

# The Effect of Investment on Youth Unemployment Rate in Indonesia

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**Abstract** – This study aims to analyze the effect of investment (domestic and foreign investment) as well as other factors on youth unemployment in Indonesia. This study uses secondary data obtained from the Central Statistics Agency (BPS) and the Coordination and Investment Agency (BKPM). The data used is panel data from time series data for 2015 – 2021 and cross sections covering 34 provinces in Indonesia. The results of the descriptive analysis show that there are provinces that have high investment but also have high youth unemployment, such as the provinces of South Sumatra, West Java, Banten, Central Sulawesi and North Maluku. The results of the panel data regression analysis show that the domestic investment has a positive and significant influence on youth unemployment in Indonesia. The government through the Coordination and Investment Agency (BKPM) is expected to encourage large companies entering Indonesia to collaborate with local companies and Micro Small Medium Enterprises (MSMEs) to focus more on labor-intensive industries.

**Keywords** – domestic investment, foreign investment, youth unemployment, panel data regression.

## I. INTRODUCTION

Youth unemployment has increased in various countries in the world despite efforts to improve the youth welfare economy. Indonesia is a developing country facing a high youth unemployment rate. Citing data from the Central Statistics Agency (BPS), the unemployment rate for the workforce aged 15-24 years or youth unemployment in Indonesia will reach 19,55% in 2021. Because of this, Indonesia has the second highest youth unemployment rate in Southeast Asia after Brunei Darussalam.

The Problem of unemployment increased during the Covid-19 pandemic. The International Labor Organization or ILO (2020) explains that the young workforce is the most vulnerable population group affected by the Covid-19 pandemic in the field of employment. The Covid-19 pandemic has had a big impact, especially on young workers. Saragih and Usman (2021) explains that the Covid-19 pandemic is impacting youth employment in three ways: disruption to work-based education, training and learning; difficulties in finding work for newcomers; and loss of jobs and income for workers. The Covid-19 pandemic has reduced the number of jobs, especially for young workers. several business sectors stopped operating due to the Covid-19 pandemic, such as restaurants, hotels, transportation, arts and recreation services. In general, these sectors employ more young people. The problem of providing decent and fulfilling jobs is one of the focuses of the Sustainable Development Goals (SDGs) program. Provision of jobs for young unemployed is still a problem of employment in Indonesia. This is based on the fact that

unemployment in Indonesia is dominated by young people. The high rate of youth unemployment in Indonesia shows the government's lack of attention to youth unemployment policies. Ningrum (2016) states that if there are no macro and micro policies that are in favor of the workforce, it is feared that the number of young unemployed will continue to grow and have an impact on various things including problems in society. Unemployed youth also tend to withdraw from social life by reducing their participation in political democracy, the desire to commit suicide increases, and leads to criminal acts. As stated by Sukirno (2006) that unemployment has an impact on increasing crime rates in Indonesia. In the long term, a low level of social welfare due to the large number of unemployed will increase the percentage of poverty. Unemployment has the potential to become a disaster in society if left unchecked.

The high youth unemployment must be overcome by creating as many jobs as possible so that appropriate government policy instruments are needed. Investment, both domestic and foreign investment is one of the biggest instruments for creating jobs. Several studies related to the effect of investment on youth unemployment have been carried out before. Fu and Balasubramanya (2005), Craigwell (2006), and Haddad (2016) show that foreign direct investment is very important for job creation and reducing youth unemployment although different forms of foreign direct investment produce different results. Foreign direct investment will have an impact on reducing unemployment, including youth unemployment. The impact of investment (both foreign and domestic

investment) will expand employment opportunities especially for young people. Hasan (2020) shows that foreign direct investment (FDI) has a negative and significant effect on youth unemployment in Asean countries. These findings are in line with the study of Ebaidalla (2016) which shows that increased domestic investment tends to reduce youth unemployment in member countries of the Organization of Islamic Cooperation (OIC). A study conducted by Anyanwu (2013) gave different results where there was a positive and significant effect of domestic investment on youth unemployment in Africa.

Research on the effect of investment on youth unemployment is considered important in developing countries such as Indonesia which has high youth unemployment to guide policy formulation to achieve sustainable youth employment. Research on the effect of investment (domestic and foreign investment) on youth unemployment in Indonesia is still limited. This is what causes the topic of the effect of investment (domestic and foreign investment) on youth unemployment in Indonesia to be interesting to study. This study aims to analyze the picture of youth unemployment in Indonesia. In addition, this study also analyzes the effect of investment (domestic and foreign investment) as well as other factors on youth unemployment in Indonesia so that it can provide policy recommendations in handling the problem of youth unemployment.

## II. METHODS

This study uses secondary data obtained from the Central Statistics Agency (BPS) and the Coordination and Investment Agency (BKPM). The data used is panel data from time series data for 2015 – 2021 and cross sections covering 34 provinces in Indonesia. The data in this study are:

1. Youth unemployment rate, economic growth, inflation, the contribution of the agricultural and manufacturing sector, young population, gross enrollment rate, labor force participation rate, vulnerable workers, and wage rate obtained from the Central Statistics Agency (BPS).
2. Domestic investment and foreign investment obtained from the Coordination and Investment Agency (BKPM).

