JOURNAL OF DEVELOPING ECONOMIES
https://e-journal.unair.ac.id/JDE/index

SOCIOECONOMIC DYNAMICS AND POVERTY RATE IN EAST JAVA: A PANEL REGRESSION INVESTIGATION

Nabilah Sa'diyah[*1]
Laila M. Pimada[2]

[1,2] Universitas Brawijaya, Malang, Indonesia

ABSTRACT

Economic development can be described as a process of system or non-social system in order to achieve a better condition. It is often related to public welfare as evidenced by the poverty phenomenon experienced by the population. The population growth in a country must be controlled in order to prevent a threat to the country's welfare, since an increase in the population will lead to an increase in the need for fulfillment. This condition should be balanced with a proper income alignment. East Java Province has the second highest population in Indonesia. In fact, this condition has had an impact on the economic development process, particularly in East Java, where there has been an increase in the poverty rate. Over the past decade, the poverty rate in East Java has fluctuated. It showed an increase in a few years, namely 2015, 2020, and 2021, with an average increase of 0.88%. This study aims to identify the effects of several factors on the poverty rate in East Java between 2017 and 2022. Furthermore, this study used a quantitative method with a panel regression analysis. The independent variables included open unemployment rate, labor force participation rate, minimum wage, and education level. This study found that open unemployment rate and minimum wage affected poverty rate. In contrast, labor force participation rate and education level did not affect poverty rate.

Keywords: *Poverty Rate, Open Unemployment Rate, Labor Force Participation Rate, Minimum Wage, Education Level*

JEL: I31; J3; J10

ARTICLE INFO

Received: November 13th, 2023
Revised: March 7th, 2024
Accepted: April 16th, 2024
Online: June 4th, 2024

*Correspondence:
Nabilah Sa'diyah

E-mail: nabilasadiyah19@gmail.com

To cite this document: Sa'diyah, N. & Pimada, L. M. (2024). Socioeconomic Dynamics and Poverty Rate in East Java: A Panel Regression Investigation. *Journal of Developing Economies*, 9(1), 107-127. https://doi.org/10.20473/jde.v9i1.51515

Introduction

Economic development is associated with the attempts to prevent unemployment, inequality, and poverty. Development is a multidimensional process that involves all sorts of fundamental changes either in the social or non-social system, as well as the reduction of inequality and the prevention of poverty (Todaro & Smith, 2012). Poverty is one of the recent economic development issues in Indonesia. Based on the theory of poverty cycle proposed by Ragnar Nurkse, poverty appears as a result of market backwardness, imperfection, and lack of capital (Kuncoro, 2010). Poverty is still a problem that should concern all provinces

in Indonesia, including East Java with a relatively high economic level (Central Bureau Statistics of East Java Province, 2023d). However, East Java has occupied the third highest position of poverty rate in Java Island during from 2013 to 2022 with an average percentage of poor population about 11.68% (Central Bureau of Statistics, 2023). Meanwhile, East Java Province with a total population of 41.15 million people is the second province with the largest population throughout Java Island and in Indonesia (Central Bureau Statistics of East Java Province, 2023d). The uncontrolled increase of population growth can harm and threat the wellbeing of the population and increase the possibility of poverty (Berliani, 2021). The poverty rate in East Java has decreased from 2016 to 2019 with an average decrease of 0.49% (Central Bureau of Statistics, 2023). However, the poverty rate has also increased in several years, namely in 2015, 2020, and 2021, with an average increase of 0.88%.

The increase in the poverty rate is caused by the open unemployment rate (Putra & Arka, 2018). The phenomenon of unemployment reflects the unproductivity of the society. Unemployment affects the decrease of income and wellbeing of the society (Sukirno, 2019). This condition has caused the inability of the society to fulfill their needs, thereby increasing the poverty rate. The open unemployment rate in East Java has decreased from 2017 to 2019 with an average decrease of 0.13% (Central Bureau Statistics of East Java Province, 2023d). However, the open unemployment rate in East Java Province has also increased in 2020 with an average increase of 2.02%.

In addition to the open unemployment rate, the labor force participation rate also affects poverty rate (Mirah et al., 2020). The labor force participation rate is described by the percentage of the population with the active working age in economic activities. The increase in the labor force participation rate has signified an increase in the labor supply in the production of goods and services (Central Bureau of Statistic, 2021a). From the data processed by the Central Bureau of Statistics of East Java Province, the labor force participation rate in East Java tended to increase from 2018 until 2020, with percentages of 69.56%; 69.61%; and 70.33%, and an average increase of 0.52% (Central Bureau Statistics of East Java Province, 2023a). The increase of labor force participation rate will contribute to the reduction of poverty rate. On the other hand, the decrease of labor force participation rate can trigger an increase in the poverty rate (Mirah et al., 2020).

Another factor that can affect poverty is the minimum wage (Kurniawan & Suparta, 2020). According to Panjawa (Pertiwi & Setyowati, 2022), wage is defined as a compensation paid to a unit of work in the form of money. Wage plays an important role for both producers and workers. Meanwhile, according to Feriyanto (Azizah & Setyowati, 2022), minimum wage is an attempt to improve the lives of low-income workers, especially for workers who are classified as poor. The higher the minimum wage, the higher the income of the society, thereby increasing the welfare of the society. The minimum wage in East Java Province has increased every year, particularly from 2017 to 2022 (Keputusan Gubernur Jawa Timur No. 188/803/KPTS/013/2021 Tentang Upah Minimum Kabupaten/Kota di Jawa Timur Tahun 2022, 2021).

