Testing the Kuznets Hypothesis on Income Disparities and Economic Growth in the Horseshoe Region

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Abstract

This study aims to determine the sectors that have the potential to be developed so as to encourage economic growth, classification based on the Klassen typology, the condition of income disparity levels and proof of the Kuznets hypothesis applicable in the District/City of the Horseshoe Region. This research was conducted using quantitative methods and using secondary data obtained from BPS East Java Province. The analytical tools used are Location Quotient, Shift Share, Klassen Typology, Williamson Index, and analysis of economic growth trends on income disparities in the District/City of the Horseshoe Region as proof of the Kuznets hypothesis. Based on the analysis of Location Quotient and Shift Share, it can be seen that the agriculture, fishery and forestry sectors are the basic sectors in most of the Horseshoe Areas. Then the results of the classification using klassen typology, indicate that Pasuruan Regency is included in Quadrant I, Banyuwangi Regency and Probolinggo City are included in Quadrant III area, and five other regencies are included in Quadrant IV area. The results of the Williamson Index show that the average income disparity of districts/cities in the Horseshoe Region is high. And it is proven that the kuznets hypothesis applies in the Regency/City in the Horseshoe Area.

Keywords: Kuznets hypothesis, Income Disparity, Economic growth, Williamson Index.

1. Introduction

Countries that are classified as developing countries always have a main goal that is always their main concern, namely the development of their economy, one of which is Indonesia. This country which has many islands with various kinds of different character of the people in it. The existence of this condition causes what is accepted by the community in it can also be different so that there are inequalities in economic conditions that can be obtained and felt by the community in it. There are several regions that are able to obtain and develop the economy equally and there are also regions that have not yet received and developed it. So that these different conditions also lead to unequal development between regions. This is often a problem in developing countries. (Oka et al., 2015).

If there is an economy that has increasing growth and is not followed by economic equality that is obtained by each community, it will be the cause of the widening of unequal differences in society. However, in different words, if the similarity of the economic level obtained is not balanced with its growth, it will bring up a new problem, namely the existence of poverty. So that the existence of economic growth and equity becomes something that cannot be separated and requires more attention because realizing it takes the same time but it is not something easy. (Rubiarko, 2013).

Each region in Indonesia has many differences, including differences in natural resources, human resources, and the existence of existing public facilities because development in the area is not always accompanied by equity. The existence of the location of the area close to the city center makes the pace of development in the area will also be faster when compared to areas that are far from the city. This is the main reason for the striking economic differences in each region. These economic differences include differences in income per capita. Per capita income is related to GRDP and the total population owned by each region. The higher GRDP does not determine the level of per capita income, it will also be high if the population is also the same. (Iswanto, 2015).

Looking at Indonesia's development performance from a spatial perspective, this shows that when compared to other provinces outside Java, Java is generally developing faster. This is what causes differences in progress in the territory of Indonesia because most of the economic activities are centered on this island. The differences in development that occur in various provinces in Indonesia can be seen through the unequal GRDP and economic growth (Sukwika, 2018).

Horseshoe is an area located in the eastern part of East Java Province. This area is called a horseshoe because the shape of the area on the map is similar to the shape of a horseshoe. The term Horseshoe Region (WTK) emerged ahead of the 1977 General Election, which was to identify a territorial concentration of territory which at that time was vulnerable to social, political and security upheaval. Based on its history, the Horseshoe area during the Majapahit era was called Blambangan or Mataraman, because this area was never part of the Mataram kingdom, until finally some residents from the west came and settled in some of these areas in later periods. (Supriono et al., 2011).

Regencies and cities in the Horseshoe area consist of Pasuruan Regency, Probolinggo Regency, Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency, Banyuwangi Regency, and Probolinggo City. The Horseshoe area is often considered to be a backward area in East Java. Compared to other areas in East Java, the backwardness of the Horse Tapal area is characterized by a low level of economic growth and contradicts with abundant natural potential and a relatively lower population density. In terms of regional income, the Horseshoe area is still underdeveloped, as well as other infrastructure development (Soejono et al., 2011).
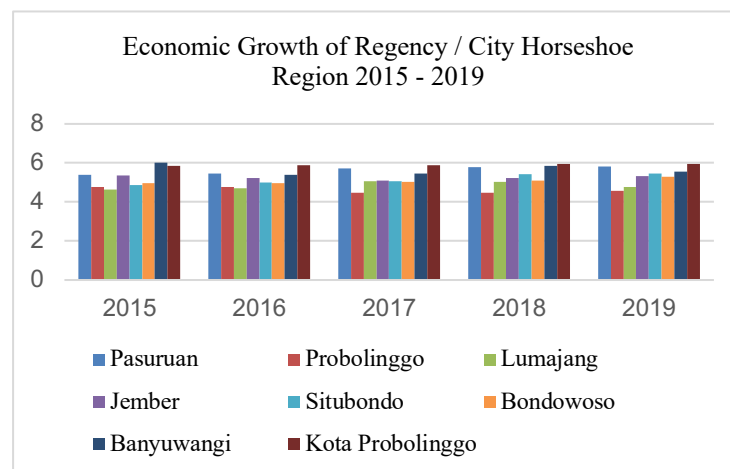