### Method Data Analysis and Processing

The analytical method used in this research is descriptive and quantitative method. The descriptive method is used to explain the general picture of youth unemployment in Indonesia. Then the quantitative method was carried out by means of panel data regression analysis to analyze the effect of investment (domestic and foreign investment) as well as other factors on youth unemployment in Indonesia. Data processing was carried out using Microsoft Excel and E-Views 10 software.

### Panel Data Analysis

Panel data (panel pooled data) is a combination of cross section and time series data. In other words, panel data is data from the same individuals observed over a certain period of time. If we have T observation periods ( $t = 1, 2, \dots, T$ ) and N number of individuals ( $i = 1, 2, \dots, N$ ), then with panel data we will have a total of NT observation units.

#### A. Common Effects Model

The common effects model is the simplest panel data approach. This model does not pay attention to the individual or time dimensions, so it is assumed that the behavior between individuals is the same in various time periods. This model only combines time series and cross section data and estimates it using the least squares approach (pooled least squares). The regression equation in the common effects model can be written as follows:

$$y_{it} = \alpha + X'_{it}\beta + \varepsilon_{it} \quad (1)$$

where  $i$  denotes the cross section (individuals) and  $t$  denotes the time period. Assuming the error component in ordinary least squares processing, the estimation process can be performed separately for each unit cross section.

Based on the assumption of the residual variance-covariance matrix structure, in the common effects model, there are 4 estimation methods that can be used, namely:

1. Ordinary Least Square (OLS), if the residual variance-covariance matrix structure is assumed to be homoscedastic and there is no crosssectional correlation.
2. Generalized Least Square (GLS)/ Weighted Least Square (WLS): Cross Sectional Weight, if the residual variance-covariance matrix structure is assumed to be heteroscedastic and there is no crosssectional correlation.
3. Feasible Generalized Least Square (FGLS)/ Seemingly Uncorrelated Regression (SUR) or Maximum Likelihood Estimator (MLE), if the residual variance-covariance matrix structure is assumed to be heteroscedastic and there is a cross sectional correlation.
4. Feasible Generalized Least Square (FGLS) with an autoregressive (AR) process on the error term, if the residual variance-covariance matrix structure is assumed to be heteroscedastic and there is a time-to-time correlation in the residuals.

#### B. Fixed Effects Model

The fixed effects model assumes that there are different effects between individuals. This difference can be accommodated through the difference in the intercept. In general, the model equation is as follows:

$$y_{it} = \alpha + D\alpha_i + X'_{it}\beta + \varepsilon_{it} \quad (2)$$

Based on the assumption of the residual variance-covariance matrix structure, in the fixed effects model, there are 3 estimation methods that can be used, namely:

1. Ordinary Least Square (OLS/LSDV), if the residual variance-covariance matrix structure is assumed to be homoscedastic and there is no cross-sectional correlation.
2. Weighted Least Square (WLS), if the structure of the residual variance-covariance matrix is assumed to be heteroscedastic and there is no cross-sectional correlation.
3. Seemingly Uncorrelated Regression (SUR), if the residual variance-covariance matrix structure is assumed to be heteroscedastic and there is a cross-sectional correlation.

### 3. Random Effects Model

The Random Effects Model assumes that there are different intercepts for each individual which are random (stochastic) in nature. In this case, there are two components that contribute to the formation of errors, namely individuals and time so that the random effect model equation is as follows:

$$y_{it} = \alpha + \beta X'_{it} + \varepsilon_{it}; \varepsilon_{it} = u_i + v_t + w_{it} \quad (3)$$

where  $u_i$  is the error cross section component,  $v_t$  is the error time series component and  $w_{it}$  is the combined error component.

In the random effect model, estimation using the Ordinary Least Square (OLS) method can be used if it meets the assumption  $\sigma_u^2 = \sigma_v^2 = 0$ . If these assumptions are not met, then the random effect model needs to be estimated using the Generalized Least Square (GLS) method.

### Model Selection

#### 1. Chow test

To choose which model is more suitable between common effects or fixed effects, the Chow test can be used with the following hypotheses:

$H_0$ : The common effects model is better than the fixed effects

$H_1$ : The fixed effects model is better than the common effects

The F test statistics are as follows:

$$F_{obs} = \frac{(SSR_1 - SSR_2)/(N-1)}{(SSR_2)/(NT-N-k)} \sim F_{(N-1), (NT-N-k)} \quad (4)$$

where  $N$  = number of individuals,  $T$  = observation period,  $k$  = number of independent variables in the fixed effects model,  $SSR_1$  = sum squared residual from the common effect models, whereas  $SSR_2$  = sum squared residual from the fixed effects model. If  $F_{obs}$  is greater than  $F_{\alpha; (N-1), (NT-N-k)}$  then the null hypothesis will be rejected so that it can be concluded that the fixed effects panel data regression model is better than the common effects model.

