Study of Economic Inequality in The Agglomeration Region of Malang Raya

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Article Information	A B S T R A K
	Setiap daerah memiliki potensi untuk tumbuh dan berkembang sesuai dengan kondisi masing-masing. Perbedaan kondisi tersebut mengakibatkan ketimpangan kecepatan tumbuh kembang di setiap daerah, kondisi ini dikenal dengan istilah disparitas. Kesenjangan tersebut akan menjadi masalah jika terjadi kesenjangan yang terlalu besar dan disebabkan oleh sistem pembangunan yang salah, sehingga dapat menjadi penyebab kerusuhan, ketidakpuasan bahkan gerakan separatis yang ingin memisahkan diri dari Negara Kesatuan Republik Indonesia. Permasalahan mendasar dalam pembangunan daerah di Wilayah Metropolitan, khususnya Malang Raya adalah kesenjangan antar wilayah yang pembangunannya monosentris, berpusat di Kota Malang. Menyikapi kondisi tersebut, perlu dirumuskan sistem disparitas wilayah di Malang Raya, untuk mengetahui sejauh mana perkembangan dan pertumbuhan wilayah terkonsentrasi di Malang Raya. Selain itu, diharapkan melalui perumusan sistem disparitas wilayah dapat menjadi acuan sehingga arahnya dapat meminimalisir disparitas wilayah di Malang Raya
	A B S T R A C T
	Each region has the potential to grow and develop according to their respective conditions. The difference in these conditions results in inequality in the speed of growth and development in each region, this condition is known as disparity. The gap will be a problem if there is a gap that is too large and is caused by the wrong development system, so that it can be a cause of unrest, dissatisfaction and even a separatist movement that wants to separate itself from the Unitary State of the Republic of Indonesia. The basic problem in regional development in the Metropolitan Area, especially Malang Raya is the gap between regions where development is monocentric, centered on Malang City. Responding to such conditions, it is necessary to formulate a regional disparity system in Malang Raya, to find out the extent to which development and regional growth are concentrated in Malang Raya. In addition, it is hoped that through the formulation of the regional disparity system, it can be a reference so that the direction can minimize regional disparities in Malang Raya.

Introduction

Each region's conditions and potentials are very diverse in their characteristics. Therefore, it forms different growth and development levels of an area, causing an uneven pace of regional growth and development, also known as disparity. Regional inequality is a condition where a "gap" occurs between parts within a region. In economic development, reducing regional disparities is one of the main themes discussed.

Economic inequality and income distribution in several regions are issues in the metropolitan area. Cities in urban places have differences or gaps that become considered in economic development planning. Regions' income distribution is related to economic growth, poverty alleviation, and spatial harmony. A low-income level causes an increase in inequality which will always be associated with a low level of economic growth and a high poverty rate. In terms of PDRB distribution, sectoral contributions to PDRB, household consumption per capita, and poverty levels are factors causing disparities within the province.

In this regard, the fundamental regional development problem in the Metropolitan Area, especially Malang Raya, is the gap between regions where development is monocentric, centred on Malang City. Responding to such conditions, it is necessary to formulate a system of regional disparities in Malang Raya to find out the extent to which development and regional growth are concentrated in Malang Raya. In addition, it is hoped that through the formulation of the regional disparity system, it can be a reference in formulating directions to minimize regional disparities in Malang Raya.

Achieved aim by the researcher is to study the system of regional economic disparities in the agglomeration area of Malang Raya based on the Local Indicator Spatial Autocorrelation, which is to examine regional system inequality in Malang Raya. To achieve the objectives of this study, two interrelated objectives were formulated. The following are the targets used in this study :

1. Identify factors which is affects regional disparities
2. Formulate regional system in Malang Raya
3. Identify how big is the regional disparity in Malang Raya
4. Identify regional disparity system in Malang Raya

Methods

Research related to the economic disparity system in this region is located in Malang Raya which consists of 3 regions, namely Malang City, Malang Regency and Batu City. The general description related to each region.

Malang City is an autonomous region and the second largest city after Surabaya in East Java. Malang City has 110.06 Km^2 area. Demographically, Malang City has 844,933 people in 2022. The area in Malang City is divided into 5 sub-districts consisting of Lowokwaru, Sukun, Blimbing, and Kedungkandang. Meanwhile, Malang City consists of 57 urban village divided based on the administration of the urban village.

Malang Regency is one of the districts in East Java. Malang Regency is the second largest district after Banyuwangi Regency. In addition, Malang Regency has the largest population in East Java. Malang Regency population in 2022 is 2,668,296 people. Malang Regency has 2,977.05 km2 area which is divided into 33 sub-districts and Singosari District is the largest sub-district in Malang Regency with 239.49 km2 area. Malang Regency has a government center located in Kepanjen Distric.