Figure 1. Economic Growth of Regency/City Horseshoe Region 2015-2019
Source: (BPS, 2020) (data processed)

The economic growth of the Horseshoe area in the 2015 - 2019 period tends to fluctuate. During this period, only Probolinggo City and Pasuruan Regency experienced the highest economic growth. In 2015 Probolinggo City had an economic growth of 5.86% and in 2019 it increased by 5.94%. Then in 2015 Pasuruan Regency had an economic growth value of 5.38% which increased to 5.83% in 2019. While the lowest and fluctuating economic growth was occupied by Lumajang Regency, where in 2015 with a figure of 4.62% and 2019 to 4.77%. This figure is far below the economic growth of East Java Province, where in 2015 it was 5.44% and 5.52% in 2019.
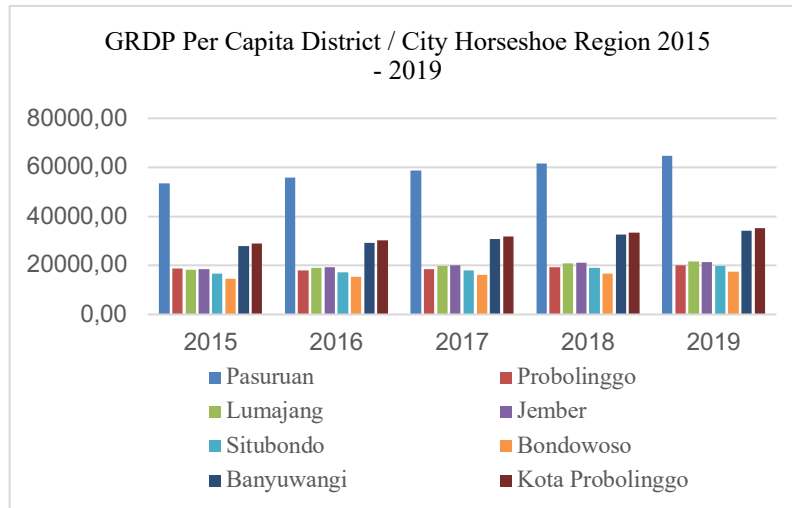

Figure 2. GRDP Per Capita District / City Horseshoe Area
2015 - 2019

Source: (BPS, 2020) (data processed)

During the period 2015 - 2019, the value of GRDP per capita of each Regency or City in the Horseshoe Area has varied values and tends to increase. In the 2015 – 2019 period, Pasuruan Regency and Probolinggo City had the highest GRDP per capita among other regions in the Horseshoe area. In 2015 Pasuruan Regency had the highest GRDP with a figure of 53,367.31 and in 2019 it increased to 64,735.98. While in the second highest position is occupied by the City of Probolinggo, where in 2015 it had a per capita GRDP of 28,944.88 and increased to 35,135.82 in 2019. This is inversely proportional to the GRDP per capita of Bondowoso Regency, which in 2015 only reached 14,686. .74 and in 2019 it was 17,580,38. And this figure is much lower than the GRDP per capita of East Java Province, where in 2015 it was 34,271.81 and in 2019 it reached 41,566.75. There are differences in the value of economic growth and GRDP per capita, causing inequality between regencies and cities in the Horseshoe Region.

2. Literature Review

Economic Growth

In aggregate, the economy can be said to be advanced if the economy in the country grows well and continues to increase. The existence of this growth is seen from the production generated from the goods and services sector that can be produced by a country. In analyzing the existence of economic development in a country, the existing economic growth becomes a very important thing (Nuraini, 2017). The economy of a country can be calculated quantitatively by looking at its economic development in a certain time compared to the previous time. So it can be concluded that the increase in income from year to year is an understanding of economic growth (Budi, 2014).

Economic Disparities Between Regions

Economic disparity between regions is an imbalance of economic growth in a region. The disparity in development that occurs between regions is a problem that often occurs in economic development. The cause of this imbalance is the cause of the different natural resources and conditions of the population in each place. As a result, there are differences in the ability to encourage the development process. This imbalance will ultimately have an impact on people's welfare. Disparities between regions have an impact on the level of community welfare which will affect the formulation of regional development policies carried out by the government. (Oka et al., 2015).

Income Distribution Disparity

There is an increase in the economic sector that has a direct or indirect impact on the issue of regional disparities. In this regard, it is necessary to understand that income disparities can be interpreted as differences in economic development in various regions that are capable of causing disparities in the level of income per capita in each region (Kuncoro, 2004). The cause of the unequal distribution of income in developing countries is generally caused by the rate of population growth so that it has an impact on declining per capita income. In addition, this also has an impact on inflation which continues to increase but can be said to be unbalanced by the increase in production of both goods and services, uneven development between regions, low social mobility, the establishment of policies regarding import substitution industries with industrial product prices. high rates, in some developing countries also have an impact on the deteriorating exchange rate, as well as the decline in the competitiveness of the people's handicraft industry (Arsyad, 2010).

Total Population

The number of residents is an important indicator of economic activity. Income disparities can increase if in an area there are high numbers of productive people who have worked or have not worked. The existence of this phenomenon is influenced by the inequality of the productive population, this results in different incomes for each resident, for example in rural areas there are more productive residents than cities with lower productive populations. Thus, residents who work in urban areas have a greater amount of income than residents who work in villages (Musfidar, 2012).

