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Spatial Poverty Concentration In East Java Province

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ABSTRACT

This study focuses on the spatial concentration of poverty in East Java Province by looking at data on the number of poor people in each urban district in East Java province using the Moran Index Analysis. The results of the analysis and discussion through Moran's I conclude that there is a spatial autocorrelation in the percentage of the poor population in East Java, both in 2020 and 2021. Moran's I figures in 2020 and 2021 are 0.989 and 0.990 which indicates a positive autocorrelation or a pattern that is grouped and have similar characteristics at adjacent locations.

Keywords : Spatial Poverty; Moran Index; East Java.

1. INTRODUCTION

Development is a dynamic process that aims to improve people's welfare. The criteria for successful development are economic growth, economic structure, and a narrowing income gap between populations, regions and sectors. The main goal of economic development efforts apart from creating the highest possible growth, must also eliminate or reduce poverty rates, income gaps, and unemployment rates (Todaro & Smith, 2003).

Poverty is a complex problem because it is associated not only with low income and low consumption problems, but also with poor levels of education. Inability to participate in health and development, and various problems related to human development. This aspect of poverty is manifested in food, water, healthy housing, poor medical care, and a lack of education.

Poverty is misused as an Index to evaluate development outcomes. Regions that can display the poverty rate of each region with a good or bad poverty rate. Traditionally, poverty refers to people who are unable to meet their needs. On the other hand, poverty concentration sees poverty as a universal group.

Poverty is used as an indicator to assess development performance. The poverty rate in each region can give an idea of which areas are developing better or worse. Poverty usually refers to people who are unable to meet their basic needs. Meanwhile, the concentration of poverty is to see poverty as a group of people. The concentration of poverty provides an overview and comparison between one community and another. A group of poor people are those who have a poor population of more than 20% (Ftrady, 2003).

There are several things that cause the concentration of poverty. Differences in the development progress of a region will lead to income disparities, which at the same time will lead to differences in poverty levels (Wijayanti & Wahono, 2005). In general, economic development does not take place in all sectors and regions simultaneously. Some sectors are developing rapidly, while others are underdeveloped. Most of the regional growth theories are disproportionate growth, as Hirschman explains that disproportionate growth is development efforts that focus on multi-sectors that encourage investment in various sectors during the next period.

In Myrdal's theory, the positive impacts are (spread effects) and negative (backwash effects), in some places the spread effects and backwash effects may have the same strength in a certain period so that it seems as if there is a balance (Ho, 2004). According to human resource theory, people in poor areas have low education, contributing to the spatial disparities of poverty between regions.

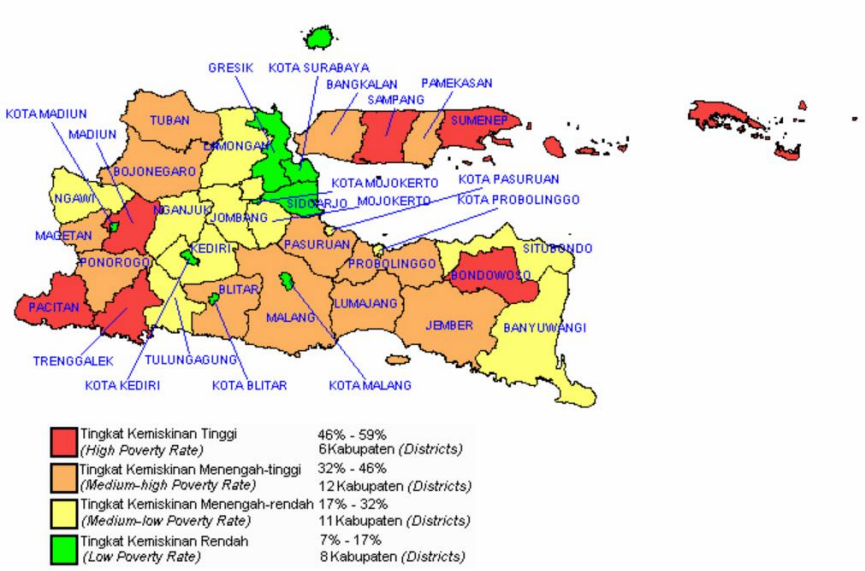
Research conducted by Dwi Atmanti & Hendarto (2011) on the concentration of poverty in Central Java province based on calculations with the Theil Entropy index, shows that in Central Java there is a concentration of economic activity spatially. Regions with advanced industrial and tourism sectors will have a small index value. Meanwhile, regions that are not supported by the industrial sector have a large index value. A small index value indicates small inequality (more even distribution) and a large index value indicates large inequality. The majority of urban areas are more advanced than districts.