In addition to the above factors, the low education of the society can also affect the poverty rate in Indonesia (Berliani, 2021). Education is a significant factor in shaping individual characters in the formation of the character of society and nation. Therefore, education is a fundamental need that must be fulfilled so that it is taken as a foundation in national development and progress. The level of social welfare in a region is represented by its education level. The higher the education level, the higher the productivity of an individual to increase the amount of income (Azis et al., 2021). Through the increase of income, the individual will be able to fulfill their needs, thereby reducing poverty. Mean years of schooling is one of the parameters used to describe the education level of a society, and East Java Province is in the

second position of the lowest mean years of schooling in Java with an average of 7.67 years or equivalent to completing the first semester of the eighth grade of junior high school during 2017-2022 (Central Bureau Statistics of East Java Province, 2023b). Sampang is a regency with the lowest mean years of schooling in East Java with an average of 4.63 years or equivalent to completing the fifth grade of elementary school. According to the data, the mean years of schooling in East Java is still under 12 years or equivalent to senior high school level, and even the lowest average does not reach 6 years or equivalent to the sixth grade of elementary school.

This study is motivated by a research gap with other previous studies, such as Purboningtyas et al. (2020), Putra & Arka (2018), Soejoto & Karisma (2013), and Berliani (2021), which mentioned that unemployment factor could affect poverty. Nevertheless, the result was in contradiction with the study by Suripto & Subayil (2020) which stated that unemployment could not affect poverty because it was dominated by unemployed people with high education level. Therefore, they could actually fulfill their needs, since not all unemployed people were always poor. This recent finding asserts that sometimes unemployed people with high education level in urban areas do not work voluntarily because they might seek for the better job according to their education level. This finding shows an inconsistency. On the other hand, previous research on labor force participation rate conducted by Mirah et al. (2020) showed that labor force participation rate between male and female workers affected the reduction of poverty rate.

Previous studies on minimum wage, such as Romi & Umiyati (2018) and Kurniawan & Suparta (2020), have pointed out that minimum wage can affect poverty. Meanwhile, Agustin et al. (2019) found that minimum wage can affect poverty rate, but it does not affect poverty depth and severity. This finding shows an inconsistency. Another previous study by Azis et al. (2021) investigated two dependent variables, namely open unemployment rate and poverty. The result showed that education affected poverty. Studies by Agustin et al. (2019), Azis et al. (2021), Berliani (2021), Kurniawan & Suparta (2020), Purboningtyas et al. (2020), Putra & Arka (2018), Romi & Umiyati (2018), and Soejoto & Karisma (2013) used the multiple linear regression analysis method, while the study by Mirah et al. (2020) used the path analysis method. Meanwhile, this study used the panel data regression method.

Many developing countries have relatively high economic growth, but they still fail to benefit the poor population. Hence, the spread of poverty and inequality is the main problem of within the national development, which really needs social concern, especially the government as a policy maker. If the result of government efforts is not maximum and equal, the effects of poverty will be widespread and bring bad effects on the economy. Therefore, this study aims to identify the effects of open unemployment rate, labor force participation rate, minimum wage, and education level on poverty rate in East Java Province from 2017 to 2022. Furthermore, this study is expected to be a consideration for the government of East Java as a policy maker to formulate and arrange policies and make proper decisions relating to the open unemployment rate, labor force participation rate, minimum wage, and education level to reduce poverty rate.

Literature Review

Theory of Poverty in Economics

According to the Central Bureau of Statistics, poverty is measured using the basic needs approach or the concept of ability to fulfill basic needs. Therefore, poverty is described as a population that is unable to fulfill the daily basic needs due to living in poverty (Central Bureau of Statistics, 2023). The Vicious Circle of Poverty theory stated by Ragnar Nurske suggests

that poverty might occur because of market backwardness, imperfection, and lack of capital, thereby affecting productivity (Kuncoro, 1997). According to Ragnar Nurkse, this theory of poverty is observed from the supply and demand sides.

From the supply side, it shows that in underdeveloped countries, poverty causes low population productivity. Low productivity is reflected in low income, which increases the inability of the population to save. As a result, the population is unable to increase their investment and the capital formation cannot be carried out. This causes the population to be unable to meet their daily needs, thereby increasing the poverty rate.

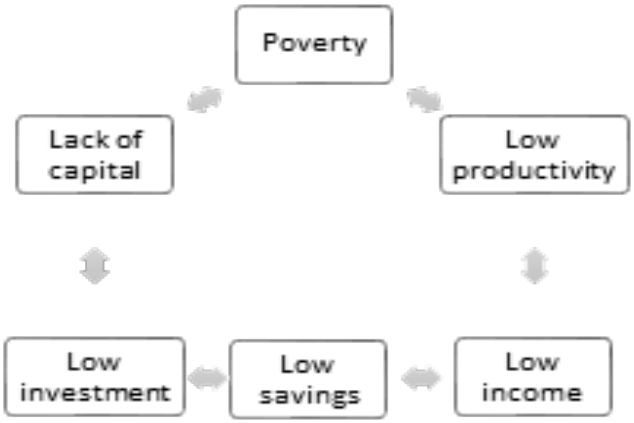

Figure 1: The Vicious Circle of Poverty Theory from the Supply Side

Source: Hudiyanto (2014)

Nurkse has also described the vicious circle of poverty from the demand side. Figure 2 illustrates that the high rate of poverty can have an impact on the low productivity of an individual, thus affecting the amount of income gained.

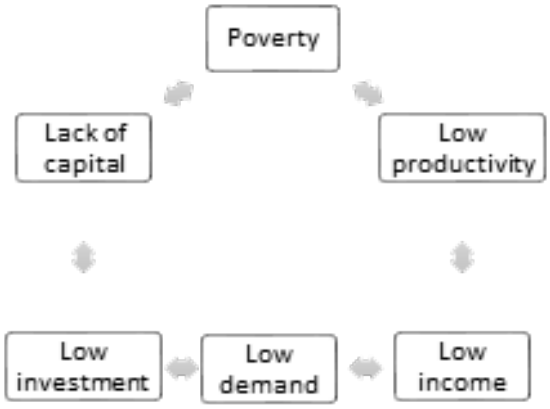

Figure 2: The Vicious Circle of Poverty Theory from the Demand Side

Source: Hudiyanto (2014)

Therefore, if the individual cannot purchase a product, the product demand will be lower. The lower product demand will cause lower investment and lower capital arrangement. This condition causes the poverty rate to increase because people are unable to fulfill their needs.