Research Hypothesis

Based on the background, problems and also the theoretical basis in this study, there are several hypotheses that have been determined, including:
  a) It is suspected that there are sectors that have the potential to be developed in order to encourage economic growth in the District/City of the Horseshoe Region.
  b) It is suspected that there are differences in the classification of districts/cities in the Horseshoe Area.
  c) It is suspected that there is an income disparity between Regencies/Cities in the Horseshoe Area.
  d) It is suspected that the Kuznets hypothesis applies to districts/cities in the Horseshoe Area

3. Methodology

Data Type

This study uses secondary data that has been collected from related agencies, namely the Central Statistics Agency (BPS) of East Java Province, using time series data for 5 years, namely in 2015 – 2019. The data used are as follows:
a) GRDP of East Java Province ADHK for the period 2015 – 2019.
b) Regency/City GRDP in East Java Province ADHK for the period 2015 – 2019.
c) GRDP Per Capita East Java Province ADHK for the period 2015 – 2019.
d) GRDP Per Capita Regency / City in East Java Province ADHK period 2015 – 2019.
e) Total Population of East Java Province in 2015 – 2019.
f) Number of Regency/City Population in East Java Province in 2015 – 2019.

Data Source

Sources of data obtained in this study are data from the official publication of the Central Statistics Agency of East Java Province, literature, and so on.

Analysis Method

Location Quotient (LQ)

LQ analysis is used to determine the basic and non-basic sectors through the value-added approach to GRDP and the approach to the number of workers in each sector. In this study, the researchers used a value-added approach to GRDP, as intended, was applied using the following formula:

$$LQJi = \frac{VAJi/VAli}{PDRB\ J/\ PDRB\ I}$$

Information:
LQJi = Location Quatient sector i in area J.
VAJi = Value added of sector i in area J.
Vali = Value added of sector i at district level.
PDRBJ = Gross Regional Domestic Product in area J.
GDP = Gross Regional Domestic Product of the Regency.

Based on this formula, there are several categories regarding the results of calculating Location Quotient (LQ) in the regional economy, namely:
a) If the value of LQ>1, then the related sector in the study area has a higher level of specialization than the reference area.
b) If the LQ value <1, then the related sector in the study area has a lower level of specialization than the reference area, and it can be concluded that the sector is included in the non-basic sector category.
c) If the LQ value = 1, then the related sectors in the study area and also in the reference area have increased (Vikaliana, 2018).

Shift Share

This analysis aims to identify the relationship between regional growth and the regional economic structure. From the application of this analytical approach, it can be seen the performance of the economy and the leading sector of a region, by comparing the area with a larger area (Regional or National). This is also done to determine the GRDP growth of each sector with the influence of either external factors (industrial structure) or internal influences (location factors). The analysis was carried out to complete the LQ analysis that had been carried out (Rasyid, 2016).

Shift Share measurement can be done by applying the following equation calculation:

$$PR_{ij} = Q_{ij}^0 \left\{ \frac{Y_t}{Y_0} - 1 \right\}$$

If PR < d Q then sector growth in the district / city will encourage sector growth in the same province (and vice versa)

$$PS_{ij} = Q_{ij}^0 \left\{ \frac{Q_i^t}{Q_i^0} - \frac{Y_t}{Y_0} \right\}$$

If PS > 0 then the sector grows faster than the sector at the same provincial level (and vice versa)

$$DS_{ij} = Q_{ij}^0 \left\{ \frac{Q_{ij}^t}{Q_{ij}^0} - \frac{Q_i^t}{Q_i^0} \right\}$$

If DS > 0 then the sector has a faster growth compared to other sectors in the same district (Locational).

Information (Mangilaleng et al., 2015):

Yt = GRDP of East Java Province period year t
Y0 = GRDP of East Java Province for the base year period
Q_i^t = GRDP of East Java Province sector i in year t
Q_i^0 = GRDP of East Java Province sector i in the base year
Q_ij^t = GRDP of sector i district in year t
Q_ij^0 = GRDP of sector i in the base year

Klassen Typology

This analysis aims to determine regional categories based on two main indicators, including regional income or gross regional domestic product (GRDP) per capita and economic growth. The approach to an area produces four categories of districts with different characteristics of economic growth in each district, including the following (Aditama, 2019):

a) Quadrant I is a Regency/City that is Advanced and Fast Growing (high growth and high income).
b) Quadrant II is Regency/City Advanced but Depressed (high income but low growth).
c) Quadrant III is a Regency/City that is developing fast (high growth but low income).
d) Quadrant IV is relatively underdeveloped Regency/City (low growth and low income).

Williamson Index

To determine the size of the level of income inequality in each region (regional) can be done with the regional inequality index proposed by Jeffrey G. Williamson (1965). According to Kuncoro, the Williamson Index formula used is as follows:

$$IW = \frac{\sqrt{\sum (Yi - Y)^2 Fi/n}}{Y}$$

Information:

IW : Williamson Index Value

Yi : Per capita GRDP in Regency/City

Y : District/City average GRDP per capita

Fi : Total population in Regency/City

n : Total population of Province

Based on the calculation of the Williamson Inequality Index, several criteria were found, including (Sari & Budhi, 2013):

a) The number 0.0 to 0.2 means that the level of inequality is low.

b) Numbers 0.21 to 0.35 means that the level of inequality is moderate.

c) Number > 0.35 means that the level of inequality is high.

