The International Journal of Social Sciences World
TIJOSSW is Available Online at:
https://www.growingscholar.org/journal/index.php/TIJOSSW
Vol. 4 No. 1, June 2022, pages: 272~280
DOI: https://doi.org/10.5281/zenodo.6627143
ISSN **2690-5167**
Growingscholar Publisher

Macro-Economic Impact on Educational Unemployment in Central Java, Indonesia

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Article history: Received April, 19, 2022 , Accepted: June, 01, 2022 , Displayed Online: June, 09, 2022 Published: June, 30, 2022

Keywords

Educated;

Employment;

Macro-economic;

Abstract

Educated unemployment is a serious problem experienced by the Central Java provincial government. This study aims to investigates whether macroeconomic factors such as, foreign investment, human development index, population, the least wage of regency, and the economic growth have an impact on educated unemployment which consist of graduated senior high school and bachelor degree in Central Java during period 2017 to 2020This research is quantitative research using a static panel approach. Employing 35 regencies/cities in Central Java during the period 2017 to 2018 as the sample, this research selects Random Effect Model to estimate the regression model. The results show that foreign investment, human development index, and minimum wages have not an effect on educated unemployment. Yet, the population made educated unemployment increase at the 1% confidence level. Meanwhile, economic growth can reduce the number of educated unemployed although it is very weak at the 10% confidence level. Thus, regarding the result of this study, the government needs to reduce the population and increase economic growth on a regular basis to reduce educated unemployment in the region.

1. Introduction

Human Resources (HR) is a component of the national improvement of the economy and the well-being of the populace. Nonetheless, Indonesia is currently confronted with quite complex problems in terms of human resource management, particularly the problem of dwindling employment

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opportunities (Umi et al., 2021). If this is not addressed immediately and effectively, it will increase the unemployment rate. According to Manaa & Ul Haq (2020), unemployment is one of the major problems for a country's economy and has many negative effects on developing nations, as it can slow or even stop economic growth. Therefore, unemployment is a serious concern because it has a negative impact that can diminish economic prosperity, increase crime, misery, and social instability. This unemployment problem is one of the factors contributing to the failure of the government's national development process to alleviate poverty and improve the welfare of the population. Province of Central Java is one of the regions affected by this problem. Central Java Province is a province that is currently concentrating on the development of the new economy to increase economic growth in 29 Regencies and 6 Cities by establishing a new industrial area. For example, the development of industrial estates in the Kendal and Batang Regencies is supported by easy access to distribution via the Trans Java toll roads and Tanjung Mas Port in Semarang. New economic development is anticipated to increase the amount of investment, economic growth, and the number of jobs, thereby reducing poverty and enhancing the community's welfare.

According to Bank Indonesia (BI) data from 2017, Central Java Province was capable of contributing 11.6% to the national Gross Domestic Product (GDP). Unfortunately, this new economic development has not had a significant impact, particularly in the limited absorption of labor, which has caused the number of educated unemployed in the region to rise over the past few years. The category of educated unemployment refers to unemployed laborers who are educated but have difficulty finding employment. To achieve optimal benefits from the creation of skilled human resources, individuals must be employed; yet, it is difficult for all graduates to find employment due to the poor labor market situation and the inability of developing nations to accommodate large numbers of skilled workers (Qazi et al., 2017). According to the Central Statistics Agency (BPS) of Central Java Province (2020), the number of educated unemployed in Central Java Province from 2017 to 2020 was dominated by SMK graduates with 1,051,780 people, followed by 747,935 junior high school graduates, 672,312 SMA graduates, SD with 582,982 people, Universities with 266,291 individuals, and Diplomas with 79,452 people. Besides, the number of educated unemployed in the province has increased over the past three years, reaching 1,138,791 in 2020, or 3.12 percent of the total population, an increase from the previous year's figure of 766,367. Based on this, this research focuses on educated unemployment, which is a serious problem for the Central Java Provincial government, using five indicators: foreign investment, Human Development Index (HDI), population, Regency/City Minimum Wage (MINIMUM WAGE), and economic growth (GRDP).