**3. Hausman test** To choose which model is more suitable between fixed effects or random effects, the Hausman test can be used with the following hypothesis:

$H_0$ : The random effects model is better than the fixed effects

$H_1$ : Fixed effects model is better than random effects

The Hausman test statistics are as follows:

$$\chi^2_{obs} = (\hat{\beta} - \hat{\beta}_{GLS})' \text{Var}(\hat{\beta} - \hat{\beta}_{GLS})^{-1} (\hat{\beta} - \hat{\beta}_{GLS}) \quad (5)$$

The Hausman test statistic above follows the chi-square distribution with as many degrees of freedom as the number of independent variables ( $k$ ). If the value of the Hausman statistic is greater than the critical value of the chi-square statistic, then the null hypothesis will be rejected, which means that the correct estimation model for panel data regression is the fixed effects model rather than the random effects model.

### 3. Bruesch-Pagan Test

To choose which model is more suitable between common effects or random effects, the Bruesch-Pagan test can be used with the following hypotheses:

$H_0$ :  $\sigma_\varepsilon^2 = 0$  (the intercept is not random)

$H_1$ :  $\sigma_\varepsilon^2 \neq 0$  (intercept is random)

The statistical value of LM is as follows:

$$LM = \frac{NT}{2(T-1)} \left[ \frac{\sum_{i=1}^n (\sum_{t=1}^T e_{it})^2}{\sum_{i=1}^n \sum_{t=1}^T e_{it}^2} - 1 \right]^2 \sim \chi^2_1 \quad (6)$$

where  $N$  = number of individuals,  $T$  = observation period and  $e_{it}$  is the residual common effects model. If LM is greater than the chi-square in the table with a certain  $\alpha$  significance, then the null hypothesis will be rejected, which means that the appropriate estimation model for panel data regression is a random effects model.

### 4. Testing the Residual Variance-Covariance Structure

Testing the assumptions of the variance-covariance structure was carried out to determine whether the residual variance-covariance structure meets the assumptions of homoscedastic or heteroscedastic structure and there is no cross-sectional correlation. The null hypothesis ( $H_0$ ) used is that the residual variance-covariance structure is homoscedastic. While the alternative hypothesis ( $H_1$ ) is that the residual variance-covariance structure is heteroscedastic.

$H_0$ :  $\sigma_i^2 = \sigma^2$  (Homoscedastic residual variance-covariance structure).

$H_1$ :  $\sigma_i^2 \neq \sigma^2$  (Heteroskedastic residual variance-covariance structure).

Mathematically, the test statistics used can be formulated as following:

$$LM = \frac{T}{2} \sum_{i=1}^N \left[ \frac{\hat{\sigma}_i^2}{\hat{\sigma}^2} - 1 \right]^2 \sim \chi^2_{N-1} \quad (7)$$

where  $T$  is period observation,  $N$  is the number of individuals,  $\hat{\sigma}_i^2$  is the variance the residual of the  $i$ -th

equation in the homoskedastic condition, and  $\hat{\sigma}^2$  is the mean square error of the system of equations in the homoskedastic condition. The LM test statistic follows the distribution of the chi-square statistic with N-1 degrees of freedom. If the value of the LM statistic is greater than the critical value of the chi-square statistic, then the null hypothesis will be rejected, which means that the residual variance-covariance structure is heteroscedastic without any correlation between units. The method that can be used for the heteroscedastic residual variance-covariance structure is Weighted Least Squares (WLS).

#### Selection of Heteroscedastic Structure Estimator and No CrossSectional Correlation or SUR with LM Test

This test is carried out if the results of the LM test show that the residual variance-covariance structure is heteroscedastic. In this test, the null hypothesis used is that the residual variance-covariance structure is heteroscedastic and there is no cross-sectional correlation. While the alternative hypothesis is that the residual variance-covariance structure is heteroscedastic and there is a cross-sectional correlation (Seemingly Uncorrelated Regression/SUR). The test statistic used is formulated as follows:

$$\lambda_{LM} = T \sum_{i=2}^n \sum_{j=1}^{i-1} r_{ij}^2 \sim \chi_{N(N-1)/2}^2 \quad (8)$$

where N is total individual, T is observation period, and  $r_{ij}^2$  is the residual correlation coefficient between the ith and jth equations.

This LM test statistic follows a chi-square distribution with degrees of freedom N (N -1)/2. If value  $\lambda_{LM}$  statistics is greater than the critical value of the chi-square statistic for a particular  $\alpha$ , then the null hypothesis will be rejected, which means that the residual variance-covariance structure is heteroscedastic and there is cross-sectional correlation (Seemingly Uncorrelated Regression/SUR).

#### Classic Assumption Test

Assumption test is carried out to determine the requirements of a model to be used. The expected model is an efficient, feasible and consistent model, it is necessary to detect violations of model assumptions. The violations that often appear in the regression equation are residuals not following a normal distribution, there is variation in the residual variance (heteroscedasticity), there is a correlation between observations in one variable (autocorrelation), and there is a high correlation between independent variables (multicollinearity). There are several ways to detect the assumption test. The method used in this study for the normality test used the Jarque-Bera test, the heteroscedasticity test used the Glejser test, the autocorrelation test used the Durbin Watson test, and finally the multicollinearity test used the correlation value between independent variables.