Kuznets Hypothesis

Kuznets argues that when development begins, there is an unequal distribution of income, but when development has reached a certain level, the distribution of income will be more even.
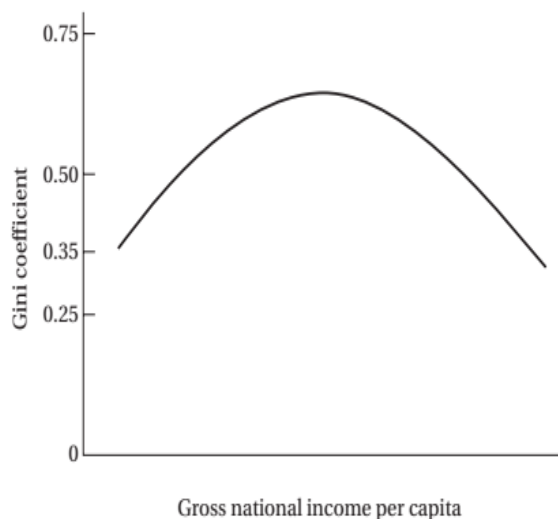
Figure 3. Kuznets Curve

Source: (Todaro, 2011)

Based on Figure 3, it can be explained that there seems to be a positive relationship between economic growth and inequality in income distribution in the short term. Thus, economic growth will be followed by an increase in income distribution inequality. But in the long term, there is a negative relationship between the two aspects, so it can be concluded that an increase in income will be followed by a decrease in income distribution inequality (Todaro, 2011).

4. Result and Discussion

To see potential sectors that can be developed, this research uses Location Quotient and Shift Share methods. The following are the results of the Location Quotient and Shift Share tests for National Shares, Proportional Shares and Differential Shares:

Table 1. Location Quotient Regency/City Horseshoe Area 2015 - 2019

SECTOR	Pasuruan	Probolinggo	Lumajang	Jember	Situbondo	Bondowoso	Banyuwangi	City of Probolinggo
Agriculture, Forestry and Fisheries	0,56	3,01	3,11	2,52	2,75	2,61	2,79	0,54
Mining and excavation	0,10	0,46	0,79	0,94	0,37	0,39	1,60	0,00
Processing industry	1,97	0,78	0,67	0,71	0,58	0,76	0,39	0,55
Electricity and Gas Supply	2,72	3,20	0,17	0,18	0,23	0,16	0,18	0,38
Water Supply, Waste Management, Waste and Recycling	0,36	1,18	0,62	0,66	1,36	0,82	0,68	2,41
Construction	1,31	0,79	0,76	0,76	0,82	0,93	1,30	0,67
Wholesale and Retail Trade	0,55	0,68	0,78	0,70	0,88	0,87	0,83	1,33
Transportation and Warehousing	0,21	0,30	0,64	0,53	0,88	0,25	1,01	4,72
Provision of accommodation and food	0,65	0,28	0,24	0,42	0,34	0,13	0,48	0,64
Information and Communication	0,57	0,58	0,69	1,29	1,10	1,11	0,94	1,06
Financial Services and Insurance	0,30	0,71	0,64	0,86	1,20	1,14	0,70	2,32
Real Estate	0,43	1,40	0,97	0,83	0,98	0,72	0,91	1,79
Company Services	0,13	0,41	0,42	0,42	0,56	0,47	0,30	0,82
Government Administration, Land and Social Security	0,50	1,43	1,41	1,60	1,51	1,53	0,99	2,15
Education Services	0,26	0,97	0,96	1,99	1,49	1,36	1,25	1,76
Health Services and Social Activities	0,23	0,92	1,10	1,15	1,35	1,16	0,59	1,34
Other Services	0,73	1,55	1,15	0,82	1,52	1,27	0,87	2,36

Source: (BPS, 2020) (data processed)

Location Quotient

Based on the calculation of Location Quotient (LQ), it shows that the agricultural, forestry and fisheries sectors are the basic sectors that dominate most of the Horseshoe Regions, namely Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency and Banyuwangi Regency. The mining and quarrying sector is the base sector in Banyuwangi Regency. The manufacturing sector is the base sector in two regions, namely Pasuruan Regency and Probolinggo Regency. Procurement of electricity and gas is the basic sector in Pasuruan and Probolinggo Regencies. Then the water supply sector, waste management, waste and recycling became the base sector in Probolinggo Regency, Situbondo Regency and Probolinggo City. Then construction became the base sector in two regions, namely Pasuruan Regency and Banyuwangi Regency. Wholesale and retail trade are the only basic sectors in Probolinggo City. Probolinggo City and Banyuwangi Regency have transportation and warehousing sectors as their base sectors. Information and communication are the basic sectors in

Jember Regency, Situbondo Regency, Bondowoso Regency and Probolinggo City. Financial services and insurance are the basic sectors in three regions, namely Situbondo Regency, Bondowoso Regency and Probolinggo City.

