 0.514060%. The positive coefficient value on GRDP indicates that there is a positive influence between GRDP and employment.

The large number of industrial sectors on the island of Java make the provinces on the island of Java have an important role in contributing to GRDP for national development. With an increase in the value of GRDP, it means that it indicates an increase in the amount of output or a high level of public consumption. The amount of output and demand from the community will increase the amount of production. Therefore, producers will increase the number of workers in order to meet consumer demand. This is in accordance with research conducted by Nurhardiansyah et al., (2017). The results of his research

stated that GRDP had a positive and significant effect on employment in Java.

CONCLUSION

Domestic Investment has a positive effect on employment in every province on the island of Java. This means that an increase in Domestic Investment will increase employment because domestic investment will increase production capacity, thus opening jobs and providing wider employment opportunities and can increase economic growth.

The Provincial Minimum Wage has a negative effect on employment in every province on the island of Java. This means that an increase in the minimum wage affects employment, if there is an increase in wages for workers it will reduce the number of workers in the company.

Gross Regional Domestic Product has a positive effect on employment in every province on the island of Java. This means that an increase in Gross Regional Domestic Product will increase employment in Java Island because an increase in the value of Gross Regional Domestic Product means an increase in output value so companies that increase the amount of output will create jobs.

SUGGESTION

The development of globalization encourages the movement of capital and investment flows to various parts of the world, there is also population migration or movement of labor between countries. In line with that, in order to maintain business continuity and investment. In order to avoid the occurrence of legal problems and excessive use of foreign workers, the Government must carefully determine the policies to be adopted in order to maintain a balance between foreign workers (foreign capital) and domestic workers.

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