Research conducted by Kazemipur (2000) shows that there is a correlation between poverty neighborhoods and the proportion of immigrant populations, illustrating that among the main cities in Canada, Edmonton and Toronto showed the highest correlation in 1991, followed by Winnipeg and Calgary. Montreal actually shows the lowest correlation even though the spatial concentration of poverty in Montreal is quite high.

Poverty is of course a big challenge for the government, but poverty alleviation efforts have not been prioritized and various efforts have been made, but instead to overcome this problem. Poverty is characterized by various factors, including the poor quality of life of the population, adequacy and limited quality of nutrition, poor quality and health services, child nutrition, and poor quality of education services, which are inherent problems. So far, various efforts

have been made to reduce poverty by providing food, health and education services as well as expanding employment opportunities. The problem of concentration of poverty in certain regional pockets is of course a government problem that must be addressed immediately, as in the figure below it can be seen that pockets of poverty are spread across several regions in Indonesia.

Figure 1. Map of the Distribution of the Poor in East Java Province



Source: povertymap.smeru.2004

Figure 1 illustrates the differences in levels and degrees of poverty in each province of East Java. This has an impact on differences in the level of welfare between regions, meaning that disparities between regions will widen. Based on Smeru's 2004 annual report, it is explained that the highest poverty rates are located in the districts of Sampan, Sumenep, Madiun, Pacitan, Trenggalek, and Bondowoso. While the category of the lowest poverty level is the city of Surabaya, Gresik, the city of Madiun, the city of Kediri, the city of Blitar and the city of Malang.

The concentration of poverty on the island of Java is of course influenced by several regional spatial conditions. As stated by (Pamungkas, 2009) (Puspitasari, Nurmalasari, & Sjafii, 2010) there is spatial dependence between districts/cities in East Java in terms of poverty, meaning that poverty in one district/city is affected by poverty in other districts/cities, in line with (Yolanda & Yunitaningtyas, 2019) which states that poverty in East Java is related to spatial effects, therefore it can be concluded that poverty in neighboring areas is related to one another.

The Java region, which has so far been a relatively more advanced region compared to other regions, is inseparable from the problem of poverty. In 1999, 60% of the poor lived in Java. In the following year the percentage of poor people living in Java decreased slightly, namely as much as 58% in 2000 and 57% in 2003. Even though it has decreased, it can be seen that from 1999-2003 the poor were still concentrated on the island of Java. Research (Ftrady, 2003) also states that this poverty tends to be concentrated in the Java region. Even though so far the provinces on the island of Java tend to have relatively high levels of GRDP and economic growth, compared to areas outside Java, in reality these regions experience a lot of poverty.

2. METHOD

3.1 Types of Research

Quantitative research is an effort to investigate problems, existing problems are the basis used by researchers in collecting data. Then determine the variables and measure them with numbers for analysis according to the procedures of the applicable statistics. The purpose of this research is to help draw conclusions or generalize the theory (Creswell, 2002) .

