

Unemployment Transformation Scaling Factors Youth Force in Java Province

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Date of Submission: 15-11-2024

Date of Acceptance: 25-11-2024

ABSTRACT: One of the quite serious problems faced by developing countries, especially Indonesia, is unemployment, namely people who do not have jobs, are looking for jobs or are preparing a new business or people who are not looking for jobs because they have been accepted for work but have not started working. The aim of this study is to analyze Youth Unemployment Transformation Scaling Factors in Java Island which include the number of young people, average length of schooling (RLS), information and communication technology (ICT), gross regional domestic product (GRDP) and investment. This study is a quantitative study using the Generalized Method of Moment (GMM) model parameter estimation method using Dynamic Panel. The results of this study indicate that RLS and GRDP have a negative and significant short-term and long-term influence on the youth unemployment rate in Java Island. While investment and ICT have a positive and significant short-term and long-term influence on the youth unemployment rate in Java Island. Meanwhile, the number of youth and youth unemployment last year did not have a significant influence on the youth unemployment rate in Java Island.

KEYWORDS: average years of schooling, gross regional domestic product, investment, information and communication technology, unemployment.

I. INTRODUCTION

Unemployment is a common problem in developing countries, including Indonesia. The increase in unemployment is caused by competition in the labor market, where workers who cannot compete become unemployed. According to the Central Bureau of Statistics, unemployment in Indonesia is divided into open unemployment, namely those who are not working and are looking for work, and closed unemployment, namely those who work with low productivity and irregular working hours, less than or equal to 35 hours per week (Lailatul Qamariyah et al., 2022; Lukman et al., 2023).

The demographic bonus phenomenon in Indonesia is marked by an increase in the number of young people, who play an important role in participating in development (Jusmawandi, 2022; Sujianto, 2020). Based on Law Number 40 of 2009, the youth are citizens aged 16-30 years. However, this increase also raises problems in employment, education, discrimination, and welfare (Bappenas, 2022), and is a challenge for Indonesia in overcoming unemployment.

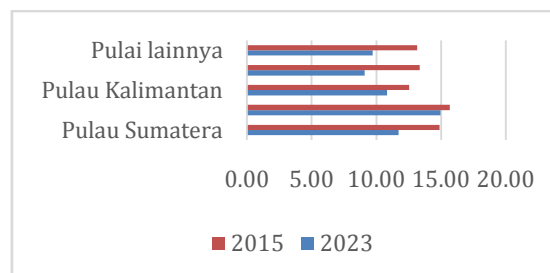


Figure 1: Development of Indonesia's Open Unemployment Rate (TPT) in 2015 and 2023
Source: Central Bureau of Statistics, Sakarnas 2015 and 2023

Based on Figure 1, it can be seen how the development of Youth TPT in various islands in Indonesia for the period 2015 and 2023. It can be seen in the image above that the Youth TPT is experiencing a downward trend, although it is fluctuating. Where in the graph it can be seen that the highest youth TPT occurred in Java. In 2015, the youth TPT in Java was the highest at 15.66 percent. Meanwhile, Sumatra Island in the same year became the second island with the highest youth TPT at 14.89 percent. In 2023, every island in Indonesia experienced a decline. However, Java Island is still the province with the highest youth TPT at 14.96 percent and followed by Sumatra Island at 11.72 percent.

Java Island has the largest youth population in Indonesia, contributing 54.79 percent of the total youth according to the Central Statistics Agency 2022. Meanwhile, Sumatra Island contributes 22.37 percent. This condition has the potential to drive high youth unemployment rates. This phenomenon is caused by the small number of opportunities, so that residents compete with each other to get jobs and those who are left out in the competition become unemployed (GA Putra & Siti Aisyah, 2021). Although the government continues to make efforts to reduce the unemployment rate, youth unemployment in Java is still quite high.

In this case, there are many factors that influence youth unemployment, including the Number of Youth, Education, Technology, Investment and GRDP. According to Sari & Pangestuty(2022) explains that the increase in population in a region causes an increase in unemployment in that region. This phenomenon is caused by the small number of opportunities, so that residents compete with each other to get jobs and those who are left out in the competition become unemployed (GA Putra & Siti Aisyah, 2021). Meanwhile, another study said that the number of residents can reduce the unemployment rate in the area (Pandiangan et al., 2021).