Probolinggo Regency and Probolinggo City have the real estate sector as their base sector. Government administration, defense and social security are the basic sectors in Probolinggo Regency, Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency and Probolinggo City. Education services are the basic sector in Jember Regency, Situbondo Regency, Bondowoso Regency, Banyuwangi Regency and Probolinggo City. Health services and social security are the basic sectors in Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency and Probolinggo City. Other services are the base sector in Probolinggo Regency, Lumajang Regency, Situbondo Regency, Bondowoso Regency and Probolinggo City. As for the provision of accommodation and food, and company services, it is not the base sector in the Regency/City of the Horseshoe Region. It can be concluded that the main potential sectors in the Horseshoe Area are dominated by agriculture, fisheries and forestry, namely Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency, Banyuwangi Regency. While Pasuruan Regency has the main potential in the manufacturing industry sector, then Probolinggo Regency has the electricity and gas procurement sector as its base sector, and Probolinggo City has the transportation and warehousing sector as its main base sector.

Table 2. Shift Share (PS) District/City Horseshoe Area East Java Province 2015 – 2019

SECTOR	Pasuruan	Probolinggo	Lumajang	Jember	Situbondo	Bondowoso	Banyuwangi	City of Probolinggo
Agriculture, Forestry and Fisheries	-245973,37	-307525,66	-302414,17	-575488,01	-157263,97	-150651,76	-649758,91	-19989,17
Mining and excavation	5111,82	5308,65	6763,30	21731,87	2347,35	2494,10	34712,96	0,00
Processing industry	310287,27	28617,06	23594,80	57758,99	12019,81	15612,68	32008,47	16857,70
Electricity and Gas Supply	-41789,48	-10980,40	-581,48	-1347,56	-458,61	-319,20	-1399,21	-370,58
Water Supply, Waste Management, Waste and Recycling	-107,11	-81,50	-39,60	-102,94	-52,64	-32,26	-103,87	-130,59
Construction	25550,76	3931,71	3494,57	8743,38	2063,97	2679,16	15327,72	1815,33
Wholesale and Retail Trade	44860,45	12944,70	14054,31	29851,54	9381,12	9321,13	35151,88	9375,09
Transportation and Warehousing	1608,97	521,30	1052,59	2090,88	845,51	247,17	4214,65	-19390,48
Provision of accommodation and food	71169,20	7106,48	5731,36	23740,67	4789,79	1895,26	27140,57	5661,32
Information and Communication	44241,42	10393,24	11773,03	51042,94	11097,69	11181,36	37709,27	8807,53
Financial Services and Insurance	-3883,40	-2145,31	-1813,57	-5757,08	-2107,86	-1938,81	-4773,85	-7727,68
Real Estate	-1299,07	-963,49	-606,75	-1240,38	-350,99	-279,59	-1349,67	1236,00
Company Services	490,12	361,44	349,79	833,79	275,86	230,06	603,11	577,05
Government Administration, Land and Social Security	-14994,85	-9901,14	-9309,13	-24911,97	-5885,75	-5996,65	-15678,17	-6584,40

Education Services	2072,66	1815,17	1696,52	8430,80	1862,72	1442,09	5408,19	6246,57
Health Services and Social Activities	1514,78	1406,10	1566,84	3877,63	1153,94	991,94	2018,53	1434,31
Other Services	-3823,75	-1626,33	-1285,07	-2211,10	-1006,13	-860,55	-2183,77	1932,45

Source: (BPS, 2020) (data processed)

Based on the table above, it can be seen that the economic sector that has PS > 0, is a sector that has faster growth compared to the same sector at the East Java Province level.

Table 3. Shift Share (PR) District/City Horseshoe Area East Java Province 2015 – 2019

SECTOR	Pasuruan		Probolinggo		Lumajang		Jember	
	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij
Agriculture, Forestry and Fisheries	188125,89	78484,68	235800,86	71392,00	231216,20	107891,40	439135,28	284640,20
Mining and excavation	15866,37	10939,91	16561,08	12115,80	26337,20	38563,20	76031,42	92837,00
Processing industry	1701678,34	3246882,46	153016,10	365890,40	127923,46	269360,80	320689,02	581680,40
Electricity and Gas Supply	25374,39	6840,27	6674,90	8213,80	353,56	374,40	823,78	1447,40
Water Supply, Waste Management, Waste and Recycling	1023,57	1606,12	783,58	1139,80	390,54	419,60	977,78	1775,60
Construction	357102,74	446758,33	48981,76	99634,60	44621,58	81885,40	104933,24	236518,40
Wholesale and Retail Trade	293763,38	569834,38	84865,42	166848,80	91974,82	197189,00	195119,46	449094,80
Transportation and Warehousing	17873,19	39573,48	5830,80	13720,00	12065,32	30263,20	23457,96	55096,40
Provision of accommodation and food	99416,28	247698,07	9919,58	23084,00	8006,42	22040,80	33178,26	89875,20
Information and Communication	94858,88	205657,31	22259,34	48356,80	25176,02	63087,80	109206,54	276241,80
Financial Services and Insurance	23071,54	30972,64	12518,64	19167,60	10757,70	16967,80	33675,56	54173,60
Real Estate	21658,97	33083,49	16388,02	24604,80	10746,98	23837,20	21629,04	40375,40
Company Services	2961,98	5327,74	2191,20	3791,40	2101,04	4109,20	4983,18	10254,20
Government Administration, Land and Social Security	32561,92	39704,23	21495,88	27676,20	20277,60	25527,20	54059,22	73678,80
Education Services	20260,58	33185,92	17471,22	30231,40	16359,52	30142,60	79798,50	145049,80
Health Services and Social Activities	4503,42	8849,90	4181,38	7068,00	4651,42	9401,40	11458,16	24859,00

