# ANALYSIS OF FACTORS AFFECTING POVERTY LEVEL IN JAVA ISLAND

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**Abstract**

Java Island is an area that has the highest poverty level in Indonesia for every year. Java Island is a centralization area of economic development, but there is also a poverty problem centered on Java Island. Factors that can affect poverty include total population, income per capita and labor force participation rate. The research was conducted to find out how the influence of total population, income per capita and labor force participation rate on poverty levels in Java Island. The data used in this study are 6 provinces in Java for the period 2013 – 2019, so the panel data regression model is the method used in this study, with the selected model being is Fixed Effect Model (FEM). The results of this study represent that the total population does not effect on poverty levels in Java Island, income per capita has effects on poverty levels in Java Island and the labor force participation rate has effects on poverty levels in Java Island.

## INTRODUCTION

The most basic economic problem is poverty, where poverty can cause a decrease in welfare and hinder economic development in an area. In Indonesia, the number of poor people in 2019 was around 24.79 million people or 9.22% of the total population in Indonesia. One of the areas with a fairly high poverty rate is Java Island. On the island of Java, there are 2.56 million poor people with a percentage of 8.29%, meaning that Java Island has half the population of poor people in Indonesia (Statistik, 2019).

In general, the centralization of development in Java is considered to be one of the factors that trigger the high poverty rate every year. Economic development that does not move to other areas results in an increase in the number of residents every year. Income per capita is more less than the total population, accordingly the Java Island have the highest poverty rate in Indonesia (Ilham,2015).
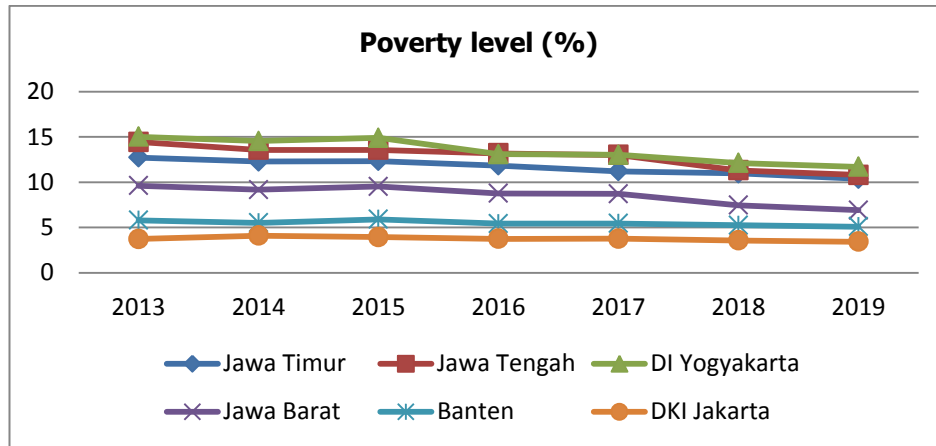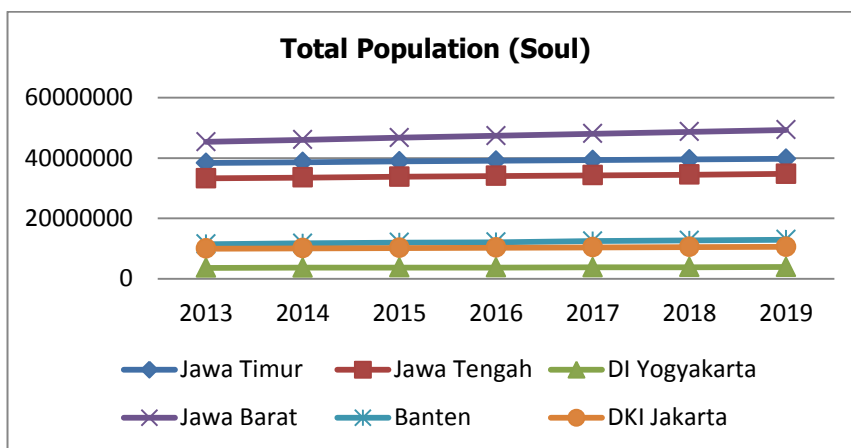
**Graph 1**
**Poverty Level of Java Island in 2013-2019 (%)**

Based on the table above, the provinces that have a high poverty rate are East Java, Central Java, Yogyakarta Special Region, and West Java. Meanwhile, the poverty level of DKI Jakarta and Banten provinces is relatively low. Based on graph 1, the poverty rate in all provinces of Java Island increased in 2015 due to an increase in inflation which made it difficult for people to meet their daily needs due to high prices of basic necessities (Giovanni, 2018). In the following years the poverty rate in Java Island has decreased, however, the highest poverty rate in Indonesia is still owned by the Java Island region.