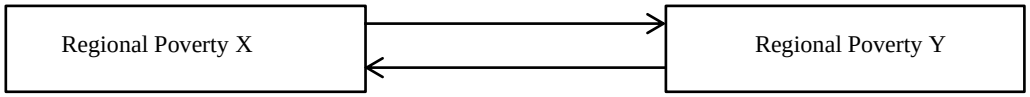
3.2 Research Object

The object of this study is East Java by looking at the concentration of poverty using Moran index analysis. The reason for choosing this object is because East Java is a province with fluctuating poverty conditions and has urban districts with almost the same characteristics of poverty, causing poverty in one area to cause poverty in other areas.

3.3 Data Collection Techniques

The data collection technique uses a documentation study by collecting secondary data, recording, and processing data related to this research. According to (Sugiyono, 2013) Secondary data is a data source that does not directly provide data to data collectors, for example through other people or through documents. Secondary data sources are complementary data sources that function to complement the data required by primary data. The data is sourced from the Central Statistics Agency for East Java Province in 2021.

3.4 Research Model



Source of data: processed data

Figure 3. 2
Research Model

3.5 Data Analysis Techniques

3.5.1 Moran Index Analysis

Moran's index (Moran's I) is the most widely used method to calculate global spatial autocorrelation. This method can be used to detect the onset of spatial randomness. The Moran index method can be done by (Bhattacharyya, Haldar, & Banerjee, 2021) :

$$I = \frac{n\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_{i\neq j}^{n} w_{ij}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

With:
I : Moran's Index
n : the number of incident locations
xi :value at location i
xj : value at location
j̄ : average of all objects
wij : element in standardized weighting between regions i and j

The range of values of the Moran Index in the case of a standardized spatial weighting matrix is $-1 \leq I \leq 1$. The value of $-1 \leq I < 0$ indicates a negative spatial autocorrelation, while a value of $0 < I \leq 1$ indicates a positive spatial autocorrelation, the Moran Index value is zero indicates no group. The Moran Index value does not guarantee the accuracy of the measurement if the weight matrix used is non-standardized weighting. To identify whether there is spatial autocorrelation or not, a significance test for Moran's Index was performed. The hypothesis test for the Moran Index is as follows:

i. hypothesis
   H0 : There is no spatial autocorrelation
   H1 : There is spatial autocorrelation
ii. Significance level: α
iii. Test statistics:

$$Z(I) = \frac{I - E(I)}{\sqrt{Var(I)}} \qquad (2.4)$$

Dengan

$$E(I) = -\frac{1}{n-1}$$

$$Var\,(I) = \frac{n^2.S_1 - n.S_2 + 3.S_0^2}{(n^2-1)S_0^2} - [E(I)]^2$$

$$S_0 = \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}$$

$$S_1 = \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}(w_{ij} + w_{ji})^2$$

$$S_2 = \sum_{i=1}^{n}(\sum_{j=1}^{n} w_{ij} + \sum_{j=1}^{n} w_{ji})^2$$

Test criteria: Reject H0 at the α significance level if $Z(I) > Z\alpha/2$.

According to (Anselin & Hudak, 1992) the Moran Scatterplot is a tool used to see the relationship between standardized observation values and standardized neighbor average values. When combined with the regression line, this can be used to determine the degree of fit and identify any outliers. *The Moran Scatterplot* can be used to identify spatial balance or influences. The types of spatial relationships can be seen in Figure 3.1