Concept of Unemployment

Unemployment refers to those who do not work at all, those who seek work, and those who work less than two days in a week (Halim, 2012). Meanwhile, open unemployment rate is defined as the number of unemployed people in relation to the number of labor force, expressed as a percentage (Central Bureau of Statistic, 2021b). According to Todaro, unemployment is closely associated with poverty rate (Soejoto & Karisma, 2013). A low standard of living is reflected in the form of low income, inadequate housing, poor health, and minimal or no education, high infant mortality, relatively short life expectancy, and low chance of getting a job. The low chance of getting a job means the higher possibility of becoming unemployed. The high unemployment rate will affect the lower income obtained by an individual. Therefore, they cannot meet their basic needs and contribute to the increase in the poverty rate.

Concept of Labor Force Participation Rate

According to the Central Bureau of Statistics (2023), people over 15 years old are classified as working age population. Therefore, labor force is a population that is within productive and working age, while not working and unemployed. Meanwhile, labor force participation rate is a ratio between the number of labor force and population over 15 years old (Central Bureau of Statistic, 2021a). The increase in the number of working age population will trigger an increase in the number of labor force and labor force participation rate (Bakir & Manning, 1984). The increase of labor force participation rate signifies a high number of active populations in economic activities. Therefore, it might contribute to the increase of national income per capita. This condition will also affect the reduction of poverty rate. Conversely, the higher the number of non-labor force, the smaller the number of labor force and labor force participation rate.

Concept of Minimum Wage

Panjawa has stated in his study that wage is a compensation paid to a unit of work in the form of money (Pertiwi & Setyowati, 2022). Wage plays an important role for both producers and workers. For the producers, wage turns into a production cost that must be pressed and reduced in order to be efficient. Meanwhile, for the workers, wage turns into a compensation for their service that has been performed and becomes a source of income. Therefore, the amount of wage can determine people's living rate. Feriyanto stated that minimum wage is an effort to improve the life of workers with low income, especially for the workers who are included in the poor population (Azizah & Setyowati, 2022). The higher the amount of minimum wage, the higher the people's income, thereby improving the public welfare. Moreover, wage is one of the income sources. If the income source is decreased or even the same, the welfare will be reduced or certainly affect the poverty rate.

Concept of Education Level

Education is a systematic effort which is aimed to equip and help every human being to achieve a stage of their life, which is internal and external happiness (Yusuf, 2018). Education is one of the attempts that can be made by an individual to be free from poverty (Todaro & Smith, 2012). Moreover, education is a human capital because of its great contribution to economic development (Putra & Arka, 2018). This statement is in line with the statement by Todaro that education is one of the fundamental factors of development. Education is one of the aspects that plays an important role in building a country's capacity by absorbing modern technology and developing the capacity to achieve a sustainable development. The mean years of schooling is one of the measurements which are exerted to measure the educational

achievement of individuals that is described by the average number of years of population over 15 years old in accomplishing formal education (Central Bureau Statistics of East Java Province, 2023b).

Hypothesis

Relationship between Open Unemployment Rate and Poverty Rate

Open unemployment is a person who does not have a job due to the unavailability of employment and jobs that do not match their educational background or expertise (Gatiningsih & Sutrisno, 2017). Basically, unemployment is affected by the mismatch between the number of labor force and the number of job (Halim, 2012). Therefore, unemployment might cause the lower income of people. As a consequence, it causes the society to reduce their daily life expenditure, decrease the welfare rate, and increase the poverty rate. According to Purboningtyas et al. (2020) and Soejoto & Karisma (2013), open unemployment rate can positively and significantly affect poverty rate. Therefore, the increase of unemployment will increase poverty rate. In short, the open unemployment rate variable is related to the following hypothesis:

H1: Open unemployment rate significantly affects poverty rate.

Relationship between Labor Force Participation Rate and Poverty Rate

Labor force participation rate is a ratio of the number of labor force and the population of 15 years old and above (Central Bureau of Statistics, 2021a). The labor force participation rate can affect the poverty rate (Mirah et al., 2020). The increase in the labor force participation rate refers to an increase in the number of labor force. This condition indicates the number of productive populations in economic activities, thereby resulting in a higher output. In relation to this, the amount of income will be increased and affect the decrease of poverty rate. On the other hand, the decrease of labor force participation rate means the lower number of labor force and non-labor force population that can cause the low productivity of society, thereby reducing the output. This situation leads to the decrease of income and the inability of the society to fulfill their primary needs, which then affects an increase in poverty rate. Therefore, the labor force participation rate variable is related to the following hypothesis:

H2: Labor force participation rate significantly affects poverty rate.

Relationship between Minimum Wage and Poverty Rate

According to Feriyanto, minimum wage is an attempt to improve the life of workers with low income level, especially those who are categorized into the poor population (Azizah & Setyowati, 2022). The notion of minimum wage has been developed since 1970 and aimed to guarantee workers to fulfill their daily needs and promote their productivity and welfare (Agustin et al., 2019). According to Kurniawan & Suparta (2020) and Romi & Umiyati (2018), minimum wage negatively affects poverty rate. Therefore, the increase in minimum wage will affect the decrease of poverty rate. In short, the minimum wage variable is related to the following hypothesis:

H3: Minimum wage significantly affects poverty rate.