The population density on the island of Java reached 1,184 people/km2 in 2019, the island is home to 60% of Indonesia's population. The population on the island of Java always increases every year because Java is the center of economic development. However, population growth that continues to increase can result in a decrease in resource capacity, hampering economic development and causing other socio-economic problems (Shalihah, 2021).



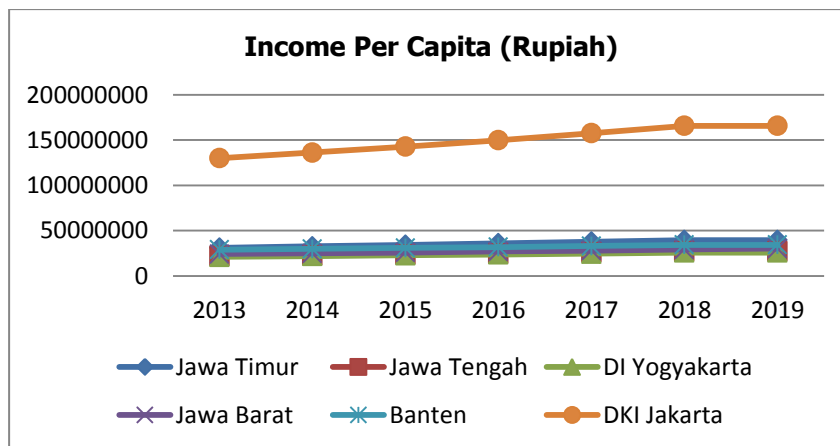**Graph 2**
**Total Population of Java Island 2013-2019**

Based on graph 2, during the 2013-2019 period, the population in all provinces on the island of Java always increases every year, but the poverty rate in all provinces of Java has actually decreased from 2017-2019. Although poverty in Java has decreased, if the population continues to increase, it will hamper efforts to reduce poverty. The article

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according to BPS in recent years there has been a slowdown in poverty reduction in Java, namely the decline is around 0.5% while the increase in population is faster, namely 1.5% every year. As a result, the distribution of social assistance and the distribution of prosperous rice (rastra) for the poor is hampered and uneven because the population is always increasing, therefore the number of poor people in Java is still high every year (Mustami, 2017).

Per capita income is an indicator of the development and level of welfare of a region, the higher the per capita income, the more prosperous the region. The basic concept of poverty is related to the level of income and minimum needs. If income cannot meet the minimum needs, then a person can be said to be poor (Munawaroh & Puruwita, 2012).
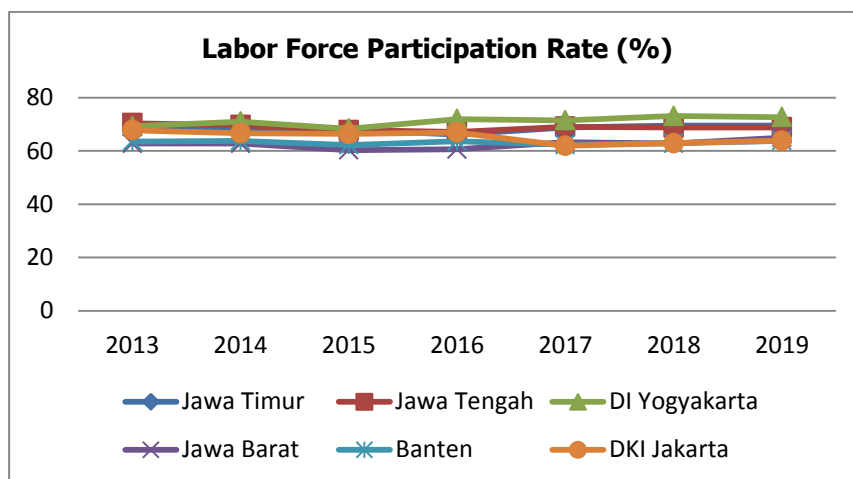