According to the Central Java Province BPS (2020), the indicator of foreign investment entering the Central Java Province in 2020 was $95.59 billion, a decrease of 50.96 percent from 2019's level of $194.94 billion. The HDI indicator reveals that in 2020 it was 72.39, a 0.17 percent increase from 2019's HDI of 72.39, which placed it in the medium category. The population indicator indicates that in 2020 there will be 36,516,035 people, a 5.18 percent increase from the previous year's population of 34,718,204. The minimum wage indicator indicates that the average annual salary in 2020 was IDR 1,980,785, representing an increase of 8.57 percent compared to the previous year's salary of IDR 1,823,95. In 2020, the GRDP indicator predicts a contraction of 1.96 and a significant decrease of 136.09 when compared to the previous year's growth of 5.44 percent. Foreign investment can affect educated unemployment. Previous research demonstrates that foreign investment could indeed affect unemployment (Chris, 2015). According to Sadikova et al. (2017), foreign investment is beneficial to the government. The entry of funds can be managed to develop or establish a business that can create employment opportunities. This condition will encourage many companies to assist others in increasing production capacity to meet public demand. For instances, it will have a positive effect on regional economic growth. Nonetheless, a decline in foreign investment and economic growth can result in problems, as the company's development and establishment were hampered by significant obstacles,

resulting in a dearth of employment opportunities. Teimouri and Zietz's (2018) research proves that a decrease in investment can lead to an increase in unemployment.

HDI influences unemployment among the educated in another context. Standard of living is reflected by the HDI (Fahrika et al., 2020; Fitri et al., 2021). The greater the HDI, the more a community's standard of living can improve. Previous research has demonstrated that the Human Development Index (HDI) can reduce unemployment levels (Sisnita & Prawoto, 2017). To be competitive in the labor market, regions with a high HDI can encourage individuals to be more skilled and productive. Thus, resource management should incorporate an increase in HDI. Long-term need for efficient natural resources (Resce, 2021). The population growth has the greatest impact on the increase in unemployment among the educated. Population growth can lead to a rise in the labor force, causing labor competition to become more intense. If this is not counterbalanced by an increase in labor demand, the unemployment rate will increase. According to the findings of Manaa & ul Haq (2020) and Chris (2015), population growth can lead to an increase in the unemployment rate. Accept the empirical findings of Khaliq et al. (2014), which prove that a 1 percent increase in population can result in a 0.37 percent increase in unemployment.

The results of previous studies show that the minimum wage has both a short-term and a long-term effect on educated unemployment (Wirawan & Sentosa, 2021). Central Java Province BPS data (2021) indicates that the average increase in the minimum wage in Central Java over the past three years was above 8 percent, with the highest minimum wage in 2021 being in the City of Semarang at IDR 2,810,025 and the lowest minimum wages in the Regency or city of Banjarnegara at IDR 1,505,000. The determination of wages for each province region is still not distributed. Many educated and competent job seekers are seeking employment in regions with high minimum wages. On the other hand, high wages can be a burden for companies that encourage labor efficiency by implementing technology that reduces employment opportunities. Yet, the lower the wage determination, the greater the likelihood that the company will open the field employment, thereby reducing the unemployment rate (Faryna et al., 2021; Puspadjuita, 2018; Chris, 2015).

According to previous research, foreign investment, HDI, population growth, and minimum wage are factors that can influence educated unemployment. However, additional factors are believed to influence educated unemployment. Previous research has demonstrated that economic growth can reduce the unemployment rate (Irpan et al., 2016; Chris, 2015). Almfraji and Alsafir (2014) define economic growth as an increase in productivity through the production of extra goods and services. This encourages companies to increase the number of workers required to meet operational needs, which has a positive effect on the unemployment rate. According to the preceding description, educated unemployment is a major issue for the provincial government of Central Java. Therefore, the authors are interested in conducting research on the macroeconomic factors influencing educated unemployment in the province of Central Java.

Five hypotheses are proposed in this study. Figure 1 depicts the relationship between variables and research hypotheses via a static panel.

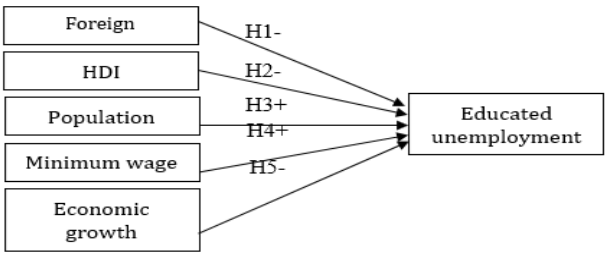


Figure 1. Research Framework

According to the research framework above, the authors of this research hypothesis are as follows:
H1: Foreign investment has a negative impact on the unemployment rate among the educated.
H2: HDI has a detrimental impact on educated unemployment
H3: Population has a positive effect on the unemployment rate among the educated
H4: Minimum wage has a positive effect on the unemployment rate among the educated
H5: Economic growth has a negative impact on unemployment among the educated