Relationship between Education Level and Poverty Rate

Education is considered as human capital due to its great contribution to economic development (Putra & Arka, 2018). The higher the level of education, the higher the productivity of an individual, thereby increasing their income (Azis et al., 2021). When the amount of

income is increased, the individual can fulfill their needs, thereby reducing the poverty rate. The education level negatively affects the poverty rate. Therefore, the improvement of education level can help lower the poverty rate (Berliani, 2021). In short, the education level variable is related to the following hypothesis:

H4: Education level significantly affects poverty rate.

Data and Research Methods

Research Approach

This study used a quantitative approach that was aimed to determine the effects of open unemployment rate, labor force participation rate, minimum wage, and education level variables on the poverty rate in East Java Province during 2017-2022.

Research Sample

The panel data included time series data or annual time series from 2017 to 2022 and cross-sectional data that covered about 38 regencies/cities in East Java Province. The technique of data sampling used in this study was saturated sampling. All study populations were included in the samples, with a total of 228 observational data. The 2017-2022 period was selected because of a limitation in the data availability from the objects observed in this study. Therefore, valid and relevant data that were published in the official website of the Central Bureau of Statistics were used.

Data Source

This study included secondary data from books, journals, reports, and website of the Central Bureau of Statistics of Indonesia and East Java Province that were relevant to the theory or research data.

Data Collection Method

The data collection method used in this study was documentation. The data were obtained from documents containing past events or phenomena (Syahrum & Salim, 2014), namely the publications from the Central Bureau of Statistics of Indonesia and East Java Province, books, scientific journals, official websites, and related sources that might be relevant to this study.

Data Analysis Method

The data analysis method used in this study was panel data regression. Panel data are data consisting of time series data and cross-sectional data (Gujarati & Porter, 2010). Regression analysis was used to analyze the data properly so that they are in accordance with the research objectives. The level of significance in this research was 5% or 0.05. The panel data regression analysis was expressed in the following equation:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + e \quad (1)$$

Where:

Y = poverty rate of a regency/city in East Java Province

β_0 = constant

X_1= open unemployment rate of a regency/ city in East Java Province

X_2= labor force participation rate of a regency/ city in East Java Province

X_3= minimum wage of a regency/city in East Java Province

X_4= education level of a regency/city in East Java Province

$\beta_1, \beta_2, \beta_3, \beta_4$ = coefficient of independent variables

e= error term

i = 1, 2, 3, …., 38 (regency/city in East Java Province)

t = 1, 2, 3, 4, 5, 6 (period of 2017-2022)

In panel data regression, it is necessary to test several models to obtain the best model estimates (Gujarati & Porter, 2010).

1. Common Effect Model (CEM) or Pooled Least Square (PLS)
   The Common Effect Model or Pooled Least Square combines time series data and cross-sectional data using the Ordinary Least Square (OLS) method of panel data estimation. This model ignores time dimensions or individual companies because data behavior is assumed to be the same.
2. Fixed Effect Model (FEM)
   Given that each cross-sectional unit may have several characteristics of its own, this model allows interception in its regression to differ between an individual and another.
3. Random Effect Model (REM)
   The interception of a unit in this model is taken randomly from a population with a constant mean value and the intersection is expressed as a deviation from the constant mean value.

There are three model estimation techniques to determine the best model among the Common Effect Model, the Fixed Effect Model, and the Random Effect Model.

1. Chow Test
   This test is used to determine whether CEM or FEM is the most appropriate model to estimate panel data. CEM is selected if the Chi-squared cross-sectional probability value is more than 0.05 and proceed with the Lagrange Multiplier Test. FEM is selected if the Chi-squared cross-sectional probability value is less than 0.05 and proceed with the Hausman Test.
2. Hausman Test
   This test aims to determine whether the Fixed Effect Model (FEM) or the Random Effect Model (REM) is the most appropriate model to estimate panel data. REM is selected if the random cross-sectional probability value is more than 0.05 and proceed with the Lagrange Multiplier Test. FEM is selected if the random cross-sectional probability value is less than 0.05 and the best model selection is complete.
3. Lagrange Multiplier Test
   The Lagrange Multiplier test is used to determine whether the Random Effect Model is better than the Common Effect Model (CEM) to estimate panel data. CEM is selected if both values are more than 0.05 and the best model selection is complete. REM is selected if both values are less than 0.05 and the best model selection is complete.

Results and Discussion

Poverty Rate in East Java Province during 2017-2022

The poverty rate in this study was calculated from the data of the percentage of poor population (Central Bureau of Statistics, 2023). Based on the annual report of the Central Bureau of Statistics, East Java Province was ranked third with the highest poverty rate throughout East Java Province during 2017-2022 with an average of 11%.

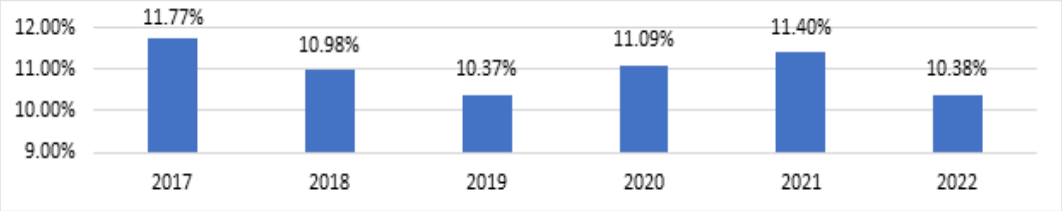

Figure 3: Poverty Rate in East Java Province during 2017-2022

Source: Central Bureau Statistics of East Java Province (2023d)

Based on Figure 3, the average of poverty rate in East Java was about 11%, one of them decreased from 11.77% in 2017 to 10.98% in 2018 (Central Bureau Statistics of East Java Province, 2023d). Subsequently, another decrease of 10,37% in 2019 was caused by the procurement of non-cash food assistance that was formulated in 2017 (Agustina & Megawati, 2022). However, the poverty rate increased from 10.37% in 2019 to 11.09% in 2020 and 11.40% in 2021. East Java was one of the economic centers and has the second largest population in Indonesia and Java Island with a total population of 41.15 million people (Central Bureau of Statistics, 2023). Therefore, poverty alleviation in East Java Province should highlight and focus on the number of population that can affect the poverty rate (Devanantyo, 2021). About five regencies were found to have the highest rate of poverty: Sampang Regency, Bangkalan Regency, Sumenep Regency, Probolinggo Regency, and Tuban Regency. These five districts should get a special concern because the economic activities in these regencies were relatively large,along with a relatively high poverty rate in each region.