SECTOR	Pasuruan		Probolinggo		Lumajang		Jember	
	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij
Other Services	30956,36	43740,42	13230,62	19674,00	10672,12	21245,80	18053,48	28075,00

Source: (BPS, 2020) (data processed)

Table 4. Shift Share (PR) District/City Horseshoe Region, East Java Province 2015 – 2019

SECTOR	Situbondo		Bondowoso		Banyuwangi		City of Probolinggo	
	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij	Average	Average ΔQij
Agriculture, Forestry and Fisheries	120423,68	62942,60	115055,33	67028,00	496330,67	224088,60	14812,54	8877,20
Mining and excavation	7587,26	6861,00	8036,50	7743,40	129278,97	204746,20	0,00	0,00
Processing industry	63593,16	167702,80	84897,19	186703,00	177746,01	339760,40	41755,16	48517,00
Electricity and Gas Supply	278,65	280,80	194,36	258,20	853,31	1130,80	293,02	318,60
Water Supply, Waste Management, Waste and Recycling	512,35	554,60	308,89	473,80	1027,49	1373,40	601,41	752,80
Construction	29172,69	36700,20	32519,17	59439,00	179106,46	516434,40	16211,44	28746,40
Wholesale and Retail Trade	61364,33	134976,60	61045,79	121240,60	229442,87	625506,00	63757,26	115047,40
Transportation and Warehousing	9709,42	22861,20	2793,23	6442,60	45428,30	90221,20	36148,30	72866,60
Provision of accommodation and food	6690,73	17097,00	2644,92	6314,40	37973,75	124200,00	9012,42	19582,40
Information and Communication	23764,98	51808,20	23943,62	53244,60	80635,97	204735,60	15718,77	31321,20
Financial Services and Insurance	11720,02	23297,20	11335,79	17930,60	27600,33	49839,80	15231,54	23295,60
Real Estate	6328,97	13653,20	4756,71	7423,40	24062,57	47454,40	7937,06	13101,80
Company Services	1639,21	3454,80	1391,34	2561,80	3614,32	7221,40	1666,75	2912,60
Government Administration, Land and Social Security	12876,80	12969,20	13051,98	16454,80	33925,86	46520,60	11953,20	14311,80
Education Services	14962,41	30662,60	13750,31	27034,00	50480,17	108564,60	11909,42	19548,20
Health Services and Social Activities	3474,72	4262,20	2950,94	5530,20	5882,06	14543,00	2314,37	4335,00
Other Services	8309,92	15355,80	7022,82	11163,80	18960,66	48292,20	8642,29	11841,80

Source: (BPS, 2020) (data processed)

Based on the table above, if the results of PR < d Q indicate that the economic sector will encourage sector growth in East Java Province.

Table 5. Shift Share (DS) District/City Horseshoe Region, East Java Province 2015 - 2019

SECTOR	Pasuruan	Probolinggo	Lumajang	Jember	Situbondo	Bondowoso	Banyuwangi	City of Probolinggo
Agriculture, Forestry and Fisheries	8824,61	-16699,09	22368,72	123328,58	18158,46	24637,59	41079,10	3648,21
Mining and excavation	-20793,13	-20981,22	-12390,46	-56470,39	-8216,93	-8235,13	-46901,39	0,00
Processing industry	81095,47	80491,41	31099,59	-14212,06	48963,09	28627,68	9490,99	-21714,84
Electricity and Gas Supply	6054,40	7994,53	362,71	1412,50	271,87	251,27	1098,15	309,22
Water Supply, Waste Management, Waste and Recycling	-4,22	-93,73	-196,05	237,53	-252,42	-12,25	-246,78	-109,90
Construction	-177976,38	13508,94	3517,29	51692,64	-14310,68	2191,67	200541,58	3727,54
Wholesale and Retail Trade	32034,45	11495,73	28792,66	91815,64	22621,07	9480,26	205309,37	11984,21
Transportation and Warehousing	7971,14	3414,01	8963,41	13640,70	5722,05	1508,10	9775,52	16858,92
Provision of accommodation and food	9694,55	-668,67	2872,87	10458,13	1079,15	-19,31	33328,94	1104,86
Information and Communication	2242,39	610,94	9066,07	41938,45	831,33	1884,29	31706,84	1849,52
Financial Services and Insurance	-3856,59	306,94	729,78	3424,57	5737,68	847,95	8298,12	2502,62
Real Estate	-1959,22	-1930,41	6409,50	5321,86	3383,72	-278,61	8425,15	1590,55
Company Services	-132,56	-246,95	233,56	1058,22	428,22	-3,01	553,18	187,51
Government Administration, Land and Social Security	62,25	1508,19	811,59	7881,91	-2750,71	551,33	5271,26	863,86
Education Services	-2883,55	-900,64	994,04	2717,11	3685,21	2518,25	18446,69	358,55
Health Services and Social Activities	-221,72	-1354,18	29,09	1753,86	-2722,05	-413,51	2653,45	222,00
Other Services	-4377,46	-900,23	4622,93	-6,97	2417,77	240,33	18658,39	-458,99

Source: (BPS, 2020) (data processed)

Based on the calculation of the Differential Shift, it shows that a result that has a value > 0 means that the sector has a locational advantage or has a faster growth compared to other sectors in the same area.