**Graph 3**
**Per Capita Income of Java Island in 2013-2019**

Based on graph 3, per capita income in Java has always increased from 2013-2019. Although per capita income always increases, its contribution to poverty can be said to be not optimal because the decline in the poverty rate is quite slow, namely the average decline is only 0.5% per year. In addition, the increase in per capita income that occurred in Java was influenced by the large population, not by the increase in wages/salaries received by the community, although as a center of the economy, but the Java Island has 4 provinces that have the lowest Provincial Minimum Wage (PMW) in Indonesia. Indonesia and the figure is around 1 million rupiah, namely Yogyakarta, East Java, West Java, and Central Java (Deny, 2018). In addition, there is still income inequality that occurs on the island of Java, for example in DKI Jakarta Province and other provinces on the island of Java. DKI Jakarta's per capita income in 2019 was 165.872 million Rupiah while other provinces such as Yogyakarta were only 25.776 million Rupiah. According to BPS, all provinces in Java have income inequality above 0.35%, which means that inequality in Java is at a moderate level, indicating that Java is the center of the economy, but the achievement of welfare is not evenly distributed (Sovita, 2016).

The Labor Force Participation Rate (LFPR) describes the working age population who have productivity or are economically active in working in daily activities. The increase in the workforce if it is not accompanied by the provision of employment opportunities causes low job opportunities which lead to an increase in the number of poor people because the opportunities to earn income are getting smaller (Lail, 2018).

**Graph 4**
**Java Island Labor Force Participation Rate in 2013-2019**

Based on Figure 4, LFPR in 6 Java Island Provinces experienced fluctuating development with an increasing trend. In 2014 the average LFPR decreased, but the phenomenon that occurred, namely the poverty rate on the island of Java also experienced a decline. The same phenomenon occurred in 2019, when the LFPR in Yogyakarta decreased, but the poverty rate in Yogyakarta also decreased. The cause of the decline in LFPR in Yogyakarta is the reduced number of job opportunities (Kota, 2020).

Based on the problems that have been described in the background above, there are differences in the results of previous studies and the dissimilarity between theory and data, making the authors decided to conducting a study entitled "Analysis of Factors Affecting Poverty Levels in Java".

**METHOD**

**1. Population and Sample**

The population in this study is the total population, per capita income and Labor Force Participation Rate (LFPR) in Java, which consists of 6 provinces, namely East Java, Central Java, Yogyakarta, West Java, Banten and DKI Jakarta. This study investigate data for the 2013-2019 period with a population of 6 provinces, and the number of samples in this study is 42 data. The saturated sample technique was chosen as the sampling technique in the study, namely the sampling technique when all members of the population were used as samples.

**2. Data collection technique**

In this study, the type of data used is secondary data, where secondary data is obtained indirectly, namely from intermediary media such as historical reports and archives, both published and unpublished. The data source is obtained from the official website of the Central Statistics Agency. Collecting data through documentation and literature study.

**3. Data analysis technique**

This study using panel data regression analysis techniques, which combines the reression time series data collected from time to time and cross section data from the number of individuals at one time (Widarjono & Pengantar, 2016). The time series data is for the period 2013-2019, and the cross section data is 6 provinces on the island of Java. The test is carried out through the use of the panel data equation function, then the regression equation that has been determined is:

$$Y\_it = \beta 0 + \beta 1\ X1\_it + \beta 2\ X2\_it + \beta 3\ X3\_it ] + \varepsilon ⟦\_it$$

where:

| | | |
|---|---|---|
| Y | : Poverty Level | |
| i | : Province in Java Island | |
| t | : Period 2013 to 2019 | |
| 0 | : Constant | |
| 1,β2,β3 | : Coefficient | |
| X1 | : Total Population | |
| X2 | : Income Per capita | |
| X3 | : Labor Force Participation Rate | |
| E | : Confounding variable | |

## RESULTS AND DISCUSSION

### 1. Classic Assumption Test

a. Normality test

This test aims to see whether the independent and dependent variables in the regression model are normally distributed or not. If the Jarque-Bera Probability value is more than 0.05, then the conclusion that can be drawn is that the data is normally distributed. If the probability value is less than 0.05, then the data is not normally distributed (Ghozali, 2013).

**Table 1**
**Normality Test Results**

| Jarque-Bera | 1.62225 |
|---|---|
| Probability | 0.922090 |

According to these results, the Jarque-Bera probability value is 0.922090 more than 0.05, so the conclusion that can be drawn is that the data is normally distributed and it means that there is no problem of normality and the classical assumptions about normality have been met.

b. Autocorelation Test

This test is carried out to detect whether or not there is a relationship between the nuisance error in period t and the error in the previous period (t-1). To find out the problem with autocorrelation, you can use the Durbin Watson test. By looking at the Durbin-Watson value, it is one way to find the autocorrelation problem. D-W value less than -2 indicates positive autocorrelation. The D-W value is between -2 and +2, so there is no autocorrelation problem. D-W value more than +2 indicates a negative autocorrelation (Santoso, 2012).