The unemployment rate can also be caused by the low quality of the workforce and the unfulfilled qualifications in the requirements for job acceptance in a company. The quality of the workforce can be seen from the level of education. Based on the Human Capital theory, education is the main indicator in obtaining knowledge and skills that affect the quality of the workforce, where a person's education often reflects their ability and productivity in the workplace (Setyanti & Finuliyah, 2022). The level of education of young people can be seen from the highest level of education and the average length of schooling. The higher the average length of schooling, the more

negative the impact on the unemployment rate (Johar, 2023). However, the level of education can also have an impact on increasing the unemployment rate, this is because someone who has a higher education will choose wages and jobs that do not match the education they have(Siskawati et al., 2021; Sujianto, 2018).

In the modern era, technology plays an important role in globalization, including in Indonesia. Information and Communication Technology (ICT) has positive and negative impacts, and increases labor absorption. This happens because to get efficiency and effectiveness in terms of time, cost and productivity so that companies encourage online labor recruitment and administration processes (Putri & Idris, 2020). So that the development of ICT has an influence on the level of workforce participation, because the higher the technology, the lower the level of workforce participation because the position of workers is replaced by rapidly developing technology (Wahyuni & Anis, 2019).

Macroeconomic factors that affect youth unemployment are economic growth reflected in the increase in Gross Regional Domestic Product (GRDP). GRDP measures the level of economic growth of a region. Based on Okun's Law, there is a negative and significant relationship between GRDP and the unemployment rate; if GRDP increases, the added value of goods and services in the region will also increase. The increasing number of goods and services will cause an increase in the number of workers demanded(Sari & Pangestuty, 2022; Sujianto & Asy'arie, 2022).

In addition, there are other factors that affect youth unemployment. Where investment has a negative effect on youth unemployment in a country(Sever & İğdelİ, 2018; Siswanto et al., 2022). This is because investment can encourage the opening of new jobs that can absorb workers that can affect the unemployment rate. Based on the description above, the researcher is interested in conducting research on the youth unemployment rate in Java. Where the researcher took the title of "Determinants of Youth Unemployment in Java in 2015-2023".

II. METHODOLOGY

This research is quantitative with secondary data from the Central Bureau of Statistics, Youth Development Index, and other sources. Time series data from 2015-2022 in the Province of Java Island. The independent variables analyzed include youth unemployment (Y), number of youth (X_1), length of schooling (X_2), ICT (X_3), investment (X_4), and GRDP (X_5).

This study uses descriptive analysis and dynamic panel data regression analysis with the Generalized Method of Moments (GMM) model, processed using Stata 17. The System GMM method, developed by Arellano and Bover and Blundell and Bond, estimates the equation of the first difference and level with the first-difference instrument. System GMM effectively overcomes the problem of weak instruments in the FD GMM estimator. One of them is by creating a dynamic panel data autoregressive model without exogenous

regressors (level model) which can be described as follows:

$$Y_{it} = \delta Y_{i,t-1} + \mu_i + v_{it}$$

Y_{it} : Observation unit i in period t ;
 δ : coefficient of explanatory endogenous variables;
 μ_i : Panel regression error for the i -th observation unit at the t -th time period;
 v_{it} : individual not observed at level i in period t .

III. RESULT AND DISCUSSION

1. Results

a. Descriptive Analysis

Table 1. Descriptive Statistical Analysis

Variables	Obs	Mean	Std Dev.	Min	Max
TPT	54	2.66	0.3	1.94	3.09
Number of Youth	54	3.16	0.06	3.05	3.29
RLS	54	2.34	0.08	2.28	2.53
ICT	54	4.24	0.11	3.95	4.41
GRDP	54	1.57	0.25	0.85	1.88
Investment	54	7.24	1.77	2.27	9.02

Source: Stata (processed)

Based on table 1, it can be seen that the variables TPT, Number of Youth, Average Length of Schooling (RLS), Information and Communication Technology (ICT), PDRB and Investment in six provinces on Java Island have data that is not varied. This is because in each variable the $\text{valuemean} > \text{Standard deviation}$.

b. Sargan Test (Instrument Validity)

Sargan test is a method used in statistics to check the validity of a regression model. This test involves testing whether the regression coefficient obtained is significant and whether the regression model can explain the dependent variation well.

