Analysis of factors influencing poverty in special region of Yogyakarta

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Abstract
This study examined how the poverty rate in Yogyakarta Special Region was affected simultaneously and partly by infrastructure, investments, economic growth, and district or city minimum salaries. In addition to time series data from 2014 to 2020, it used panel data with cross-sectional data from five districts or cities in the province of Yogyakarta Special Region. The Fixed Effect Model was the model employed in this investigation. The findings indicate that all independent variables, namely infrastructure, investment, economic growth, and district- or city-level minimum wages, affect the poverty rate simultaneously in the Special Region of Yogyakarta. The partial test results indicate that the infrastructure and investment variables have a positive but insignificant effect because they have yet to reach the periphery. In contrast, the economic growth variable has a significant impact.

Keywords: Poverty Rate, Infrastructure, Investment, Economic Growth, District Minimum Wage.

1. Introduction
Poverty is a problem that never goes away from a region. Various policies are implemented by the government to reduce poverty because high poverty will affect the development of a region. According to the Bureau of Statistics (2021), poverty
arises due to economic incapacity in which societies cannot meet their basic needs. (basic needs approach). Failure to meet these basic needs will lead to a decline in the quality of human resources. The decline in the quality of human resources will be followed by declines in productivity and wages that will ultimately hinder the national development of a region. (Astuti & Lestari, 2018). That is why poverty is a problem that needs serious attention.

One of the provinces in Indonesia that has a relatively high poverty problem is the Province of Yogyakarta. This is because the level of poverty in the cities / districts in the Yogyakarta Special District is higher than the province poverty rate or national poverty level. The poverty rate of Yogyakarta is also recorded to be the highest on Java Island. (BPS DIY, 2020). Based on the report of the DIY Regional Development Planning Agency (2019), it is explained that poverty in DIY is due to low investment in labor-intensive industries, uneven infrastructure, as well as uninclusive economic growth.

Figure 1. Poverty Rate in the Provincial District of Yogyakarta and National, 2014-2020 (%)  

Figure 1 shows that the poverty rates of some districts/cities in the Yogyakarta Special Region are higher than the provincial and national poverty figures. In addition, as by BPS DIY (2020) that the level of poverty in the districts located in the southern area of the Istimewa District of Yogyakarta, namely Kulon Progo and Mount Kidul tend to be higher than in the northern regions of Sleman and Yogyakarta. The high level of poverty needs to be done efforts to find a determinant of the poverty level in the Yogyakarta Special Area in order to have guidance in reducing poverty.

In general, the poverty rate continued to decline from 2014 to 2019, but not in 2020, which actually increased. The fact is that the efforts to reduce poverty in the Yogyakarta Special Area appear to have a positive impact. Despite this, it can be seen that between districts/cities in the Special District of Yogyakarta there are quite
clear differences in poverty levels. The highest poverty rate in DIY is found in the district of Kulon Progo and subsequently in the Kidul mountain district, this is in accordance with the geographical conditions that are generally dominated by the agricultural sector with low income so that the community can not meet the standard of living needs. The above is contrary to the city of Yogyakarta and the district of Sleman which holds the lowest poverty rate in DIY due to being in urban areas where the availability and ease of access to infrastructure will help in the activities and needs of the community (Suryandari, 2018).

Poverty is closely related to infrastructure where infrastructure development is aimed at facilitating the mobility of both people, goods and services, thereby having a direct impact on the reduction of poverty rates. (Purnomo, Wijaya, & Setiawan, 2021). Research conducted by Sumardjoko & Akhmadi (2019) suggests that the availability of an infrastructure in a region, especially a decent connectivity infrastructure, will provide access facilities in conducting economic activities of both trade and distribution of goods and services that will subsequently help communities to get a dignified life.

Electricity infrastructure is one form of infrastructure that has an impact on poverty. Electricity is crucial in combating poverty because it makes it simple for communities to use it to enhance their quality of life. This access is crucial since electricity is a crucial source of energy for raising living standards. Without sufficient access, people are disadvantaged and struggle to use electronic devices that are essential for economic, educational, and health growth as well as basic amenities like lighting, heating, and cooling. The increasing quantity of electricity clients indicates that electricity is increasingly becoming a necessary resource for society in order to support its daily activities and economic activities, which can enhance society's well-being and ultimately aid in the reduction of poverty. (Sumardjoko & Akhmadi, 2019). According to Nugraheni & Priyarsono (2012) research, a good electric infrastructure will increase a region’s economic employability and lessen local poverty.