#### Model Specifications

This study uses an existing model by modifying it according to research needs. This study refers to the equation model used by Mkombe et al. (2020) and Baah-Boateng (2016). The model for estimation is determined as follows:

$$YUR_{it} = \beta_0 + \beta_1 LN\_DI_{it} + \beta_2 LN\_FI_{it} + \beta_3 EG_{it} + \beta_4 INF_{it} + \beta_5 YP_{it} + \beta_6 GER_{it} + \beta_7 AGR_{it} + \beta_8 MANU_{it} + \beta_9 LFPR_{it} + \beta_{10} VUL_{it} + \beta_{11} LN\_W_{it} + \beta_{12} DC_{it} + U_i + \varepsilon_{it} \quad (9)$$

Information:

- $YUR_{it}$  : Youth unemployment the i-th province of the t-th year (in percent),
- $LN\_DI_{it}$  : Domestic investment the i-th province of the t-th year (in percent),
- $LN\_FI_{it}$  : Foreign investment the i-th province of the t-th year (in percent),
- $EG_{it}$  : Economic growth the i-th province of the t-th year (in percent),
- $INF_{it}$  : Inflation the i-th province of the t-th year (in percent),
- $YP_{it}$  : Young population the i-th province of the t-th year (in percent),
- $GER_{it}$  : Gross enrollment rate the i-th province the t-th year (in percent),
- $AGR_{it}$  : Contribution of the agricultural sector the i-th province the t-th year (in percent),
- $MANU_{it}$  : Contribution of manufacturing sector i-th province of the t-th year (in percent),
- $LFPR_{it}$  : Labor force participation rate the i-th province of the t-th year (in percent),
- $VUL_{it}$  : Vulnerable workers to the i-th province of the t-th year (in percent),
- $LN\_W_{it}$  : The average wage for workers/employees the i-th province of the t-th year (in percent),
- $DC_{it}$  : dummy of the economic crisis during the Covid-19 pandemic in the i-th province of the t-th year (before 2020 = 0, 2020 and 2021 = 1),
- $U_i$  : Error component of the i-th province,
- $\varepsilon_{it}$  : Error component for the i-th province of the t-th year.

### III. RESULT AND DISCUSSION

Based on the results of the August National Labor Force Survey (Sakernas) conducted by BPS, the highest youth unemployment occurred in 2015 reaching 22,59 percent, which means that out of 100 residents aged 15-24 years who are included in the labor force, there are around 22-23 unemployed people. The highest increase in cases of youth unemployment occurred in 2020 by 1,77 percentage points when compared to 2019. This occurred due to the Covid-19 pandemic which greatly affected the employment sector in Indonesia, especially youth unemployment.

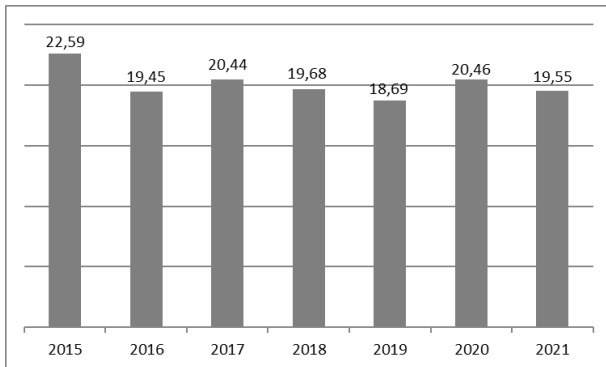


Fig.1. Youth unemployment in Indonesia 2015-2021 (Percent)

To see the relationship between youth unemployment and investment (domestic and foreign investment), it can be explained by quadrant analysis in Figures 2 and 3. In Figure 2, the quadrant that needs attention is quadrant I (high youth unemployment and high domestic investment). Quadrant I consists of the provinces of South Sumatra, West Java and Banten. In Figure 3, the quadrants that need attention are quadrant I (high youth unemployment and high foreign investment). Quadrant I consists of the provinces of South Sumatra, West Java, Banten, Central Sulawesi and North Maluku.

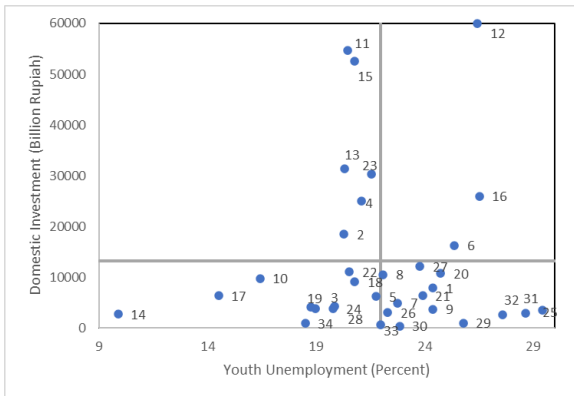


Fig.2. Quadrant Analysis of Youth Unemployment and Domestic Investment (DI) in 2021.