Open Unemployment Rate in East Java Province during 2017-2022

In this study, unemployment was projected with an open unemployment rate, which refers to the percentage of the number of unemployment and labor force (Central Bureau of Statistics, 2021b).

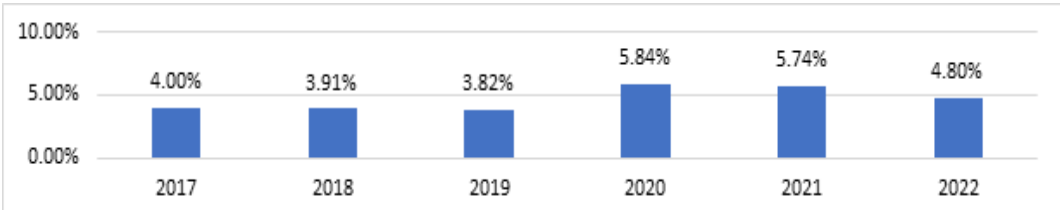

Figure 4: Open Unemployment Rate in East Java Province during 2017-2022

Source: Central Bureau Statistics of East Java Province(2018b); (2020b); (2023c); (2023d)

Based on Figure 4, the average of open unemployment rate in East Java during 2017-2022 was 4.69%. This was caused by an increase from the previous year of 2019 to 2020 about 2.02%, This increase was affected by a job termination due to the COVID-19 pandemic (Muslim, 2020). Several regencies and cities were included in the areas with a relatively high economy, but the percentage of unemployed population was still high, for instance, Malang City, Surabaya City, Bangkalan Regency, Gresik Regency, and Sidoarjo Regency (Central Bureau Statistics of East Java Province, 2023d).

Labor Force Participation Rate in East Java Province during 2017-2022

In this study, labor force participation rate is the ratio between the number of labor force and the number of population aged 15 years old and above (Central Bureau of Statistics, 2021a). As shown in Figure 5, the percentage of average labor force participation rate in East

Java was 69.92% during 2017-2022. The percentage of labor force unemployment rate was a result of the increase in four consecutive years (2017-2020) with a percentage of 68.78%, 69.56%, 69.61%, and 70.33%, respectively (Central Bureau Statistics of East Java Province, 2023a).

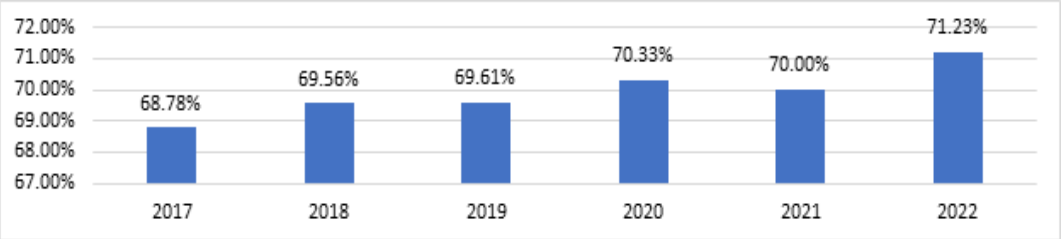

Figure 5: Labor Force Participation Rate in East Java Province during 2017-2022

Source: Central Bureau Statistics of East Java Province (2018a); (2019a); (2020a); (2022a); (2023a)

However, the labor force participation rate declined from 70.33% in 2020 to 70% in 2021 and significantly increased to 71.23% in 2022. This study found some regencies with the highest labor force participation rate: Pacitan Regency, Magetan Regency, Sumenep Regency, Bondowoso Regency, and Trenggalek Regency.

Minimum Wage in East Java Province during 2017-2022

Minimum wage refers to the amount of minimum income that workers collect in rupiahs. Figure 6 illustrates that the minimum wage of East Java Province increased every year.

Figure 6: Minimum Wage of East Java Province during 2017-2022

Source: Keputusan Gubernur Jawa Timur No. 188/803/KPTS/013/2021 Tentang Upah Minimum Kabupaten/ Kota di Jawa Timur Tahun 2022 (2021)

Based on the data, until 2022, a number of regencies and cities that have implemented a relatively high minimum wage were Surabaya City, Gresik Regency, and Sidoarjo Regency. This high amount of minimum wage was affected by the fact that these districts and cities are located in a dense industrial area of East Java Province.

Education Level in East Java Province during 2017-2022

In this study, education level was observed through the mean years of schooling, which was used to measure individual achievement in terms of accomplishing formal education, expressed in years (Central Burau Statistics of East Java Province, 2023b). Figure 7 illustrates that the mean years of schooling in East Java Province increased significantly every year (Central Burau Statistics of East Java Province, 2023c). This increase was affected by the implementation of free tuition program for all state junior high schools/vocational schools in East Java Province that has been carried out since 2019 (Dinas Komunikasi dan Informatika Provinsi Jawa Timur, 2020).