Table 2. Sargan Test (Instrument Validity Test)

Testing	Statistical Values	P-Value
Sargan Test	31.58	0.54

Source: Stata (processed)

Based on table 2 the results of the Sargan test estimation, it can be concluded that the instrument that has been used is valid. This is evidenced by the value of $\text{Prob} > \text{Chi}^2 = 0.54$ which is greater than $\alpha 0.05$ (5%) which means accepting H_0 . So there is no correlation between the error and the overidentifying restriction value which detects no problems with the validity of the instrument or the overidentifying restriction condition in the model estimation is valid.

c. Arrelano Bond Test (Consistency)

The Arrelano Bond test is used to test the consistency of the estimates obtained in the GMM method. In the consistency estimate, it can be seen from the second-order first difference, which is not significant or there is no autocorrelation between the residual and its endogenous variables.

Table 3 Arellano Bond Test (Consistency Test)

Testing	Statistical Values	P-Value
AR (m1)	-1.53	0.13
AR (m2)	-0.66	0.5

Source: Stata (processed)

From the results of the Arrelano Bond (AB) Test, the estimated value in this study is consistent, which means that there is no autocorrelation in the 2nd order first difference

error. This can be seen from table 3, the results of the 2nd order value estimation Prob> α of 0.5 are greater than the significance level value of 0.05 (5%) which means accepting H_0 .

d. System Generalized Method of Moment (Sys-GMM) estimation results

Table 4. GMM System Model with Blundell-Bond Estimation

logTPT	Coef	St. Err.	t-value	p-value
L	-0.02	0.07	-0.33	0.74
youth log number	0.32	0.27	1.19	0.234
logrls	-1.14	0.49	-2.33	0.02
logistics	0.65	0.29	2.22	0.03
logpdrb	-0.30	0.33	-8.97	0.00
investment log	0.10	0.01	8.85	0.00
Constantine	1.38	1.27	1.09	0.27

Source: Stata (processed)

The Number of Youth variable has an insignificant value of $0.237 > 0.05$, so H_0 is accepted. Which means that partially the Number of Youth variable has an insignificant and positive effect on Youth TPT. The Average Length of Schooling variable has a significant value of $0.02 < 0.05$, so H_1 is accepted. Which means that partially the Average Length of Schooling variable has a significant and negative effect on Youth TPT.

The Information and Communication Technology variable has a significant value of 0.03

< 0.05 , so H_1 is accepted. Which means that partially the Information and Communication Technology variable has a significant and positive effect on Youth TPT. The PDRB variable has a significant value of $0.00 < 0.05$, so H_1 is accepted. Which means that partially the PDRB variable has a significant and negative effect on Youth TPT.

The Investment variable has a significant value of $0.00 < 0.05$, so H_1 is accepted. Which means that partially the Investment variable has a significant and positive effect on Youth TPT.

e. Short and Long Term Tests

Table 5. Long-Term and Short-Term Estimation Results

Variables	Coefficient			
	Short-term	p-value	Long-term	p-value
Number of Youth	0.32	0.234	0.31	0.231
RLS	-1.14	0.03	-1.11	0.018
ICT	0.65	0.02	0.63	0.024
GRDP	-0.30	0.00	-0.29	0.00
Investment	0.105	0.00	0.102	0.00

Source: Stata (processed)

The relationship between the number of youth and the youth unemployment rate is positive, as evidenced by the value of the elasticity coefficient of the number of youth in the short and long term which is positive, namely 0.32 and 0.31. The relationship between the average length of schooling and the youth unemployment rate is negative, as evidenced by the value of the average

elasticity coefficient of the length of schooling in the short and long term being negative, namely -1.14 and -0.11.

The relationship between ICT and the youth unemployment rate is positive, as evidenced by the positive values of the ICT elasticity coefficient in the short and long term, namely 0.65 and 0.63. The relationship between GDP and the

youth unemployment rate is negative, as evidenced by the GDP elasticity coefficient values in the short and long term being negative, namely 0.30 and 0.29.