Information:

1=Aceh; 2=North Sumatra; 3=West Sumatra; 4=Riau; 5=Jambi; 6=South Sumatra; 7=Bengkulu; 8=Lampung; 9=Kep. Bangka Belitung; 10 = Kep. Riau; 11=DKI Jakarta; 12 = West Java; 13 = Central Java; 14=DI Yogyakarta; 15= East Java; 16=Banten; 17=Balinese; 18=NTB; 19=NTT; 20=West Kalimantan; 21=Central Kalimantan; 22=South Kalimantan; 23=East Kalimantan; 24=North Kalimantan; 25=North Sulawesi; 26=Central Sulawesi; 27=South Sulawesi; 28=Southeast Sulawesi; 29=Gorontalo; 30=West Sulawesi; 31=Moluccas; 32=North Maluku; 33=West Papua; 34=Papua

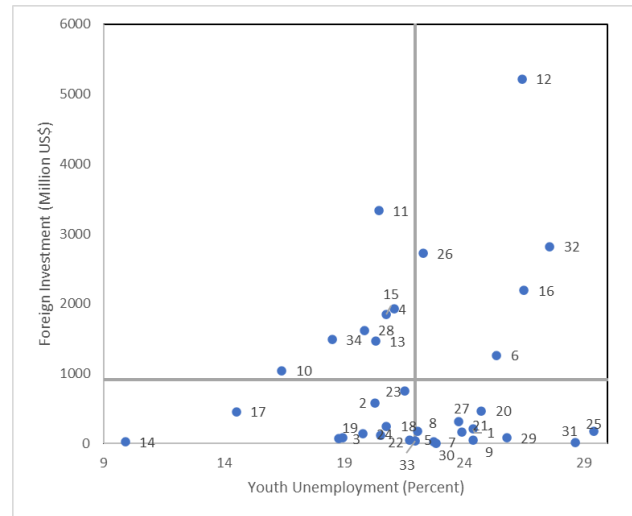


Fig.3. Quadrant Analysis of Youth Unemployment and Foreign Investment (FI) in 2021

Information:

1=Aceh; 2=North Sumatra; 3=West Sumatra; 4=Riau; 5=Jambi; 6=South Sumatra; 7=Bengkulu; 8=Lampung; 9=Kep. Bangka Belitung; 10 = Kep. Riau; 11=DKI Jakarta; 12 = West Java; 13 = Central Java; 14=DI Yogyakarta; 15= East Java; 16=Banten; 17=Balinese; 18=NTB; 19=NTT; 20=West Kalimantan; 21=Central Kalimantan; 22=South Kalimantan; 23=East Kalimantan; 24=North Kalimantan; 25=North Sulawesi; 26=Central Sulawesi; 27=South Sulawesi; 28=Southeast Sulawesi; 29=Gorontalo; 30=West Sulawesi; 31=Moluccas; 32=North Maluku; 33=West Papua; 34=Papua

### Analysis of the Effect of Investment on Youth Unemployment in Indonesia

#### Best Model Selection

Selection of the best model using the Chow test produces an F-statistic value = 10,97 and p-value less than alpha 0,05 which is equal to 0,00. Thus, the null hypothesis is rejected, so it can be concluded that the fixed effects model is better than the common effects model. The next test is the Hausman test which produces Hausman-statistic = 22,91 and the p-value is less than alpha 0,05 which is equal to 0,00. The decision taken is to reject the null hypothesis, so it can be concluded that the fixed effects model is better than the random effects model.

#### Testing the Linear Regression Model Assumptions

The selected panel data regression equation is the fixed effects model. Testing the assumptions of the residual variance-covariance structure found that the residual variance-covariance matrix structure is heteroscedastic and there is cross-section correlation in the residual variance-covariance matrix. To overcome this, the fixed effect model uses the FGLS estimation method. Normality and residual (error) assumptions have been met. This can be seen from the Jarque-Bera significance which shows that the probability value of all residual cross-sections is 0,07, more than 5 percent alpha. This shows that the null

hypothesis is not rejected, so the conclusion drawn is that the residuals are normally distributed or in other words the assumption of normality in the best model has been fulfilled. The homoscedasticity assumption has been fulfilled. Based on the Glejser test, it was found that the probability value for each independent variable was more than an alpha value of 5 percent. The conclusion generated based on this test is that the estimation model is free from violations of the heteroscedastic assumption. Based on the results of the Durbin Watson test, the assumption of autocorrelation has been fulfilled that the estimation model is free from violations of the autocorrelation assumption. The non-multicollinearity assumption has also been fulfilled. This is shown where the correlation value between independent variables is below 0,80. Therefore, the resulting conclusion is that there is no linear relationship (multicollinearity) between the independent variables.

### Regression Model of Youth Unemployment Panel Data in Indonesia

After going through several test stages, the selected panel data regression equation is the fixed effects model using the FGLS estimation method. From the processing results using Eviews 10, statistical values are obtained which are presented in Table 1.