2. Materials and Methods

The research data relies on secondary sources. Schindler (2019) defines secondary data as information obtained from other sources or from databases for personal use. Secondary data obtained from a database of the Central Java Province BPS using the documentation method, focusing on foreign investment, HDI, population, minimum wage, economic growth, and educated unemployment for the period 2017-2020. This panel data is a combination of 2017-2020 time series data and cross-sectional data for 29 districts and 6 cities in the Central Java Province, totaling 140 data. Foreign investment is measured in USD units, HDI is measured in numbers (1-100), population is measured in soul units, minimum wage is measured in rupiah units, economic growth is measured by unit percent (percent), and educated unemployment (high school-university graduates) is measured in soul units. This study's data were statistically analyzed using the Stata program. There are three equation models in this static panel model estimation: 1) Common Effect Model (CEM), 2) Random Effect Model (REM), and 3) Fixed Effect Model (FEM). The researcher will determine the best static panel regression model equation by utilizing three testing stages: 1) Chow test to determine the best estimation model between CEM and FEM, 2) Hausman test to determine the best estimation model between FEM and REM, and 3) Lagrange-Multiplier test to determine the best estimation model between REM and CEM. Then, select the optimal model using a hypothesis test with the criteria used if the probability level value is 0.01 (1 percent), 0.05 (5 percent), or 0.10 (10 percent). The hypothesis is therefore accepted.

3. Results and Discussions

Model Selection

Using a static panel, this study examines the macroeconomic impact of the primary factors, which are foreign investment, HDI, population, minimum wage, and economic growth, on educated unemployment in Central Java Province from 2017 to 2020. This study's sample consisted of 29 regions and 6 cities, with 140 data points observed. To determine the optimal model for this study, the following model selection test was performed.

Chow Test Result

Table 1 Chow Test Result

Model	Educated unemployment
Probability Chi Square	0,0000

According to Table 1, the Chow test results have a Chi Square probability value of <0.05 in the educated unemployment model. The findings of this study state that the selected model is the FEM model; thus, the Hausman test must be conducted..

a. Hausman Test Result

Table 2 Hausman Test Result

Model	Educated unemployment
Probability Chi Square	0,3199

The results of the Hausman test on the educated unemployment model have a Chi Square probability value greater than 0.05, as shown in Table 2. The results of this study indicate that the selected model is the REM model; therefore, the Lagrange-Multiplier (LM) test must be conducted.

b. Lagrange Multiplier (LM) Test Result

Table 3 Lagrange-Multiplier (LM) Test Result

Model	Educated unemployment
Probability Chibar Square	0,0000

The results of the LM test on the educated unemployment model have a Chibar Square probability value of 0.05, as shown in Table 3. This indicates that REM is the superior model among the two. According to Gujarati and Porter (2009), the REM model is an estimation model based on the Generalized Least Square (GLS) method that satisfies the classical assumptions; therefore, testing the classical assumptions is unnecessary.

Panel Static Regression Model Result

Based on the results of the model selection test, the estimation of the best static panel regression model for the educated unemployment model is REM. This model is used to test the proposed hypothesis, notably H1 to H5. The criteria used are at the probability level of 0.01 (1 percent), 0.05 (5 percent), and 0.10 (10 percent). (10 percent). The estimation results of the static panel regression model are as follows.

Table 4 Regression Model Result

Variables	Expected Direction	Coef.	P > |z|	Conclusion
Foreign Investment	-	-0,0015	0,907	H1 rejected
HDI	-	1,5839	0,179	H2 rejected
Population	+	0,8879	0,000	H3 accepted
Minimum wage	+	0,4400	0,188	H4 rejected
Economic growth	-	-0,4693	0,073	H5 accepted
Cons		-15,1237	0,003	
R Square				
Within	0,1192			
Between	0,7625			
Overall	0,7293			