**Table 2**
**Autocorrelation Test Results**

| Durbin-Watson stat | 1.637740 |
|---|---|

The DW value in the table above is 1.637740 where the number lies between -2 and +2, so it can be concluded that there is no autocorrelation problem in the model above.

c. Multicollinearity Test

This test is used in order to see in the regression model, whether there is a correlation or relationship between independent variables. A good regression model does not have

multicollinearity problems among the independent variables. If the correlation coefficient between independent variables less than 0.8, the model is free from

multicollinearity problems. However, there is a problem if the correlation coefficient between independent variables is more than 0.8 (Ghozali, 2013).

**Table 3**
**Multicollinearity Test Results**

| Correlation | | | |
|---|---|---|---|
| | X1 | X2 | X3 |
| LN Total Population | 1.00000 | -0.170307 | -0.323355 |
| LN Income Per Capita | -0.170307 | 1.00000 | -0.234688 |
| TPAK | -0.323355 | -0.234688 | 1.00000 |

According to the table above, the correlation coefficient between the variables LN Total Population, LN Income Per Capita and LFPR less than 0.8, so the conclusion that can be drawn is that the model is free from multicollinearity problems.

d. Heteroscedasticity Test

This test has the aim of testing whether the regression model has a

difference in variance from the residuals of one observation to another observation. If the magnitude of the probability value is less than 0.05, then a problem occurs. Then if the magnitude of the probability value is greater than 0.05, then it is free from heteroscedasticity (Ghozali, 2013).

**Table 4**
**Table of Heteroscedasticity Test Results**

| Dependent Variabel : RESABS | |
|---|---|
| Method : Panel Least Square | |
| Variable | Prob |
| C | 0.9427 |
| LN Total Population | 0.6512 |
| LN Income Per Capita | 0.2211 |
| TPAK | 0.3084 |

Based on the table above, each variable obtained a probability value more than 0.05, so it can be concluded that the data above does not have heteroscedasticity problems.

**2. Model Determination Technique**

a. Hausman test

To get the right model between Fixed Effect Model (FEM) or Random Effect Model (REM). The criteria for determining the Hausman test are:

H0 : The probability value is < 0.05 then the selected model is Fixed Effect Model
H1 : The probability value is > 0.05, then the selected model is Random Effect Model

**Table 5**
**Hausman test results**

| Test Summary | Prob |
|---|---|
| Cross-Section Random | 0.0000 |

Based on the table above, the probability value achieved is 0.0000, where the value is smaller than 0.05. So in this Hausman test, the Fixed Effect Model (FEM) was chosen as the model. After testing to determine the best regression model, the results of the Chow test and Hausman test show that the model chosen in this study is the fixed effect model. The regression results obtained from the selected model are:

**Table 6**
**Fixed Effect Model**

| Method : Panel Least Square | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std.Error** | **t-statistic** | **Prob** |
| C | 61.85020 | 64.98808 | 0.951716 | 0.3482 |
| LN Total Population | 9.143122 | 5.179349 | 1.765303 | 0.0868 |
| LN Income Per Capita | -10.83735 | 1.478688 | -7.329031 | 0.0000 |
| LFPR | -0.241386 | 0.044729 | -5.396616 | 0.0000 |

Based on the regression equation above, it is obtained:
1) The coefficient value is 61.85020, meaning that if the variables of population, per capita income and Labor Force Participation Rate (LFPR) are considered constant, resulting in a poverty rate of 61.85020.
2) The regression coefficient value for the population variable is 9.143122, the coefficient is positive, meaning that there is a unidirectional relationship, each increase in population is 1%, thus increasing the poverty rate by 9.143122%.
3) The value of the coefficient of income per capita is -10,83735, the coefficient is negative, meaning that there is an inverse relationship, every increase in income per capita is 1%, so it will reduce the poverty rate -10.83735%.

4) The LFPR coefficient value is -0.241386, the coefficient is negative, meaning that there is an opposite relationship, every 1% increase in LFPR, so it will reduce the poverty rate -0.241386%.

3. **Hypothesis testing**
   a. Partial Test (t-test)
   This test aims to determine the magnitude of the partial effect of one independent variable on the dependent variable. In the statistical t-test, decisions are taken by comparing the t-count value with the t-table value, and also paying attention to the probability value. If t count more than t table or probability less than (0.05) then the independent variable affects the dependent variable. If t count less than t table or probability value more than (0.05), then the independent variable has no effect on the independent variable. For t table achieved is 2.02439.