Table 1: Estimation Results of Youth Unemployment Model

Description: \*significant at 1 %; \*\* significant at 5 %; \*\*\* significant at 10 %

Source: Output Eviews 10, processed

Adjusted R-squared of 0,88 indicates that 88 percent of the variability in youth unemployment in Indonesia can be explained by the variability in the independent variables. The p-value of the F test indicates that there is at least one independent variable that has a significant effect on youth unemployment in Indonesia with a significant level of 5 percent. Partial testing using t-test statistics results that the variables of domestic investment, economic growth, inflation, the contribution of the agricultural sector, LFPR, wage rates, and the dummy economic crisis during the Covid-19 pandemic have a significant effect on youth unemployment in Indonesia.

Domestic investment (DI) has a positive and significant effect on youth unemployment in Indonesia, while foreign investment (FI) has a positive and insignificant effect on youth unemployment in Indonesia. These results are consistent with conditions where investment realization in Indonesia is still dominated by capital-intensive sectors, compared to labor-intensive sectors which absorb more labour. The lack of government support in the development of sectors and economic activities that absorb labor also influences employment absorption in Indonesia. These findings are also supported by the study of Ndjie et al. (2019) where foreign direct investment has a positive

effect on youth unemployment in Africa. Ndjie et al. (2019) explained that different theoretical models and empirical investigations for different countries or periods often show inconsistent results. These discussions and controversies suggest that the effect of FDI on the labor market can change from country to country. This effect can depend on the shape of the country and the particular investment. In principle the positive effect on employment is usually much higher if the FDI is in the form of Greenfield Investment. On the other hand, when inflows of foreign capital take the form of purchasing privatized companies, it can usually have a small or even negative effect on employment (Hisarciklilar et al. 2009).

Economic growth (EG) has a negative and significant effect on age unemployment in Indonesia. These findings are in line with the research by Choudhry et al. (2013) which revealed that changes in economic conditions have a large impact on youth unemployment, even the impact is greater than on unemployment in general. Inflation (INF) has a negative and significant effect on youth unemployment in Indonesia. In other words, it can be said that if the inflation rate decreases, the youth unemployment rate will increase. These results indicate that the Phillips curve phenomenon in Indonesia still occurs. Based on these results it can be seen that there is a trade off between inflation and the unemployment rate. This result is in line with the findings of Mkombe et al. (2020), Hasan (2020), Bayrak and Tatli (2018), and

Independent Variable	Coeff.		Prob.
C	133,12		0,00
LN_DI	0,23**		0,04
LN_FI	0,18		0,19
EG	-0,07***		0,09
INF	-0,10*		0,01
YP	0,11		0,27
GER	-0,04		0,29
AGRI	-0,18**		0,05
MANU	-0,08		0,25
LFPR	-0,41*		0,00
VUL	0,06		0,20
LN_W	-5,62*		0,00
DC	1,30*		0,00
Number of Observations			238
R-squared			0,91
Adjusted R-squared			0,88
F-Statistics			40,81
Prob (F-Statistic )			0,00

Ebaidalla (2016) who also found that there is a negative relationship between unemployment and inflation.

The young population (YP) has a positive and insignificant effect on youth unemployment in Indonesia. In contrast to these results, the education level of youth (GER) has a negative and not significant effect on youth unemployment in Indonesia. The contribution of the agricultural sector (AGRI) has a negative and significant effect on youth unemployment in Indonesia. This result is in line with the findings of Daud (2017) which states that growth in the agricultural sector will directly have a positive impact on employment so as to reduce unemployment. The contribution of the manufacturing sector (MANU) has a negative and insignificant effect on youth unemployment in Indonesia. These results are influenced by conditions in Indonesia where investment in the manufacturing sector is more capital-intensive and the use of technology replaces labor in the manufacturing sector.

Labor force participation rate (LFPR) has a negative and significant effect on youth unemployment in Indonesia. These results are in line with the findings of Baah-Boateng (2016) which explains that Labor force participation rate (LFPR), which is a country's ability to generate employment, makes a significant contribution to reducing youth unemployment in Africa. An increase in Labor force participation rate (LFPR) not only has an effect on reducing the population that is not active in the labor market, but also has the effect of reducing youth unemployment and vice versa (Baah-Boateng, 2016). Vulnerable workers (VUL) have a positive but not significant effect on youth unemployment in Indonesia. This insignificant effect is supported by the percentage of youth working in the formal sector which is higher than the informal sector. More than half of youth (55,23 percent) in 2021 will work in the formal sector, the remaining 44,77 percent will work in the informal sector. The same thing also happened in previous years.

The wage rate (W) has a negative and significant effect on youth unemployment in Indonesia. These findings are in line with Putra's study (2018) which shows that the provincial minimum wage has a negative and significant effect on urban youth unemployment in Indonesia. The dummy variable of the economic crisis during the Covid-19 pandemic (DC) has a positive and significant impact on youth unemployment in Indonesia. The Covid-19 pandemic has caused labor conditions to become unstable, resulting in an increase in the youth unemployment rate in Indonesia. The pandemic has caused many workers to experience layoffs as a result of the disruption.