Shift Share

Based on the results of Proportional Shift (PS) > 0, namely the mining and quarrying sector, processing industry, construction, wholesale and retail trade, transportation and warehousing, provision of accommodation and food, information and communication, corporate services, education services, health services and social activities. This means that the growth of these sectors is faster than the same sector in the province. Meanwhile, the main sectors or sectors that had the highest PS yields during the 2015 – 2019 period in the Horseshoe Region were dominated by the manufacturing sector, namely in Lumajang Regency, Jember Regency, Situbondo Regency, Bondowoso Regency, and Probolinggo City. Then the sector of providing accommodation and food in Pasuruan and Probolinggo Regencies. While the wholesale and retail trade sector in Banyuwangi Regency.

Based on the results of the PR analysis above, it can be explained that the manufacturing sector; water supply, waste treatment, waste and recycling; construction; wholesale and retail trade; transportation and warehousing; provision of accommodation and food; information and communication; financial and insurance services; real estate; company services; government administration, defense and social security; education services; health services and social activities; and other services have a faster growth compared to the same sector at the provincial level. From the 17 economic sectors, there is one sector that does not have a locational advantage in the Regency/City of the Horseshoe Region, namely the mining and quarrying sector. Meanwhile, the manufacturing sector is the main sector with the most locational advantages in most areas of the Horseshoe, namely Pasuruan Regency, Probolinggo Regency, Lumajang Regency, Situbondo Regency and Bondowoso Regency. Meanwhile, Jember Regency has agriculture, forestry and fisheries sectors as the main sectors that have locational advantages. Then the wholesale and retail trade sector becomes the main sector that has a locational advantage in Banyuwangi Regency. And the transportation and warehousing sector is a sector that has a locational advantage in Probolinggo City.

Klassen Typology

Klassen typology is a regional economic analysis tool that is used to determine the classification of economic sectors and aims to identify the position of a region's economic sector. The following are the results of the classification of Klassen Typology in the Regency/City of the Horseshoe Region of East Java Province in 2015 – 2019:

Table 6. Typology of Klassen Districts/Cities in the Horseshoe Region of East Java Province 2015 - 2019

Quadrant I	Quadrant II
Pasuruan Regency	
Quadrant III	**Quadrant IV**
Banyuwangi Regency	Probolinggo Regency
	Lumajang Regency
Probolinggo City	Jember
	Situbondo Regency
	Bondowoso Regency

Source: (BPS, 2020) (data processed)

The results of the classification based on the klassen typology during the 2015 – 2019 period, show that there is one district that is included in quadrant I or a fast-growing and fast-developing area, namely Pasuruan Regency. This is supported by the high economic growth in 2019 of 5.51%, which is higher than the economic growth of East Java Province of 5.23%. While there are no areas that are included in quadrant II or developed but depressed areas, then there are two areas that are included in quadrant III or fast developing areas, namely Banyuwangi Regency and Probolinggo City, because they have higher economic growth than the province, while their per capita income is lower. than the province. Then most of the Horseshoe Regions are included in quadrant IV or relatively underdeveloped areas, namely Probolinggo Regency, Lumajang Regency, Jember Regency, Situbondo Regency, and Bondowoso Regency. This is because economic growth and per capita income are lower than the province. This difference in classification is due to differences in the potential of each region and the concentration of economic activities in developed areas in Pasuruan Regency.

Williamson Index

The income inequality between Regencies/Cities in the Horseshoe Region in East Java Province explains the conditions and developments of the area's development. Income inequality between regions can be calculated using the Williamson Index method, with the criteria that the Williamson Index value is getting smaller or closer to zero (0), then the inequality will be smaller so that income is more evenly distributed. Conversely, if the value of the Williamson index is greater, the income inequality will be higher, or the income will be more unequal. The following is a table of districts/cities in the Horseshoe Region of East Java Province in 2015 – 2019:

Table 7. Williamson Index of Horseshoe Districts/Cities East Java Province 2015 - 2019

Year	Williamson Index
2015	0,53
2016	0,54
2017	0,55
2018	0,53
2019	0,53
Average	0,54

Source: (BPS, 2020) (data processed)