Batu City is one of the cities formed in 2021. Batu City is a fraction of Malang Regency which prior to Batu City splitting into a sub-unit of development area 1 North Malang. Batu City has 197.087 km² area. The administrative area of Batu City is divided into 3 sub-districts, namely Batu, Bumiaji, Junrejo. Batu City also has 4 urban village and 19 villages. Demographically, Batu City has 214,653 people in 2022.

The administrative boundaries for the Malang Raya area are as follows:
Northern Boundary : Mojokerto and Kab.

		Jombang Regency
Eastern Boundary	:	Lumajang Regency, Kab. Probolinggo dan Kab. Pasuruan City
Southern Boundary	:	Indian Ocean
Western Boundary	:	Blitar Regency
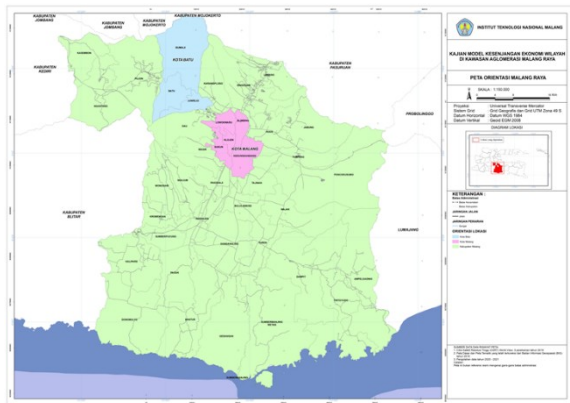
Figure 1. Malang Raya Administration Map

Regional development in the Metropolitan Area, especially Malang Raya is inequality between regions where development is monocentric, centered on Malang City.
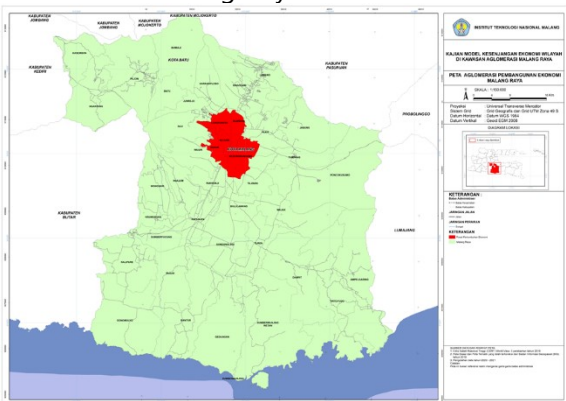
Figure 2. Economic Inequality Agglomeration Map in the Malang Raya Region

This section will be described related to the steps and methods that will be used in this research. Data collection and data analysis methods will also be described in this section. The following is data collection and data analysis methods in this study :

1. **Observation**

The following are things that were done during field observations:

    a. Factors condition that influence economic

    b. Citizen condition

    c. Data Verification

2. **Interview**

Interview is obtaining data technique by going directly to the field. The data obtained in opinions or attitudes of the population towards an issue or problem that occurs. Interviews will focus more on extracting data on the intensity and frequency of disasters.

Analysis is a tool used to obtain relevant results with research objectives. In this regard, the analysis used in this study is quantitative and qualitative analysis techniques. Quantitative research in this study is used to analyze regional disparities system in Malang Raya. Meanwhile, qualitative analysis is used to describe or interpret the results of economic inequality system in Malang Raya area. The following is an analysis and research method for each target in the study:

1. Factors identification analysis affecting regional disparities

The descriptive analysis and factor analysis method is an analysis that will be used in formulating the factors that affect the regional inequality in Malang Raya. Factors identification that affect regional disparities in Malang Raya is analyzed based on the conditions that occurred in 2015-2022, the following is an identifying factors analysis stages explanation that affect regional disparities.

In this study, descriptive analysis is used to obtain the factors that cause inequality in the Malang Raya Region. The variables used are literature review synthesis results which will be compared with data from the existing one. This aims to obtain the factors that influence regional disparities in Malang Raya. Then, factor analysis is carried out from the results of descriptive analysis.