#### IV. CONCLUSION

The results of the descriptive analysis show that there are provinces that have high investment (either domestic and foreign investment) but also have high youth unemployment, such as the provinces of South Sumatra, West Java, Banten, Central Sulawesi and North Maluku.

The results of the panel data regression analysis show that the domestic investment (DI), economic growth, inflation, the contribution of the agricultural sector, Labor force participation rate (LFPR), wage rates, and the dummy economic crisis during the Covid-19 pandemic have a significant effect on youth unemployment in Indonesia. Most of the investment realization in Indonesia is capital-intensive investment. This is consistent with the results of this study where domestic investment (DI) has a positive and significant influence on youth unemployment in Indonesia. Inflation, economic growth, and the contribution of the agricultural sector have a negative and significant effect on youth unemployment in Indonesia. Labor force participation rate (LFPR) has a negative and significant effect on youth unemployment in Indonesia, while the wage rate has a positive and significant effect on youth unemployment in Indonesia. Meanwhile, the dummy economic crisis during the Covid-19 pandemic had a positive and significant effect on youth unemployment in Indonesia.

The government through the Coordination and Investment Agency (BKPM) is expected to encourage large companies entering Indonesia to collaborate with local companies and Micro Small Medium Enterprises (MSMEs) to focus more on labor-intensive industries. It is hoped that the existence of the Job Creation Law passed by the government will encourage the entry of quality investment so that it will have an impact on employment and increase economic growth in Indonesia. The government is also expected to increase employment opportunities for young people. Serious efforts are needed for the government to expand employment opportunities, for example by providing and expanding space and access for job seekers to be able to develop hard skills and soft skills through verified training that has been recognized by companies. The government through the Ministry of Manpower also needs to optimize the Independent Workers Program so that job seekers can independently create job opportunities and business opportunities in the informal sector.

#### REFERENCES

- [1] Anyanwu, J. (2013). Characteristics and macroeconomic determinants of youth employment in Africa. *African Development Review*. <https://doi.org/10.1111/j.1467-8268.2013.12019.x>
- [2] Baah-Boateng, W. (2016). The youth unemployment challenge in Africa: What are the drivers? *The Economic and Labour Relations Review*. <https://doi.org/10.1177/1035304616645030>
- [3] Baah-Boateng, W. (2013). Determinants of unemployment in Ghana. *African Development Review*. <https://doi.org/10.1111/1467-8268.12037>
- [4] Baltagi, B. (2005). *Econometrics Analysis of Panel Data* (3rd ed). England: John Wiley & Sons Ltd.