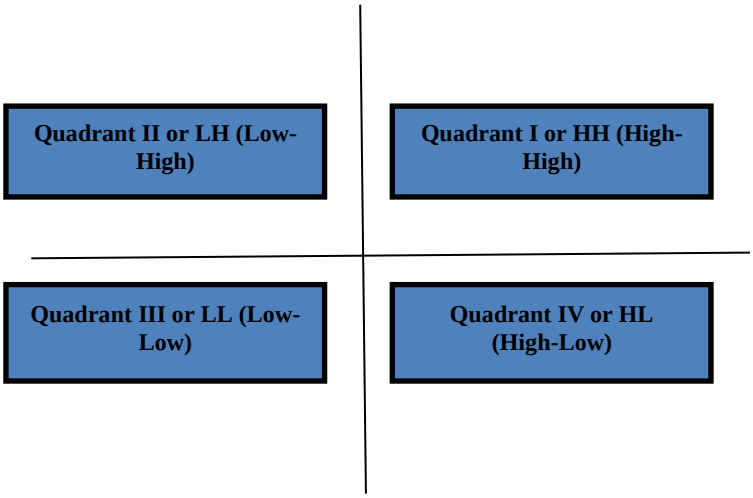


Figure 3.1
The Moran Scatterplot

3. RESULTS AND DISCUSSION

3.1 General Description of the Research Object

3.1.1 Development of Economic Growth and Poverty in Indonesia

Economic growth is believed to be a measure of a country's success, because it is the process of increasing the output of goods and services which will increase national income. In 1997-1998 Indonesia's economic growth showed an unstable development, this was due to the economic crisis which eventually spread to a crisis of confidence in the government. Indonesia also experienced weak economic growth again after the global crisis in 2008. The global economic crisis that occurred in 2008 actually started with the US economic crisis which then spread to other countries around the world, including Indonesia. The global economic crisis in 2009 began in America due to the propincity to *consume* . The American people live in consumerism beyond the means of their income. They live in debt, spending on credit cards, and on mortgages. As a result, the financial institution that provided the credit went bankrupt because of a loss of liquidity, because the company's receivables from housing creditors had been mortgaged to the lending institution. In the end these companies had to go bankrupt because they could not pay all of their debts that were due at the same time. The collapse of these financial companies resulted in the *Wall Street stock market* becoming powerless, large companies unable to survive. Indonesia is a country affected by the global economic crisis in 2009.

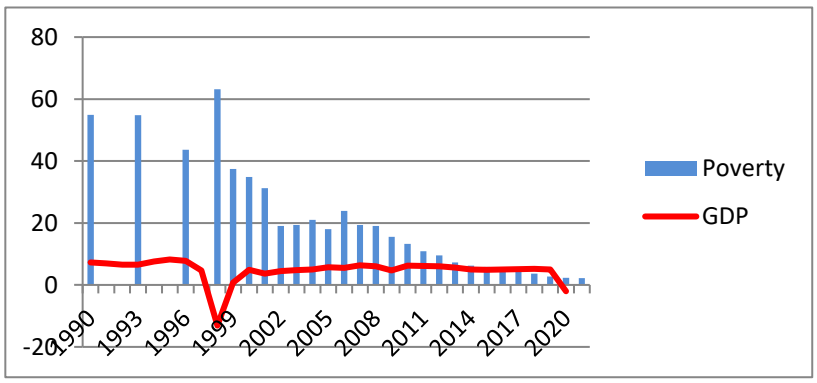


Figure 5 *GDP* and *Poverty headcount ratio* in Indonesia
Source: World Bank, 2021

Until 2017 economic growth in Indonesia experienced a positive growth rate even though its development was fluctuating. However, this condition did not last long. Back in 2020 , Indonesia's economic growth declined and even reached minus -3.2% economic growth due to Covid-19. This then causes a recession due to limited economic mobility due to *social distancing* .

However, this is not in line with the declining poverty ratio in Indonesia. It was recorded that since 1997-1998 the poverty ratio had increased. This was due to the economic crisis in Indonesia. Since the end of the economic crisis in Indonesia, the poverty ratio has decreased, but increased again in In 2008, this was due to the global financial crisis, the existence of a subprime mortgage, which is a term for housing loans (mortgage) given to debtors with bad credit history or no credit history at all, so that they are classified as high-risk loans. Disbursement of subprime

mortgages in the US experienced a rapid increase from US$ 200 billion in 2002 to US$ 500 billion in 2005, which caused the global financial crisis, including Indonesia.