Factor analysis is an analysis to simplify several variables into a factor that is simpler and smaller than the variables studied previously. Factor analysis is carried out by grouping the influential factors and reducing the non-influential factor so that stronger

factors are obtained that cause economic inequality in the Malang Raya area. Factor quantitative data were analyzed using SPSS 16 analysis tool to group factors according to similar characteristics and to reduce unmatch data (outlayers) so as to strengthen the justification of factors affecting regionally. Factor analysis calculation stages are as follows :

a. Correlation matrix or covariance calculation, which is changing the original data matrix (objects number observed based on all factors) into a correlation or covariance matrix,

b. Extracting factors in determining the number of factors. There are four criteria in determining factor number, namely eigenvalue criteria, a priori criteria, variance percentage criteria and sree tail criteria. Form a factor matrix that explains variables weight in each (loading faktor),

c. Factor rotation to simplify and facilitate factor interpretation.

2. Calculating Factor Score Regional Inequality System Formulation analysis in Malang Raya

The purpose of regional economic disparity system analyzing in Malang Raya is to determine the relationship between regional disparities and the factors that influence it. These factors are the previous analysis result. This analysis stage final result is a panel regression equation that contains correlation and the coefficients types between factors that affect regional disparities. Correlation type draws two types of relationship between factors with regional disparities. The first is a positive correlation relationship, the inequality increase will be followed by the factor increase according to the coefficient, this also applies vice versa. The second is a negative correlation relationship, the greater the inequality, the lower the value of the factors that influence it, this also applies vice versa. In this research, data types used for analysis is panel data Panel data is data in time series form or commonly called longitudinal data. There are two information that can be explained in panel data, namely cross-section information on differences between subjects and time series information that describes changes in time subjects.

Factors that influence regional disparities will be analyzed using regression panel analysis to formulate regional disparity patterns in Malang Raya. because the data used in this study are time series, panel data regression analysis is used. According to Baltagi 2001, there are advantages that can be obtained by using panel data regression such as the heterogeneity in each unit, reducing collinearity between factors, more informative and suitable for describing the dynamics of change.

2. Identify the large regional inequality in Malang Raya is divided into two stages such as the large inequality identification analysis of each factor that affects the regional disparity in Malang Raya and the second is identifying the large regional inequality of each regency/city in Malang Raya. Inequality level constituent factors is using a regression equation. The final result in this analysis is the Moran index.

3. Identify Regional Disparity System in Malang Raya

The identification analysis purpose of regional disparity system in Malang Raya is to obtain concentration and outliers system from regional disparities in Malang RayaAnalysis results are a map containing concentrations and outliers location. The data used were obtained from the panel regression equation in the previous stage. In this equation, we need to input factors data that compile the regency/city panel regression equation. This results in the inequality value for each regency/city.

Inequality value result used as input in the regional system identification analysis in Malang Raya. In this analysis, the analytical method used is LISA (Local Autocorrelation) with 0.9 Geoda analysis tool. LISA utility is a statistical method that can be used to summarize spatial information from a map. Information is obtained through a mechanism for comparing observed area value with area that surrounds it value..

A. Theory

The benchmark for a region's development progress is characterized by high economic growth, low unemployment and equitable per capita income. Meanwhile, political stability, legal certainty, social institutions, culture and environmental sustainability can ensure progress and equity from time to time benchmarks that can be used continously.

The central government has launched regional development by increasing productivity growth, expanding business opportunities, equalizing income distribution, reducing unemployment, and maintaining sustainable development. This is the main goal that always proclaimed by the central government.

Dynamic regional conditions in the competition face are needed to realize this goal. Dynamic regional conditions in the competition face are needed to realize this goal so that in formulating the regional concept development, it must be in accordance with the region condition by taking into account the growth potential. Sustainable economic growth is enhanced through a more population rational distribution, increasing productivity and employment opportunities.

Regional development definition referred to in this study is a continuous process, between regions sectors, so that all processes within must be integrated and mutually supportive through a focus on all physical, human and natural capital assets. Therefore, it is necessary to have a regional development planning stage in the regional development process so that development harmony and balance between regions within an area can be pursued as well as development harmony and balance between all sectors and resources.

Regional development in this study is a continuous process, between regions and between sectors, so that all processes in it must be integrated and mutually supportive through a focus on all physical, human and natural capital assets. Therefore, in the regional development process, we need a plan, so that the sector and resources development harmony and balance within an area can be pursued. In this regard, it is necessary to assess the criteria and indicators for regional development.

Regional development success or failure assessment in an area cannot be carried out without a comprehensive assessment device, easy to operate and always up to date. The assessment tool should contain clear measurement parameters, which are not only measured from the economic side (eg statistical size of GRDP) but also from population welfare perspective and other qualitative elements, for that we need a measurement tool in the regional development indicators form. To find out the area development, it will be assessed using indicators. The indicators to determine regional development are as follows :

1. Gross domestic income level
2. Basic needs fulfillment
3. Job creation for local residents
4. There is a local link.

This regional development indicator is expected to be a bridge for equalizing perceptions and assessments for both the central and regional governments in an effort to assess the success of regional development in the context of regional development performance in a particular area.