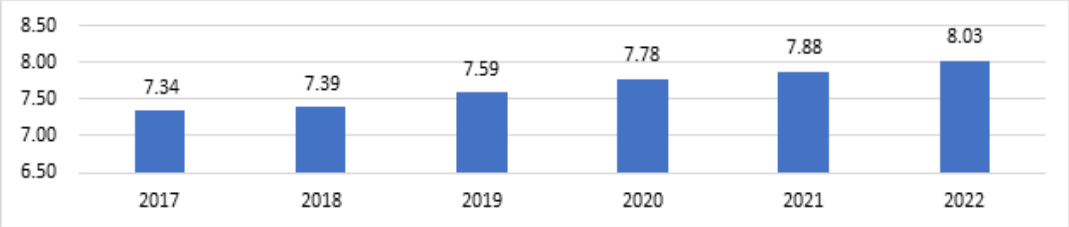

Figure 7: Mean Years of Schooling in East Java Province during 2017-2022

Source: Central Bureau Statistics of East Java Province (2019b), (2020b), (2021a), (2023c)

Through the implementation of free tuition program, state junior high schools/ vocational schools in East Java were asked not to charge tuition to the students, especially new students, in any form. The school tuition could be replaced with the School Operational Assistance and Regional Revenue and Expenditure Budget of East Java Province in the form of operational assistance cost of education management in 2020. As for private junior high schools/vocational schools, the government only subsidizes part of the tuition fee. Therefore, it is not completely free. Additionally, due to the COVID-19 pandemic, the mean years of schooling only slightly increased (Dinas Komunikasi dan Informatika Provinsi Jawa Timur, 2022). Although the government has implemented a program aimed to improve the mean years of schooling, the authors found some regencies with the lowest mean years of schooling, including Sampang Regency, Bangkalan Regency, Sumenep Regency, Probolinggo Regency, and Bondowoso Regency. This condition has depicted that the average population in Indonesia are educated up to elementary school level. This phenomenon might be influenced by the lack of education fee since many of them preferred to work to get an amount of income rather than education, which is considered as not really important (Fauziah et al., 2020). The low mean years of schooling could lead to the limited self-development and low quality of human resources. This condition then leads to the low productivity of the society and increases the poverty rate.

Selection of Panel Data Regression Estimation Model

Chow Test

Table 1 presents the results of Chow test that was aimed to prove which model was the best one between Common Effect Model and Fixed Effect Model.

Table 1: Chow Test Results

Effects Test	Statistic	Prob.
Cross-section F	136.463505	0.0000
Cross-section Chi-square	760.928121	0.0000

Based on Table 1, the probability value of Chi-squared cross-sectional was 0.0000 (0.0000 < 0.05). Therefore, the model selected in this study was Fixed Effect Model (FEM).

Hausman Test

Table 2: Hausman Test Result

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	40.673203	0.0000

After the Fixed Effect Model (FEM) was selected based on the results of the Chow test, the authors continued the analysis by performing the Hausman Test, which was aimed to

prove the best model between Fixed Effect Model and Random Effect Model.

Based on Table 2, the probability value of random cross-sectional was 0.0000 (0.0000 < 0.05). Therefore, the model selected in this study was FEM and the selection of the best model was done.

Results of Panel Data Regression Analysis

Partial Test (t-Test)

The t-Test or partial significance test was a test to indicate the extent to which the effect of a dependent variable is to explain the dependent variables individually (Ghozali & Ratmono, 2020). The results of the best model selection of Fixed Effect Model (FEM) are presented in the following table.

Table 3: Panel Data Regression Results of the Fixed Effect Model

Variable	*Coefficient*	*Std. Error*	*t-statistic*	Prob.
Constant (C)	6.249195	0.742429	8.417227	0.0000
Open Unemployment Rate (X1)	0.083075	0.015532	5.348676	0.0000
Labor Force Participation Rate (X2)	-0.098589	0.135204	-0.729186	0.4668
Minimum Wage (X3)	-0.221316	0.051696	-4.281087	0.0000
Education Level (X4)	-0.205154	0.161747	-1.268365	0.2063
R-squared	0.989288			
Adjusted R-squared	0.986927			
F-statistic	418.9842			
Prob(F-statistic)	0.000000			

Based on Table 3, the probability value of open unemployment rate variable was 0.0000, indicating that the poverty rate was significantly affected by the variable. The probability value of the labor force participation rate was 0.4668, indicating that the poverty level was not affected by the variable. The probability value of the minimum wage variable was 0.0000, indicating that the minimum wage had a significant effect on poverty rate. Furthermore, the probability value of the education level variable was 0.2063, indicating that poverty rate was not affected by the variable.

Simultaneous Test (F-Test)

F-test or simultaneous significance test was a test to indicate whether all dependent variables could affect independent variables at the same time (Ghozali & Ratmono, 2020). Based on Table 3, the probability value of F-statistics was 0.000000 (0.000000 < 0.5), indicating that the variables of open unemployment rate, labor force participation rate, minimum wage, and education level simultaneously affected the poverty rate in East Java Province during 2017-2022.

Determinant Coefficient

Determinant coefficient was used to test the model capability in explaining the variation of dependent variables (Ghozali & Ratmono, 2020). If the determinant coefficient value (r2) is almost 1, the independent variables provide almost all information needed to predict the variation. Based on Table 3, the determinant coefficient value was 0.989288, indicating that 98.93% of the dependent variable could be explained by the independent variables, while 1.07% were explained by the other variables outside this study.

Classical Assumption Test

Normality Test

Normality test was aimed to prove whether the confounding variable or residual data of a regression model could contribute normally or not (Ghozali & Ratmono, 2020). Based on the tests that have been carried out, the probability value of 0.497189 indicated normal distribution.

Autocorrelation Test

Autocorrelation test was aimed to prove the correlation between the confounding error in t-1 period (before) and the data in regression model (Ghozali & Ratmono, 2020).