Another aspect that is well-known to contribute to the decline of poverty is the significant impact that capital investment has on an area (Rarun, Kawung, & Niode, 2018). According to Sukirno, who was quoted in (Minggu, Rumate, & Rotinsulu, 2019), when investment enters a region, it will result in the introduction of new employment possibilities that will help increase public income, enhancing the income of the poor will result in a decrease in the rate of poverty. The economy of an area will grow faster as a result of increased investments. According to Safuridar (2017), the economic growth rate will promote job openings, which will lower unemployment and ultimately lower poverty. In a specific time period, the rate of economic growth can raise the population’s incomes from economic activity. At the same time, the sources of economic growth will contribute to the improvement of the poor's quality of life, which will lower the poverty rate (Astuti & Lestari, 2018).

The Yogyakarta Special Region’s poverty is predicted to decrease as a result of the high rate of economic growth since it is expected to boost productivity, which will
lead to more job possibilities, higher incomes, and ultimately a decrease in poverty. When the average income of the population rises, poverty can be overcome (Islami & Anis, 2019). The policy of raising the regional, district, or city minimum wage can be used to boost employee income. The policy of raising the minimum wage affects how well off low-income workers are financially (Kumiawati, Gunawan, & Indrasari, 2017). In order to lift society out of poverty, the increase in the minimum wage will also have an effect on the growth in local income. This will be followed by an uptick in spending and welfare (Giyanti Permata Dewi, 2015).

The poverty rate in the Yogyakarta Special Region between 2014 and 2020 generally has decreased quite significantly. Nevertheless, the four factors – infrastructure, investment, economic growth, and SME – increased significantly between 2014 and 2020. Therefore, it is necessary to prove the influence of these four factors on the level of poverty in the Yogyakarta Special Region through a study. The research was conducted to analyze how the influence given by infrastructure variables, investment, economic growth, and UMK on poverty levels in the Yogyakarta Special Region.

2. Literature Review

The core of poverty is the inability to procure basic needs in compliance with what society considers reasonable. Poverty is a multifaceted condition that affects many facets of life. It is not merely a lack of resources like money or property (Safuridar, 2017). According to the World Bank, hunger, homelessness, a lack of employment, inadequate health and educational resources, and disability are all associated with poverty. Based on its concept, poverty according to Bappenas (2018) has two types, namely: First, Absolute poverty is defined as an inability to meet minimum basic needs, such as food, clothing, housing, health and education, which is called the poverty line. For the population whose standard of living is below the poverty line, the population falls into the category of poor population, Second, Relative poverty is the poverty that arises due to the development policy of the government has not been able to provide an influence that can be reached by the entire layer of society to cause the emergence of conditions of inequality in which the population is poorer than the rest of the population.

According to Budhijana (2020), poverty is still a common problem in developing countries and poverty can be observed from a variety of factors. Some of these factors include slow economic growth, low human development index, and high unemployment that can have an impact on poverty levels in Indonesia. This study is consistent with the findings by Agustin et al (2019) that discussed the impact of economic growth, human development index, and minimum wage on poverty in Merangin County using time series data with a double linear regression analysis method. The study also stated that increasing the minimum wage would help to curb poverty in a region. Siregar (2006) stated that in reducing poverty in a region, the rate of economic growth is a primary condition of its presence. Economic growth can
overcome poverty if the economic growth is spread evenly across the various populations.

Wages are one of the factors affecting poverty. Wage is a cost incurred by the producer in the production process in return for services to the labor force that has performed the production activity. (Wihastuti & Rahmatullah, 2018). In the salary granting of workers there is a minimum wage which is imposed to protect the welfare of workers by using the calculation of the Demand for Decent Living. The Ministry of Labour Regulations (1999) stated that the minimum wage is the wage that includes the basic wage along with the fixed allowance that is received each month. The minimum wage has several types, namely: first, the Provincial Minimum Wage (UMP) refers to the lowest wage value that workers must receive in a region/province. Second, The District/City Minimum Wage (UMK) refers to the lowest wage that the company must pay to employees that only apply in one district/city. such as research conducted by Fadhillah, Arintoko, & Kamio (Fadhillah, Arintoko, & Kamio, 2021) on the impact of investment, projects, and foreign debt on poverty in Indonesia with panel data methods and methods of analysis Ordinary Least Square (OLS). The results of the research show that increasing amounts of investments influence poverty reduction, as will increasing numbers of projects help reduce poverty. Foreign debt has no effect on poverty.