The relationship between investment and youth unemployment rate is positive, as evidenced by the value of the investment elasticity coefficient in the short and long term which is positive, namely 0.105 and 0.102.

2. Discussion

a. The Influence of the Number of Youth on the Youth Open Unemployment Rate for the Period 2015-2023

The number of youth has a positive and insignificant influence on the Youth Open Unemployment Rate in Java Island in 2015-2023. This is in line with research conducted byGVH Putra & Hidayah(2023)which states that the Population in a region does not have a significant effect on the Open Unemployment Rate. This study also explains the short-term and long-term effects of the Number of Youth having a positive and insignificant effect on the Open Unemployment Rate of Youth in Java. These results are in accordance with research conducted by ME Putra(2018)which states that the number of young people has no influence on the Youth Open Unemployment Rate both in cities and villages. This is because young people choose to continue their education, so they are not yet included in the workforce (Nisa & Sugiharti, 2022).

b. The Influence of Average Length of Schooling on the Open Unemployment Rate of Youth for the Period 2015-2023

Average Length of Schooling has a negative and significant relationship to the Open Unemployment Rate of Youth in Java Island in 2015-2023. This result is in accordance with research conducted byMustakim, A Ferlin & Rizal (2022)which states that the Average Length of Schooling has a negative and significant effect on the Open Unemployment Rate. In the short and long term, the Average Length of Schooling (RLS) has a negative and significant effect on the Open Unemployment Rate of Youth in Java. This is in line with research conducted byWulandari & Astuti (2023)which says that in the long term education has a negative and significant influence on the unemployment rate.

c. The Influence of Information and Communication Technology on the Youth Open Unemployment Rate for the Period 2015-2023.

Based on the results of this study, it can be concluded that Information and Communication Technology (ICT) has a positive and significant relationship with the Open Unemployment Rate of Youth in Java. This result is in accordance with research conducted bySintha (2022)which shows that technological developments have a positive and significant influence on the open unemployment rate in Indonesia. In the short and long term, Information and Communication Technology (ICT) has a positive and significant influence on the Open Unemployment Rate of Youth in Java. This is in line with research conducted byRahardyan(2023)said digital competence has a positive role in the unemployment rate. According to BPS 2023 the purpose of using the internet which is one of the developments of ICT, the majority of young people access the internet as a social network, looking for news and entertainment more than 80 percent.

d. The Influence of GRDP on Youth Open Unemployment Rate for the 2015-2023 Period.

Gross Regional Domestic Product (GRDP) has a negative effect on the Youth Open Unemployment Rate in Java Island. This is in accordance with research conducted byArum Sukma (2022)which states that the increase in GRDP has a negative and significant effect on the Open Unemployment Rate. In the short and long term, Gross Regional Domestic Product (GRDP) has a negative and significant effect on the Open Unemployment Rate of Youth in Java. These results are in accordance with research conducted byAlharis & Yuniasih (2022)which states that GRDP has an influence on youth unemployment.

e. The Influence of Investment on Youth Open Unemployment Rates for the Period 2015-2023.

Investment can provide a positive and significant influence on the Open Unemployment Rate of Youth in Java Island. This is in line with research conducted byGuidance, (2022)which states that PMA Investment has a positive and significant effect on the unemployment rate. In the short and long term, Investment has a positive and significant effect on the Youth Open Unemployment Rate in Java. This is because investment is capital intensive and aims to develop companies such as for land purchases, using machines and using foreign workers, thus having an effect on increasing unemployment(Amar & Arkum, 2023; Supriyanto et al., 2020).

IV. CONCLUSION

This study shows that the number of young people, both in the long and short term, has a positive but insignificant effect on the youth open unemployment rate in Java Island in 2015-2023. Meanwhile, the average length of schooling and GRDP have a negative and significant effect on the unemployment rate. On the other hand, the development of Information and Communication Technology and investment have a positive and significant effect on the youth open unemployment rate in Java Island in the same period.

In an effort to reduce the unemployment rate can be done by increasing human resources, so that each workforce can compete in the labor market. Meanwhile, the findings in this study, there are some limitations. In this study only took data from 2015-2023. In addition, this study also only took five variables in influencing the unemployment rate.

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