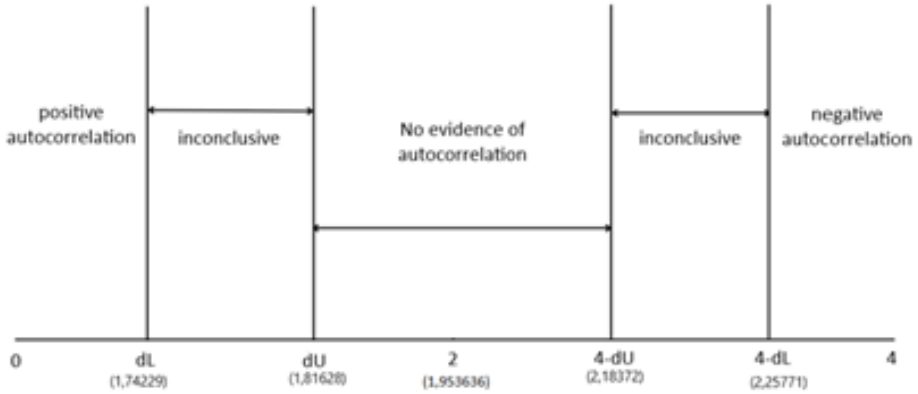

Figure 8: Durbin-Watson Autocorrelation Test Result

Based on Figure 8, the Durbin-Watson value of 1,953636 indicated no autocorrelation.

Multicollinearity Test

Multicollinearity test was aimed to prove whether a perfect linear relationship was present between or among all independent variables within a regression model (Ghozali & Ratmono, 2020).

Table 4: Multicollinearity Test Results of the Variance Inflation Factors

Variable	VIF
Open Unemployment Rate (X1)	1.808553
Labor Force Participation Rate (X2)	1.175641
Minimum Wage (X3)	1.548339
Education Level (X4)	1.408509

Based on Table 4, the VIF values of the four independent variables were less than 10 (VIF < 10), which indicated no multicollinearity problem among the data of the regression model in this study.

Heteroscedasticity Test

Heteroscedasticity test was used to prove that the data of a regression model might contain variance inequality from one observation residual to another (Ghozali & Ratmono, 2020). Based on the test that was carried out, the probability value of Chi-square (Obs*R-squared) was 0.1118, indicating that the data of the regression model in this study did not have heteroscedasticity problems.

Discussion

Effects of Open Unemployment Rate on Poverty Rate

The results of partial significance test showed that open unemployment rate had significant effects on the poverty rate in East Java Province during 2017-2022. This finding was not consistent with the previous study conducted by Suripto & Subayil (2020) which found that unemployment did not affect poverty. However, the finding of this study was consistent with other studies conducted by Berliani (2021), Purboningtyas et al. (2020), and Putra & Arka (2018). Furthermore, this finding was also consistent with the statement of Todaro that a low standard of living was described by low job opportunities, thereby increasing unemployment possibility and poverty rate.

The trade-off between unemployment and poverty due to the interconnected nature of both factors was really strong (Agénor, 2004). Poverty would increase if the level of unemployed people increased. Based on the observation made by the authors, one of the factors that affected the increase of unemployment was the COVID-19 pandemic, which not only affected the health sector, but also the national economy (Muslim, 2020). As shown in Figures 3 and 4, an increase in open unemployment rate was followed by an increase in poverty rate, especially in 2019 and 2020.

Effects of Labor Force Participation Rate on Poverty Rate

Based on the results of partial significance test, labor force participation rate did not have significant effects on poverty rate in East Java Province during 2017-2022. This finding was not consistent with the hypothesis and the previous study conducted by Mirah et al. (2020) in that labor force participation rate significantly affected poverty rate. According to the observation made by the authors, labor force participation rate did not affect poverty rate because the population could not fulfill the requirements of available employment classification (Rasyadi, 2011). The population growth continued to increase every year during the observation period with an average increase of 371.400 people per year. This has caused an increase in the number of non-labor force population, thereby decreasing labor force participation rate.

In addition, labor force participation rate did not affect poverty rate due to the implementation of the Pre-Employment Card (*Kartu Prakerja*). This program was a financial assistance in the form of training for Indonesian citizens who intend to increase or obtain work skills (Ministry of Finance of Indonesia, 2020). This program is aimed for people who are looking for a job, laborers, workers, employees, entrepreneurs of small- and micro-enterprises who are affected by the COVID-19 pandemic and did not have formal education. The beneficiaries of the Pre-Employment Card in February 2022 reported that 86.7% of the incentive was allocated to fulfill the daily needs, 33.84% was used for business capital, 11.71% was paid for debts, 19.64% was allocated for savings, and 2.81% for the other purposes (Central Bureau of Statistics, 2022). This indicated that the Pre-Employment Card has contributed to the reduction of poverty as people could get some financial assistance in order to fulfill their daily needs. Moreover, many people have started a new business to improve the economic condition.

Effects of Minimum Wage on Poverty Rate

Based on the results of partial significance test, minimum wage significantly affected poverty rate in East Java Province during 2017-2022. This finding is consistent with previous studies conducted by Agustin et al. (2019) and Kurniawan & Suparta (2020). One of the aspects that increased the amount of minimum wage was a new policy of minimum wage

which was determined by the government in order to protect the workers (Alaniz *et al.*, 2011). In the theory of poverty cycle proposed by Ragnar Nurkse, poverty was affected by the low amount of income that might impact the minimum investment and lack of capital. The new policy of minimum wage was expected to bring positive effects for the workers so that they could improve their standard of living. This indicated that the policy of minimum wage helped increase the salary of workers so that they received the amount of at least equal to the minimum wage. The increase of minimum wage would increase of the income of workers so that they could fulfill their basic needs. In a conclusion, this study found that improving the profitability of the individual or worker helps to get out of the poverty cycle.