Other factors that can influence the poverty rate are investment and infrastructure, investing in theory is an activity that has a number of positive effects on the economy, i.e. increased economic activity, increased employment opportunities that will eventually be followed by national income and improved community welfare. Investment activities have several functions, namely (1) investments as a component of aggregate output can drive aggregated demand, increase national income, and open employment opportunities; (2) the presence of increasing capital goods will increase production output, and (3) investments will bring technological progress to the receiving region (Sukirno, 2000). As for infrastructure variables, Nugroho (Nugroho, 2015) stated that the existence of infrastructure is especially important in facilitating accessibility, the more infrastructure provided, the less people become poor. The ease of accessibility accepted by poor communities will have a positive impact in improving their standard of living. Facilitating access to infrastructure for poor communities will boost economic activity and improve living standards. When there is an increase in the standard of living of the poor, then it will help out of the problem of poverty and eventually will affect the reduction of the level of Poverty. Infrastructure is defined by the Presidential Regulation of the Republic of Indonesia No. 38 of 2005 as the technical, physical, system, hardware and software facilities necessary to serve the community and support the network of structures so that the economic and social growth of the community can go well. The existence of infrastructure will facilitate the production process so that the productivity of labor will increase and will provide access to the workplace so that infrastructures will provide a significant impact for society in terms of improving the standard of living and well-being of the community (Haris, 2009).
3. Research Method

This research uses secondary data, the data obtained from information collected and published by an institution or official agency (Widarjono, 2018). Secondary data in this study is collected through a method of collecting data from library studies based on documents published by official agencies or related agencies. The researchers used data from the Central Statistics Agency, Bappeda, and other data sources for the period 2014 to 2020, including poverty level data, infrastructure data, investment data, economic growth data, and minimum wage data for districts/cities in Yogyakarta Province.

A research variable is a value of the object that will be used by the researcher to be studied and analyzed which will be subsequently obtained conclusions. (Sugiyono, 2007). The variables in this study are as follows.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Operational Definition</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty (Y)</td>
<td>It was use The poverty rate, the ratio between the poor population and the number of inhabitants</td>
<td>Percentage</td>
</tr>
<tr>
<td>Infrastructure (X1)</td>
<td>Infrastructure refers to a public facility that provides direct benefits to processes and distribution in the economy. The data used on the infrastructure variable is the number of electricity customers</td>
<td>Consumer Unit</td>
</tr>
<tr>
<td>Investment (X2)</td>
<td>Investment is said to be a capital planting activity in a number of business areas carried out by a company with a fairly long period of time. The project can be either physical or non-physical. The data used on the investment variable is the investment realisation data in the district/city</td>
<td>Rp (Rupiah)</td>
</tr>
<tr>
<td>Economic growth (X4)</td>
<td>Economic growth is directed at an increase in the income of a region caused by increased production of goods and services compared to the previous period. Data used on the economic growth variable is data of economic growth</td>
<td>Percentage</td>
</tr>
<tr>
<td>Wage (X5)</td>
<td>wage that a worker receives in a monthly salary which consists of two components: tree salary and benefits. Data used on the minimum wage variable is the data of minimum wages of the district/city</td>
<td>Rp (Rupiah)</td>
</tr>
</tbody>
</table>
The data analysis method in this study uses a panel data regression analysis method with a quantitative approach. Panel data is data that consists of the behavior of several specific objects over different periods of time (Widarjono, 2018). In this study, in performing the regression analysis data panel will be performed using the program Eviews 12. The general equation of panel data regression in this study is:

\[ Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + eit \]  

(1)

Where: \( Y = \) Poverty Rate (%), \( \beta_0 = \) Constant, \( \beta_1,2,3 = \) Coefficient, \( X_1 = \) Number of consumer electricity customers, \( X_2 = \) Investment realisation in million rupiah, \( X_3 = \) Economic growth percentage, \( X_4 = \) Minimum wage district/city rupiah, \( i = 5 \) district / province of Yogyakarta, \( t = \) year 2014-2020, \( e = \) Error terms

There are three models to choose from when estimating a data regression panel, namely: Model of Common Effects (CEM), the CEM technique is the most straightforward regression estimate method in the data panel. The next model Fix Effect Model (FEM), this model contrast to the CEM method, presumes that every item has unique properties. When processing data, the FEM approach separates apart each object's intersection while still equal its slope. The last model is Random Effect Model (REM), in REM model the intercepts of each item will be different, according to REM models, which presuppose that the error terms of the object are connected or that there is an autocorrelation.

In order to correctly select the model that will be used in this study, a number of tests are carried out, namely: Chow test (Chow Test) is a test performed for the selection between a common effect model or a fixed effect model, Hausman test, is a trial performed to select between a random effect or fixed effects model and lagrange multiplier test is to test between common effect and random effect model.