**Table 7**
**t test results**

| Variable | t-Statistic | Prob. |
|---|---|---|
| C | 0.951716 | 0.3482 |
| LN Total Population | 1.765303 | 0.0868 |
| LN Income Per Capita | -7.329031 | 0.0000 |
| LFPR | -5.396616 | 0.0000 |

Based on the regression results above, the population has a t-count value (1.765303) < t table (2.02439). The probability value obtained on the population variable is (0.0868 > 0.05), so statistically the population variable (LN Total Population) does not partially affect the poverty level variable. So with this it can be concluded that H0 is accepted, which means that the population variable has no effect on the poverty level, therefore H1 is rejected.

Per capita income has a t count (-7.329031) > t table (2.02439). The probability value obtained on the income per capita variable (0.0000 < 0.05). So statistically the income per capita variable (LN Income Per Capita) has a partial effect on the poverty level variable. So with this it can be concluded that H0 is rejected, meaning that the income per capita variable has an influence on the poverty level variable, therefore H2 is accepted.

The Labor Force Participation Rate (LFPR) has a t-count value (-5.396616) > t table (2.02439). The probability value obtained in the LFPR variable (0.0000 < 0.05). Then the Labor Force Participation Rate variable (LFPR) partially affects the poverty level variable. So with this it can be concluded that H0 is rejected, meaning that the LFPR variable has an influence on the poverty level variable, therefore H3 is accepted.

b. Simultaneous Test (F Test)

The principle describes whether or not there is a simultaneous influence of the independent variable on the dependent variable. To understand the results, you can look at the significance value and compare the calculated F value with the F table, with the F table in this study being 2.85.

**Table 8**
**Simultaneous Significance Test Results (Test F)**

| | |
|---|---|
| F-statistic | 450.8357 |
| Prob(F-statistic) | 0.000000 |

The F table value is obtained by the formula F(k-1,n-k), so that the F table value is 2.85. Thus, the value of F count > F table (450.8357>2.85) and the probability value of 0.0000 <0.05, so it can be concluded that the population, per capita income and LFPR have a simultaneous or joint influence on the poverty level.

c. Coefficient of Determination Test (Adjusted R2)

This test is to measure how far the ability of the independent variable in explaining the dependent variable (goodness of fit test).

**Table 9**
**Coefficient of Determination Test Results (Adjusted R2)**

| | |
|---|---|
| Adjusted R-Square ($R^2$) | 0.988735 |

Based on the output above, the adjusted R2 value is 0.988735, which means that in this study the independent variable was able to describe its effect on the dependent variable of 98.87%. The rest, which is 1.13%, is influenced by other independent variables that are not included in this study.

**4. Discussion**

a. The Effect of Population on Poverty Levels in Java.

According to the regression estimation results of the Fixed Effect Model, the value of t count (1.765303) < t table (2.02439) with a probability value of (0.0868 > 0.05). So it is hereby concluded that H0 is accepted, which means that the population variable has no effect on the poverty level in Java for the 2013-2019 period, therefore Hypothesis 1 is declared rejected. Because the population is always increasing, while poverty tends to decrease. Population growth in Java can be controlled through the family planning program so that the increase in population does not increase sharply. There is a Family Planning Village program that has been carried out by the government since 2016 to suppress the population growth on the island of Java. There is a special village fund budget to be allocated to the family planning program, namely to support the use of contraceptives, the priority of this program is carried out in suburban or remote areas in order to improve the quality of life of the community by regulating the ideal number of children in one family and creating quality small families. According to SP2020, the population on the island of Java is dominated by Generation X and Millennials, which are people of the working age group, these two generations belong to the productive age so that they have the potential to grow the economy quickly and can encourage development. In addition, the quality of human resources is reflected in the Human Development Index (HDI), which always increases, such as in 2019 the HDI in Java, which is 74.41%, which is higher than the National HDI, which is 71.92%, because since 2014 until now it has been continuously carried out. improving education and improving health services which include the provision of Smart Indonesia Cards (SIC), Healthy Indonesia Cards (HIC) and National Health Insurance (NHI) so that the existing population does not affect poverty in Java.

According to Adam Smith, an increase in population can grow an economy if the population has knowledge and is able to expand the market for goods and services so that the production process and economic activity are higher. In addition, a large population is able to encourage specialization and technological progress. The process of specialization in the field of work can increase worker productivity and increase labor income, in this cycle the economy will continue to experience development.