Since the end of the global financial crisis, global financial conditions have started to improve including Indonesia, but in 2020 Indonesia has again experienced an increase in the poverty ratio of 3%, this is due to the Covid 19 pandemic which has hampered economic movement due to social distancing, so that unemployment has increased due to layoffs by companies that are no longer able to pay their employees, and in particular have an impact on the increasing poverty ratio in Indonesia.

4.1.2 Development of Poverty in East Java Province

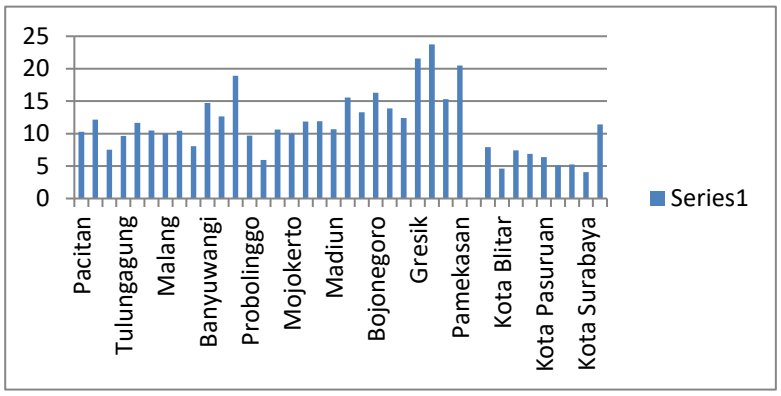


Figure 6 Poverty in East Java Province
Source: BPS, 2021

Poverty is still a homework that must be completed towards Golden Indonesia 2045. The poverty rate for Indonesia's population has increased during the 2020-2021 Covid-19 pandemic. BPS (2021) recorded the pre-pandemic poverty rate in September 2019 of 24.78 million people (9.22%) increasing to 26.50 million people (9.71%) in September 2021. Residents are categorized as poor if they have an average spending per capita per month below the poverty line. The Poverty Line (GK) reflects the rupiah value of the minimum expenditure needed by a person to fulfill his basic needs for a month, both food needs (GKM) and non-food needs (GKNM). BPS determined GK IDR 440,538 (September 2019) to IDR 486,168 (September 2021) per capita per month, consisting of GKM IDR 360,007 (74.05 %) and GKNM IDR 126161 (25.95%).

Among the poor population, there are people who are classified as extreme poor. Extreme poverty is a type of poverty defined by the United Nations as a condition that is unable to meet basic human needs, including food, clean drinking water, sanitation facilities, health, shelter, education and information. Indicators of extreme poverty are residents whose income is below US$1.91 PPP (purchasing power parity) per capita per day (equivalent to Rp.9,089 per day). PPP is defined as the number of units of currency required to purchase common goods and services that can be purchased by one unit of common/reference currency. Based on these indicators, there are 4 percent of the extreme poor in Indonesia (10,865,279 people).

On June 8, 2022, the government issued Presidential Instruction (Inpres) Number 4 of 2022 concerning the Acceleration of the Elimination of Extreme Poverty by targeting the extreme poverty rate to reach zero percent by 2024. East Java Province is one of the seven provinces that has been used as a pilot project for the accelerated extreme poverty alleviation program. in Indonesia. The number of poor people in East Java in 2021 is 4,572,730 people (10.59 % of the total population), of which 1,746,990 people (38.21%) are classified as extreme poor. A total of five districts in East Java Province have become pilot projects or pilot projects for the national program to accelerate extreme poverty alleviation, namely Bangkalan, Sumenep, Probolinggo, Bojonegoro and Lamongan.