### 4. Results and Discussion

#### 4.1. Results

The results of panel data regression analysis on the three models can be seen in the following table:

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Common Effect</th>
<th>Fixed Effect</th>
<th>Random effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeficient</td>
<td>Prob</td>
<td>Coeficient</td>
</tr>
<tr>
<td>C</td>
<td>24.59143</td>
<td>0.0000</td>
<td>20.51561</td>
</tr>
<tr>
<td>X1</td>
<td>-4.71E-05</td>
<td>0.0000</td>
<td>9.29E-06</td>
</tr>
<tr>
<td>X2</td>
<td>-9.94E-13</td>
<td>0.0001</td>
<td>3.93E-15</td>
</tr>
<tr>
<td>X3</td>
<td>-0.105385</td>
<td>0.5537</td>
<td>-0.127489</td>
</tr>
<tr>
<td>X4</td>
<td>2.67E-06</td>
<td>0.3976</td>
<td>-5.79E-06</td>
</tr>
</tbody>
</table>

Test results for the selection of the best model for research analysis are obtained as follows:

**Chow Test**
Based on the results of the Chow test regression, the prob cross-section F value is 0.0000, which is smaller than alpha (α) = 5%, so it is said to be significant and H_0 is rejected. The result means that the best model chosen for hypothetical testing is the Fixed Effect model. After finding the results of the Fixed Effect model in the Chow Test, the next necessary Hausman test is used to select the best model between the fixed effect model and the random effect model.

**Table 3. Chow Test Result**

<table>
<thead>
<tr>
<th>Effect Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>167.330238</td>
<td>(4,26)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>115.019695</td>
<td>4</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Hausman Test**

The Hausman test is a test to determine which model, a fixed effect model or a random effect model, is the most effective. Value of the prob When the prob value for Chi-square is greater than 0.05 (or 5%), we will receive H_0 with the Random Effect model, but when it is less than 0.05 (or 5%), we will receive H_1 with the Fixed Effect model. The findings of the Hausman test are as follows:

**Table 4. Hausman Test Result**

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>669.320951</td>
<td>4</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Based on the results of the Hausman Test regression above, the prob. chi-square value is 0.0000 which is smaller than alpha (α) = 5% so it is said to be significant and H_0 is rejected. The result means that the best model that can be used to test the hypothesis is the Fixed Effect model.

The result of the regression of fixed effect in table 3 shows that the variable affecting poverty in the Yogyakarta Special Territory is the economic growth and minimum wage variable of the district/city because it has a probability value < 5% which is 0.0018 for economic growth variable and 0.0082 for the Minimum Wages variable but simultaneously all the independent variables such as infrastructure, investment, economic growth, and the minimum wages of the county / city have an impact on poverty.

**4.2. Discussion**

The result shown that Economic growth (X3) had a substantial impact and a negative association with a regression coefficient of -0.127849, according to partial results of fixed-effect refraction. This suggests that increased economic growth can reduce the poverty rate in Yogyakarta Province. This study is in line with previous research that also found that economic growth has an impact on poverty levels (Akhir, Idris, & Yulhendri, 2019). The rate of economic growth has been shown to have an
impact in reducing the poverty rate in the Yogyakarta Special Region. This is consistent with the theory, where economic growth outweighs poverty through increased economic activity as well as growth in output production which will then be followed by an increase in public income which will lower poverty levels.

The variable Minimum Wage of the district or city of Yogyakarta (X4) has a significant negative impact with a regression coefficient of -0.00000579. The results show that an increase in the minimum wage in the district or city can reduce the poverty rate in the Yogyakarta Special District. This is consistent with research conducted by Akin-Olagunju et al. (2019) that shows that the minimum wage has an impact on reducing poverty rates. When minimum wages increase both in the formal and informal sectors, this will allow for a lower poverty rate in society. The study also revealed that the higher the minimum wage, the more the poverty rate will decrease. The poor will receive higher incomes if the minimum wage increases, so that their purchasing power will increase, followed by increased well-being, whose implications are that the poverty rate will decrease (Sari, 2018). Electrical infrastructure in this study has no significant impact on poverty in the Yogyakarta Special Region because the impact caused by electricity infrastructure on the economy turns out to be only small so that it does not provide too much benefit to the well-being of the community, the construction of electric infrastructure will benefit the community in a region if supported by the development of other factors, if only relying on power infrastructure then the benefits received will be limited (Prasetyo, 2016). The same is the case with electric infrastructure, investments in DIY also have no significant impact in the reduction of poverty because the capital plantation is not directed to the productive sectors of the economy, the investment is still focused on the development of sectors that have less opportunities to open jobs. Moreover, the investment made only affects some of the upper middle class who do not fall into the category of poor population (Mustamin, 2015, Arabyat, 2017).

5. Conclusion

The results of the analysis concluded that the variables infrastructure, investment, economic growth, and UMK simultaneously have an impact on the poverty rate in Yogyakarta Region during the period 2014 to 2020. When viewed partially, infrastructure variables and investment variables have no impact on the poverty rate, while the economic growth variable and the minimum wage variable of the district/city have a negative impact on poverty levels in the Yogyakarta Special Region. For the districts/cities with the highest level of poverty there are in the Kulon Progo district, while the district/city with the lowest poverty level is in the Sleman district.

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References