The foreign investment variable (IVA) has a beta coefficient of -0.0015 and a sig of 0.907%, as shown in Table 4. These findings indicate that foreign investment has no effect on the unemployment rate among the educated, thus H1 is rejected. The HDI variable possesses a beta coefficient of 1.5839 and a sig of 0.179. This indicates that HDI has no effect on unemployment among the educated, thus H2

is rejected. The population variable (POP) has a beta coefficient of 0.8879 and a sig of 0.000, indicating that the population has a significant positive effect on educated unemployment with a level of confidence of 1%; therefore, H3 is accepted. The variable minimum wage has a beta coefficient of 0.440 and a sig of 0.188, indicating that the minimum wage has no effect on educated unemployment; therefore, hypothesis H4 is rejected. While the variable economic growth has a beta coefficient of -0.4693 and a sig of 0.073, it can be concluded with a 90% level of confidence that economic growth has a significant negative effect on educated unemployment. These results are consistent with Hypothesis 5, thus Hypothesis 5 is accepted. R2 indicates that 72.93 percent of the educated unemployment model can be explained by foreign investment, HDI, population, minimum wage, and economic growth, while the remaining 27.07 percent can be explained by variables that were not examined.

Discussion

This study examines the macroeconomic effects of foreign investment, HDI, population, minimum wage, and economic growth on high school graduates to universities in the province of Central Java, Indonesia, from 2017 to 2020. Even though foreign investment has no statistically significant effect on significant, the beta coefficient has a negative direction, as demonstrated by the findings of this study. Thus, a $1 increase in investment could reduce educated unemployment by 0.0015 percentage points. Although it is not statistically significant, the construction of new factories in Central Java Province is able to absorb high school graduates into the university system. Nonetheless, the increase in HDI in every Province's county and city may increase educated unemployment. These results contradict the research hypothesis that an increase in HDI will reduce the number of educated individuals who are unemployed. Improving the quality of life of the community as a result of the inability of many highly educated individuals to create employment opportunities with their skills. This study demonstrates that an educated society prefers to find employment rather than create jobs that increase labor competition in the region. This result contradicts Sisnita and Prawoto's (2017) conclusion that an increase in HDI can reduce unemployment. The study's findings demonstrate that an increase in population can lead to an increase in the number of educated unemployed. Statistically, the findings of this study are supported by studies by Manaa & Ul Haq (2020), Sisnita & Prawoto (2017), and Chris (2015), which indicate that population growth can lead to an increase in unemployment. Every 1 percent increase in population can increase the educated unemployment rate by 0.889%.

Population growth in the region exceeds the demand for labor, resulting in an increase in the number of armed forces and the unemployment rate. The results of the study demonstrate that an increase in the minimum wage has no significant effect on the unemployment rate among the educated. Although the coefficient is not statistically significant, it does indicate a positive direction, which means that for every IDR 1 increase in the minimum wage, the unemployment rate increases by 0.44 percent. In fact, in this age of rapid technological advancement and constant growth in the number of minimum wages, businesses are encouraged to adopt more efficient technology. This is done to reduce the burden of costs associated with a workforce that continues to grow each year, but this has an effect on termination of employment and the company's inability to absorb new workers. This causes an increase in unemployment. Verified economic expansion can reduce the number of educated unemployed.

These findings are supported by previous research indicating that an expanding economy can reduce the unemployment rate (Abdul-Khaliq et al., 2014). Every 1 percent increase in economic growth can reduce the unemployment rate among educated individuals by 0.4693 percent. This decrease occurred as a result of an increase in community consumption, which can encourage a number of businesses to increase their production capacity, thereby increasing the need for personnel to ensure the smooth operation of the business. Therefore, Kitov (2011) argued that rapid economic growth is

required to reduce unemployment. According to Almfraji and Almsafir (2014), a rise in economic growth can lead to an increase in field jobs, incoming investment, and raw materials.

4. Conclusion

Regarding the problem of educated unemployment in Central Java Province, which is thought to be caused by foreign investment, HDI, population, minimum wage, and economic growth, based on the findings of the previously described research, it can be concluded that foreign investment, HDI, and minimum wage have no statistically significant effect on educated unemployment. Statistically, population growth has a very strong influence on the number of educated unemployed, with a confidence level of 1%. Meanwhile, economic growth has the potential to reduce the number of unemployed people, despite having only a 10% confidence level. Suggestions for future research include including other variables thought to have an effect on educated unemployment, such as an increase in exports and imports, and specifically examining the educated unemployment model based on graduates to determine which one has the most significant effect.

Acknowledgements

This is self-funded research. We do thank you to the journal editor who has proposed double-blind reviewers, and therefore, this manuscript has been reviewed and accepted.

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