Effects of Education Level on Poverty Rate

According to the results of partial significance test, education level did not have significant effects on poverty rate in East Java Province during 2017-2022. This finding is consistent with the studies conducted by Azis et al. (2021), Kurniawan & Suparta (2020), and Putra & Arka (2018), as well as the statement by Todaro that education was one of variables that played a significant role in creating the national ability to absorb modern technology and develop capacity for a sustainable development creation. The achievement of individuals in improving their economic condition was not only based on formal education, but also influenced by the other factors such as work experience and non-formal education in the form of work training (Arsyad, 2010). Both formal and non-formal education played an important role in reducing long-term poverty rate, either directly through training for unemployed people or poor population with related and necessary skills, or indirectly through improving productivity and efficiency in general, and increasing income.

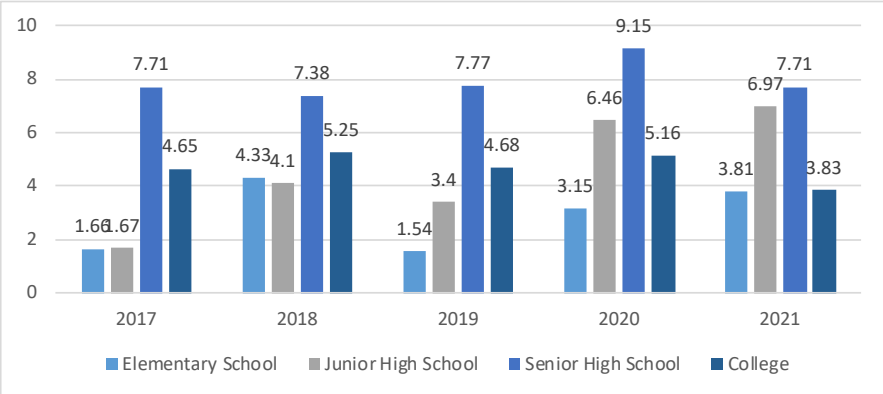

Figure 9: Open Unemployment Rate According to the Education Level in East Java Province during 2017-2022

Source: Central Bureau Statistics of East Java Province (2023d)

Work training and work experience are aspects that could improve economic achievement, with more work experience leading to higher income (Golung et al., 2018). Research shows that unemployed people with a high education level (senior high school and higher degrees) would receive higher wage than those with a low education level (Central Bureau Statistics of East Java Province, 2023d). The people with a low education level were commonly found in low-income families. These people tended to be non-selective in accepting job. Therefore, the number of unemployed people with a low education level were small. These results can be seen in Figure 9, which indicated that unemployed people with a high education level consisted of new graduates or new comers of the world of work. These new comers should not only compete with other new comers, but also with labor forces with better experiences that have first entered the labor market.

Conclusion

Based on the results on the effects of open unemployment rate, labor force participation rate, minimum wage, and education level on the poverty rate in East Java Province during 2017-2022, the authors concluded that open unemployment rate had significant effects on poverty rate. The effects occurred due to the trade-off phenomenon between unemployment and poverty and the COVID-19 pandemic. Therefore, poverty rate would increase when open unemployment rate increased. Subsequently, minimum wage also had significant effects on poverty rate. The improvement of minimum wage could help increase the income so that workers were able to fulfill the basic daily needs and get out of poverty. Furthermore, labor force participation rate did not affect poverty rate because the population could not meet the demand of available employment. Moreover, the Pre-Employment Card distinguished this study from the previous ones. Education level was not found to affect poverty rate since the individual achievement in improving the economic condition was not only based on formal education, but also by the other factors such work experience and non-formal education in the form of work training.

Referring to the conclusion above, the authors suggest that the government of East Java Province, especially the mayors/regents, further develop the potentials or special characteristics of each potential regency/city to be a center of economic activities, such as Jember Regency and Banyuwangi Regency, which are really potential to be tourism destinations. It is also expected from the government of East Java Province to create or provide employment by providing business assistance or start-up guidance or collaborate with particular industries in order to create and unlock new employment opportunities for the unemployed people. Moreover, the government of each regency/city in East Java Province is expected to organize free job trainings or courses for those with no work experience by allocating the available budget with an affordable cost. The trainings or courses should be adjusted to the development of new technology or the current type of job with the most demand, such as data analysis, big data analysis, graphic design, digital marketing, supply chain management, software developer, AI and machine learning specialist, and so forth.

Declaration

Conflict of Interest

The authors hereby affirm that they have no conflicts of interest pertaining to this publication. Furthermore, they disclose that there has been no substantial financial support for this research, thereby ensuring that external influences have not impacted its outcome.

Availability of Data and Materials

The data used in this study is sourced from the official website of Badan Pusat Statistik (BPS) and is publicly accessible for download. As this research did not involve the creation of new data, data-sharing protocols are not applicable in this context.

Authors' Contribution

In this research, NS played a leading role by conceptualizing the study, conducting data collection, performing statistical analyses, and contributing to result interpretation and discussion. LMP provided support in the study design and made substantial contributions to the elaboration of the discussion. In drafting the manuscript, both authors collaborated closely to finalize it for submission.

Funding Source

This research was conducted without the support of external funding from any public, commercial, or not-for-profit sources.

Acknowledgment

We extend our sincere gratitude to all individuals and organizations who played a vital role in the completion of this research endeavor. Our deepest appreciation goes to Universitas Brawijaya for their unwavering support and resources that facilitated the execution of this study. Additionally, we express heartfelt thanks to our beloved families for their constant encouragement and understanding throughout this journey. We are also grateful to the individuals who generously shared their insights, contributing to the depth and richness of our research findings.

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