These indicators are general, which means they will be adjusted accordingly to the conditions of each region when categorized. We could see the regional development succes can

be measured using several indicators, namely as follows:

1. Institution performance development and its apparatus is a manifestation of the productivity level.
2. Increasing technology quality and human resources in the development implementation is deficiency manifestation.
3. Implemented a regional program as a form of ensuring sustainability due to community participation.

Basri 2022 argues that the benchmark for the development progress of an area is marked by high economic growth, low unemployment and equitable per capita income. Meanwhile, to ensure the continuity of progress and equity from time to time, the benchmarks that can be used are political stability, legal certainty, social institutions, culture and environmental sustainability.

Based on this theory, in this study the regional development assessment tool is more emphasized on the economic side which contains quantitative elements, namely the level of gross domestic income, employment level, the unemployment rate, and sectoral linkages. Where if there are differences in growth or acceleration of these indicators will result in regional disparities. Inequality is a condition that causes an imbalance or difference.

According to Indonesian Dictionary, inequality is something innaropriate. Then it is further explained that the inequality occurs in Indonesia is ongoing and manifest in various forms, dimensions and aspects of Dumairy (1996). The inequality is no longer has per capita income form, but a gap in activities or regional development processes. So that the inequality occurs is not only a spatial between urban and rural areas but also a sectoral and regional inequality.

Based on this definition, the regional inequality referred to in this study is a condition that describes the economic distance in the form of a gap in achieving progress between one region and another, namely between districts and cities within the scope of Malang Raya. The inequality scopes in this study is emphasized on the differences in regional growth achieved by each district in Malang Raya, where economic activity is the main source of activity in an area.

For the factors causing development according to some experts, namely:

The factors that cause regional inequality in Indonesia include development in the PJP 1 era which was more reliant on aspects of regional growth rather than equity, then the inequality of initial gifts, both natural and the result of human efforts (Dumairy 1996). Striking differences study in aspects of labor absorption, investment and allocation of bank funds is an aspect that indicates sectoral and regional inequality.

Firman (1995) stated that the location advantages and infrastructure in urban centers is very attractive for investors to invest, so that the potential inequality tends to increase if there is no intervention. Firman added that initially and very roughly, PDRB can indicate a widening gap between regions in Indonesia.[11]

According to Lay (1993) in Lidya Estalita Kini (2001), the causes of disparities between regions can be based on a economic conditions comparison using GRDP indicators, industrial distribution and concentration patterns, poverty, investment distribution and concentration patterns.[12] While Handayani (2006) uses Several indicators are used to show regional disparities, namely GRDP per capita, GRDP growth, industrial sector productivity and the level of labor force participation.[13]

As for the distribution of PDRB, sectoral contributions to PDRB, household consumption per capita and poverty levels are factors that cause disparities within the province.The various regional disparities that have been mentioned above are mutually influencing one another.

Results and Discussion

A. Factors analysis that affect regional disparities

Based on descriptive analysis results, the factors that influence regional disparities include :

1. Economic development
2. Produk Domestik Regional Bruto (PDRB)
3. Investation
4. Total population
5. IPM

And then, the feasibility test of the factor analysis using KMO (Kaiser Meyer Olkin) with the SPSS application. The KMO test with 5 variables is 0.437 or lower than 0.5, so it is necessary to repeat the KMO test. In the results of the second KMO test with the variables of population, PDRB and IPM, the KMO test is 0.650 or greater than 0.50, so factor analysis is feasible.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.650
Bartlett's Test of Sphericity	Approx. Chi-Square	46.218
	df	3
	Sig.	.000

Figure 3. KMO Test Result

Each variable has a Measure Of Smapling Adequacy (MSA) value of 0.604 for the total population, 0.886 for the HDI and 0.589 for the GRDP variable, so all variables are eligible for factor analysis.

		Zscore: Jumlah Penduduk	Zscore: IPM	Zscore: PDRB
Anti-image Covariance	Zscore: Jumlah Penduduk	.046	-.019	-.042
	Zscore: IPM	-.019	.476	.047
	Zscore: PDRB	-.042	.047	.042
Anti-image Correlation	Zscore: Jumlah Penduduk	.604ª	-.128	-.956
	Zscore: IPM	-.128	.886ª	.332
	Zscore: PDRB	-.956	.332	.589ª

Figure 4. Jumlah Penduduk, IPM, dan PDRB

Total population, PDRB and IPM are factors that affect regional disparities.