4.2 Analysis Results

Based on the results of the spatial autocorrelation test with Moran's I (Table 2) with a significance level of 5 percent, it is known that there is a spatial autocorrelation in the percentage of poor people in East Java, both in 2020 and 2021. This is indicated by a Zcount > 1.96 . This spatial autocorrelation shows that there is a correlation or relationship between the percentage of poor people between districts/cities in East Java. As in the previous identification, there are groupings at several locations. Moran's I numbers in 2020 and 2021 are 0.989 and 0.990 which is greater than Io = -0.027. This indicates that there is a positive autocorrelation or a pattern that is clustered and has similar characteristics at adjacent locations.

Table 2 Testing Moran's I

Year	Moran's I	Z count
2020	0.989	0.262128
2021	0.990	0.259414

Figure 7 is Moran's scatterplot showing the pattern of relationship between the percentage of poor people in one district/city and other districts/cities. Regencies/cities that are in each quadrant in 2021 include:
Quadrant 1: Bangkalan, Sampang, Pamekasan, Sumenep, Tuban, Bojonegoro, Lamongan, Ngawi, Pacitan, Trenggalek, Jombang and Nganjuk. This district has a high percentage of poor people and is adjacent to other districts that also have a high percentage of poor people.
Quadrant 2: Ponorogo, Tulungagung, Jember, Banyuwangi, Situbondo, Probolinggo City, Pasuruan City, and Madiun City. These regencies/cities that have a low percentage of poor people will be close to other districts/cities that have a high percentage of poor people.
Quadrant 3: Blitar, Kediri, Malang, Sidoarjo, Mojokerto, Magetan, Kediri City, Malang City, Mojokerto City, Madiun City, Surabaya City, and Blitar City. This district has a low percentage of poor people close to other districts that have a low percentage of poor people.
Quadrant 4: Bondowoso, Probolinggo, Pasuruan, Madiun and Gresik. This district with a high percentage of poor people will be close to other districts that have a low percentage of poor people.

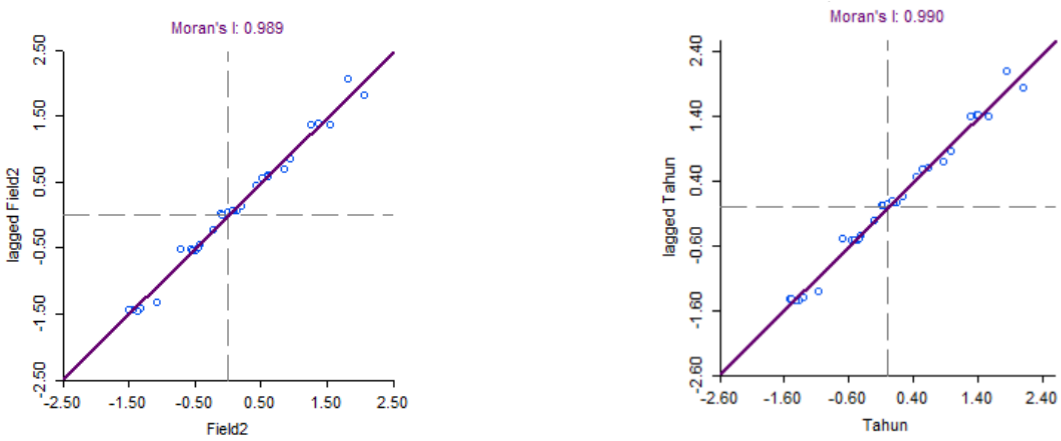


Figure 7. Results of the Moran Scaterplot of Poverty in East Java Province for 2020-2021

4. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Based on the results of the analysis and discussion through Moran's I, it can be concluded that there is a spatial autocorrelation in the percentage of the poor population in East Java, both in 2020 and 2021. Moran's I figures in 2020 and 2021 are 0.989 and 0.990 which indicates a positive autocorrelation or a clustering pattern and have similar characteristics at adjacent locations.

5.2 Suggestions

The condition of poverty which is patterned in clusters and has similar characteristics in adjacent locations makes the government's policy direction should emphasize spatial alleviation policies so that poverty alleviation programs are more targeted.

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