- [5] Bayrak, R., & Tatli, H. (2018). The Determinants of Youth Unemployment: A Panel Data Analysis of OECD Countries. *The European Journal of Comparative Economics*. <http://dx.doi.org/10.25428/1824-2979/201802-231-248>
- [6] Bellante, D., & Jackson, M. (1990). *Ekonomi Ketenagakerjaan*. Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.
- [7] Choudhry M, Marelli E, Signorelli M. 2012. Key Determinants of Youth Unemployment in OECD Countries. AIEL Conference; [diakses 2022 Juli 25]. <http://www.aiel.it/Old/bacheca/Capua/papers/ChoudhryMarelliSignorelli.pdf>
- [8] Craigwell, R. (2006). Foreign direct investment and employment in the English and Dutch-speaking Caribbean. ILO Subregional Office for the Caribbean.
- [9] Daud, N. (2017). The effect of sector economic growth on the performance of employment and welfare of people. *International Journal of Business and Management*. 10.5539/ijbm.v12n9p194
- [10] Dietrich, H. (2012). Youth unemployment in Europe theoretical considerations and empirical findings. Friedrich-Ebert-Stiftung International Policy Analysis.
- [11] Ebaidalla, E. (2016). Determinants of youth unemployment in OIC member states: A dynamic panel data analysis. *Journal of Economic Cooperation and Development*. <https://www.researchgate.net/profile/Ebaidalla-Ebaidalla2/publication/309513576Determinantsof youthunemployment inOICmemberstatesAdynamicpaneldataanalysis/links/581b8f7508ae12715afe8f2/Determinants-of-youth-unemployment-in-OIC-member-states-A-dynamic-panel-data-analysis.pdf>
- [12] Elhorst, J. P. 2003. The mystery of regional unemployment differentials: Theoretical and empirical explanations. *Journal of Economics Surveys*. <https://doi.org/10.1046/j.1467-6419.2003.00211.x>
- [13] Fu, X., & Balasubramanyam, V. N. (2005). Exports, foreign direct investment and employment: The case of China. *The World Economy*. <https://doi.org/10.1111/j.1467-9701.2005.00694.x>
- [14] Gontkovi, B., Bohuslava, M., & Pružinský, M. (2015). Youth unemployment current trend in the labour market? *Procedia Economics and Finance*. [https://doi.org/10.1016/S2212-5671\(15\)00554-7](https://doi.org/10.1016/S2212-5671(15)00554-7)
- [15] Gujarati, D. (2003). *Dasar-Dasar Ekonometrika Buku 2*. Jakarta: Salemba Empat.
- [16] Haddad, A. M. (2016). Analysis of foreign direct investment and unemployment and their impact on economic growth in Jordan. *International Journal of Investment Management and Financial Innovations*.
- [17] Hasan, Z., & Sasana, H. (2020). Determinants of youth unemployment rate in Asean. *International Journal of Scientific & Technology Research*.
- [18] Hisarciklilar, M., Gültekin-Karakaş, D., & Aşici, A. 2009. Can FDI be a panacea for unemployment: The Case of Turkey. Nottingham: Joint Workshop of Economic and Social Research Centre and University of Nottingham.
- [19] International Labour Organization. (2020). The impact of the COVID-19 pandemic on jobs and incomes in G20 economies. <https://www.ilo.org/global/about-the-ilo/how-the-ilo-works/multilateral-system/g20/reports/WCMS756331/lang--en/index.htm>
- [20] International Labour Organization. (2020). ILO Monitor: COVID-19 and the world of work. Fourth edition. <https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS745963/lang--en/index.htm>
- [21] Mankiw, N. G. (2013). *Macroeconomics*. New York: Worth Publishers.
- [22] Mkombe, D., Tufa, A. H., Alene, A. D., Manda, J., Feleke, S., Abdoulaye, T., & Manyong, V. (2021). The effects of foreign direct investment on youth unemployment in the Southern African Development Community. *Development Southern Africa*. <https://doi.org/10.1080/0376835X.2020.1796598>
- [23] Muhtamil. (2017). Pengaruh perkembangan industri terhadap penyerapan tenaga kerja di Provinsi Jambi. *Jurnal Perspektif Pembiayaan dan Pembangunan Daerah*. <https://doi.org/10.22437/ppd.v4i3.3642>
- [24] Nachrowi, N. D., Usman, H. (2006). *Pendekatan Populer dan Praktis Ekonometrika untuk Analisis Ekonomi dan Keuangan*. Jakarta: Badan Penerbit Universitas Indonesia.
- [25] Nazir, F., Cheema, M. A., Zafar, M. I., & Batool, Z. (2009). Socio-Economic Impacts of Unemployment in Urban Faisalabad, Pakistan. *Journal of Social Sciences*. <https://doi.org/10.1080/09718923.2009.11892680>
- [26] Ndjie, A. A., Ondoa, H. A., Tabi, H. N. (2019). Governance and Youth Unemployment in Africa. *Labor History*. <https://doi.org/10.1080/0023656X.2019.1645320>
- [27] Ningrum, V. (2016). Tantangan Sosial-Ekonomi Pengangguran Usia Muda di Indonesia. *Jurnal Kependudukan Indonesia*. <https://ejurnal.kependudukan.lipi.go.id/index.php/jki/article/view/17>
- [28] Nugroho, A. D., Waluyati, L. R., & Jamhari. (2018). Upaya Memikat Generasi Muda Bekerja pada Sektor Pertanian di Daerah Istimewa Yogyakarta. *Jurnal Ilmu Pemerintahan dan Sosial Politik UMA*. <http://ojs.uma.ac.id/index.php/jppuma>



- [29] Pindyck, R. S., & Rubinfeld, A. L. (2013). *Microeconomics* (8th ed). New Jersey: Pearson Education.
- [30] Putra, G. A., & Aisyah, S. (2021). Determinan pengangguran usia muda: Studi kasus di pulau Jawa dan Sulawesi. *Journal of Economics Research and Policy Studies*.  
<https://doi.org/10.53088/jerps.v1i3.347>
- [31] Putra, M. E. (2018). Determinants of Urban Young Unemployment Status and Rural in Indonesia 2012-2016. *Jurnal Ilmu Ekonomi Terapan*.  
<https://doi.org/10.20473/jiet.v3i2.9203>
- [32] Salvador, R. G., & Killinger, N. L. 2008. An analysis of youth unemployment in the Euro area. *European Central Bank Occasional Paper Series No 89*.
- [33] Salvatore, D. (1997). *Ekonomi Internasional*. Jakarta: PT Erlangga.
- [34] Saragih, M. T. B., & Usman, H. (2021). Analisis Pengangguran Usia Muda di Pulau Jawa Sebelum dan Saat Pandemi Covid-19. *Jurnal Studi Pemuda*.  
<https://doi.org/10.22146/studipemudaugm.69484>
- [35] Samuelson, P. A., & Nordhaus, W. D. (2003). *Ilmu Makro Ekonomi Edisi Tujuh Belas*. Jakarta: PT Media Global Edukasi.
- [36] Santoso, R. P. (2012). *Ekonomi Sumber Daya Manusia dan Ketenagakerjaan (Edisi 1)*. Yogyakarta: UPP STIM YKPN.
- [37] Sukirno, S. (2006). *Makroekonomi Teori Pengantar*. Jakarta: PT Raja Grafindo Persada.
- [38] Todaro, M. P. (2000). *Pembangunan Ekonomi di Dunia*. Jakarta: Erlangga. [2] M. Lu, et al., "Novel customized manufacturable DFM solutions," *Proc. SPIE Photo mask Technology 2012*, vol. 8522, pp. 852223, December 2012.