B. Formulating inequality regional system

The regional disparity system in Malang Raya is formulated using panel regression analysis. The first approach is models selection, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). The first step uses the Chow test to choose between the CEM or FEM models.

The cross-sectional Chi-square prob value obtained = 0.000 (smaller than 5%), so the

conslusion is H0 rejected or the Fixed Effect (FEM) model is better than the Common Effect (CEM). The test continues to the Hausman test.

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15302.733044	2	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
X1	0.000000	0.000000	0.000000	0.0000
X2	15889.01...	-61501.00...	25983184....	0.0000

Cross-section random effects test equation:
Dependent Variable: Y
Method: Panel Least Squares
Date: 07/28/22   Time: 20:36
Sample: 2018 2022
Periods included: 5
Cross-sections included: 3
Total panel (balanced) observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24986.49	391221.4	0.063868	0.9503
X1	3.15E-15	1.77E-15	1.781109	0.1052
X2	15889.02	5226.222	3.040249	0.0125

Effects Specification

Cross-section fixed (dummy variables)

|			
R-squared	0.999812	Mean dependent var	1229282.
Adjusted R-squared	0.999736	S.D. dependent var	1053780.
S.E. of regression	17118.46	Akaike info criterion	22.59490
Sum squared resid	2.93E+09	Schwarz criterion	22.83092
Log likelihood	-164.4618	Hannan-Quinn criter.	22.59239
F-statistic	13260.41	Durbin-Watson stat	1.258310
Prob(F-statistic)	0.000000		

Figure 4. Hausman Test

Obtained p-value = 0.000 (less than 5%). So that the decision taken is Reject H_0 or it can be concluded that the Fixed Effect (FEM) model is better than the Random Effect (REM). From the panel data results regression analysis with eviews, the best model used is the fixed effect model. The determination coefficient value is 0.9998 or 99.98% of the variables that affect each, this shows that the economic inequality is significantly influenced by PDRB and IPM in Malang Raya.

C. Regional inequality large analysis that occurred

The analysis used to determine the regional disparity that occurs in Malang Raya uses Morans,i. The autocorrelation test in this study uses the Spatial Autocorrelation (Moran's Index) analysis tool from the Geoda software.
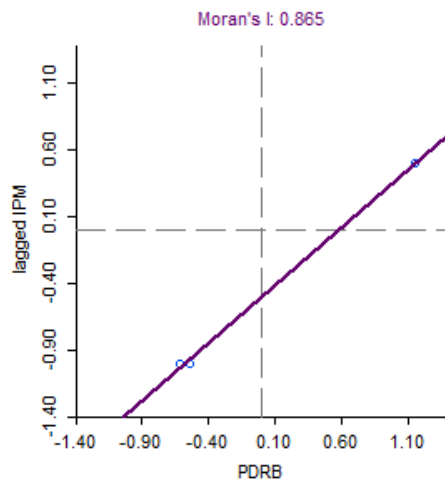
Figure 5. Autocorrelation Test (Moran's Index)

From the graph above, it can be seen that the Moran's index value produces a positive value of 0.865, meaning that there has been a spatial autocorrelation of regional disparities.

D. Regional Inequality System Analysis

Local Association is spatial autocorrelation quantification in a smaller area and produces high statistical significance (hotspots), low statistical significance (coldspots), and outliers.
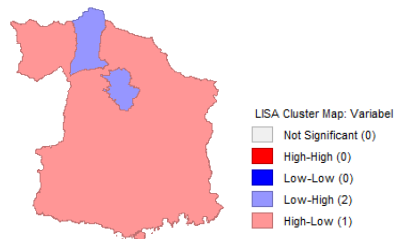
Conclusion

Malang Raya area to determine inequality magnitude that occurs in Malang Raya area. Research is obtained from each output produced in each research target. The results of this study will be described as follows:

1. Factors that affect regional disparities are population, IPM and PDRB.
2. Regional disparities system in Malang Raya is Fixed Effect (FEM) which is significantly influenced by PDRB and IPM.

3. From the autocorrelation test result using the Moran's Index, it gets a positive value of 0.865, meaning that there is an autocorrelation in the Malang area.
4. From the Local Indicator Of Spatial Association (LISA) result that Malang district is marked in pink or High-low surrounds the Malang city area and Batu City is light blue which means low-high, meaning that there is no inequality in the rea of Batu and Malang city, but there is inequality regional in Malang Regency.

From the LISA Cluster map, it can be seen that the Malang district marked with pink or High-low surrounds the Malang city area and Batu City is light blue which means low-high, meaning that there are no inequality in the Batu city and Malang city areas, but there is regional inequality in the Malang Regency Local Indicator Of Spatial Association (LISA)..

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