The results of this study are supported by (Mahsunah, 2013), the population does not affect poverty, because of the success of the family planning program since the results of SP2000 so that the shape of the population pyramid resembles an inverted barrel, which means that the population distribution is more dominant by the working age population. The number of residents indicates the number of workers who can participate in economic activities. For the productive age population, the opportunity to improve the standard of living is still wide open.

b. The Effect of Per Capita Income on Poverty Level

Based on the results of the regression estimation using the Fixed Effect model, the t value is -7.329031 > t table 2.02439 with a probability value of 0.0000 < 0.05. So in this

study, statistically the income per capita variable (LN Income Per Capita) has a significant negative effect on the poverty level in Java for the 2013-2019 period, meaning that if per capita income increases, the poverty rate will decrease. So with this it can be concluded that H0 is rejected, therefore Hypothesis 2 is declared accepted. Per capita income in Java continues to increase, per capita income is very dependent on the potential of natural resources and human resources as well as existing production factors. The large population and rapid infrastructure development make Java Island a centralized area of economic growth. Poverty that occurs in Java will decrease when there is economic growth. When per capita income increases, the purchasing power of the people in fulfilling their daily needs will be better, thus welfare can increase.

Strengthened by the theory put forward by (Todaro, 1999), income per capita is a reflection of the ability of people's income in an area to meet basic needs or minimum needs. The low standard of living is closely related to the low per capita income. The low per capita income is the result of the low productivity of the labor force. In meeting the minimum needs of the community, it can indicate the welfare obtained from the aspect of equitable distribution of community income in the region. If the per capita income is high, the purchasing power of a person will increase, so that in this case poverty can be reduced.

The results of this study are also supported by (Azizah et al., 2018), per capita income has a negative effect on poverty in East Java. Increasing per capita income can reduce poverty. Per capita income can be a parameter of community welfare in an area. High per capita income can indicate that the more prosperous the people in the area are.

c. Effect of Labor Force Participation Rate on Poverty Level

Based on the results of the regression estimation of the Fixed Effect model in table 20, the t-count value is -5.396616 > t-table 2.02439 with a probability value of 0.0000 <0.05. So that in this study, statistically LFPR has a negative effect on the poverty level in Java for the period 2013-2019, so it can be concluded that H0 is rejected, therefore Hypothesis 3 is declared accepted. When LFPR increases, the poverty rate will decrease. The increase in LFPR is influenced by the large number of the workforce involved in economic activities. On the island of Java, LFPR continued to experience a fairly good increase, precisely from 2017 to 2019, due to the increasing job opportunities provided by the service sector. The more the workforce that participates in the workforce and has work productivity, the faster economic growth will be. Likewise, per capita income will increase along with the increase in labor force participation, so that the poverty rate can decrease. However, this expansion of job opportunities must continue to be carried out, both in urban and remote areas, because even though the poverty rate has decreased, the poverty rate in Java Island is still quite high every year when compared to other islands in Indonesia.

The results of this study are reinforced by the theory pioneered by (Todaro, 1999), which states that the most important mechanism in

reducing poverty is to overcome unemployment and employment problems. High labor force participation has a major contribution to economic growth, where high labor force participation can encourage the economy so as to reduce poverty.

This result is also supported by research conducted by (Ahmaddien, 2019), one of the causes of high poverty is the low LFPR. The poverty rate is not only related to unemployment, but a low LFPR indicates the low productivity of the workforce which affects the income received. Poor people who have a fixed income but fall into the poverty criteria because the income they receive is very small due to low work productivity, so LFPR is very relevant in influencing poverty levels.

**CONCLUSION**

Based on the results of this study, can be concluded that the influence of the three independent variables on poverty in Java is as follows, the total population has no effect on the level of poverty. The population on the island of Java can already be controlled through the family planning program and the population is dominated by the working age population followed by improvements in the quality of human development, so this large number of people can encourage the economy, so it does not affect poverty in Java. Income per capita affects the level of poverty, with an increase in income per capita, the ability of the community to purchase minimum needs will increase, thus the poverty rate in Java will decrease along with the increase in people's welfare. The labor force participation rate (TPAK) affects the poverty level, with an increase in the LFPR, the number of working age population who have productivity and are involved in the labor market will also increase, this has a good impact on improving people's welfare

because people are involved in economic activities will have income to meet basic needs so that the poverty rate will decrease along with the increase in labor force participation in boosting the economy.

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