Based on the results of the average Williamson Index for the 2015 - 2019 period, which is 0.54 (0.54 > 0.35), it means that this number indicates that there is an inequality of income distribution in the high category between regencies/cities in the Horseshoe Region in East Java Province.
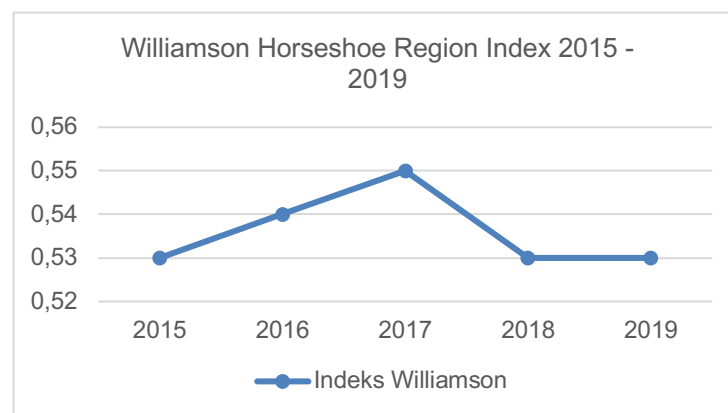

Figure 4. Williamson Index of Horseshoe Region 2015 – 2019
Source: (BPS, 2020) (data processed)

Based on the picture above, it can be seen that the trend of the Williamson Index that occurred in the Horseshoe Region of East Java Province has fluctuated. The peak occurred in 2017 reaching 0.55 and decreasing in 2018 by 0.53 until 2019. The decline over the last 2 years was due to efforts to increase development by the Regency/City government in the Horseshoe Area, especially Banyuwangi Regency which in the last two years became fast-growing areas that were previously underdeveloped areas. The results of the Williamson Index strengthen the results of the Klassen Typology which explains that there is inequality between regions in the Horseshoe Region, due to the high economic growth and GRDP per capita of Pasuruan Regency. This is in accordance with the theory of causes of inequality by (Tambunan, 2011) that there is one cause of inequality, namely the concentration of economic activity in an area and differences in natural resources owned by each region.

Kuznets Hypothesis

The discussion of the relationship between inequality and economic growth began to surface when an economist named Simon Kuznets put forward the inverted U hypothesis. Here is the result of Simon Kuznets' Inverted U-Curve:
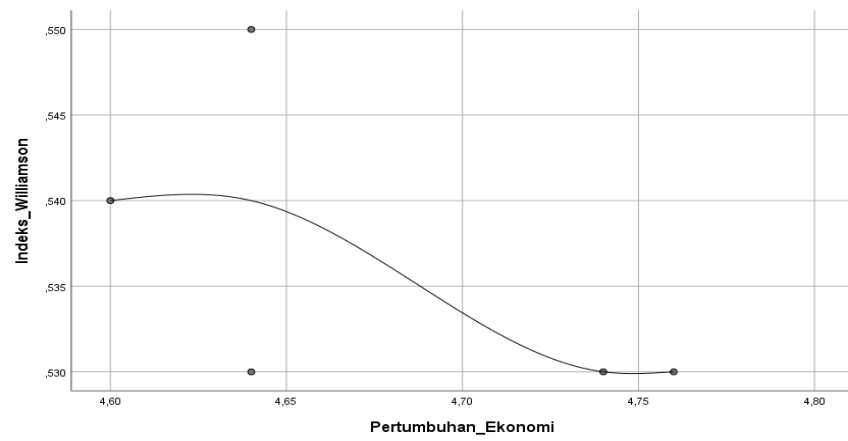

Figure 5. Kuznets Curve

Source: (BPS, 2020) (data processed)

Based on the results of the analysis of the proof of the Kuznets hypothesis, it can be shown that the Kuznets inverted "U" curve hypothesis applies in the Horseshoe Region. This is in accordance with Kuznets' statement that in the early stages of economic development, it will be followed by high income inequality. However, after reaching a certain level of development, the distribution of income will tend to be more even.

5. Conclusion

Based on the results of the discussion, the following conclusions can be drawn. The agriculture, fishery and forestry sectors are sectors that have the potential to be developed, because most of the districts in the Horseshoe Region make agriculture, fisheries, and forestry the basic sectors. Based on the Klassen Typology results, it can be seen that there is one Regency that is included in Quadrant I or a fast-developing and fast-developing area, namely Pasuruan Regency, there is no Regency/City included in Quadrant II or developed but depressed area, then there are two Regencies/Cities that are are included in Quadrant III or fast developing areas, namely Banyuwangi Regency and Probolinggo City, while most of the regencies are included in Quadrant IV or underdeveloped areas, namely Probolinggo Regency, Lumajang Regency, Jember Regency, Situbondo Regency, and Bondowoso Regency. The results of the Williamson Index show that the average district/city income disparity in the Horseshoe Region for the 2015 – 2019 period is relatively high. The Kuznets hypothesis applies to the Horseshoe District/City, meaning that as time goes by economic development, the distribution of income will tend to decrease.

Based on the conclusions described above, the suggestions put forward in this study are as follows. Regional governments in carrying out economic development should pay more attention to equitable distribution of income by prioritizing regional development in Quadrant IV or underdeveloped areas, without neglecting fast-growing and fast-growing areas or Quadrant I. In addition, the government can further develop its regions through sectors that have the potential to improve competitiveness and economic growth. Improving the quality of human resources in the area, such as developing education and health service facilities, especially in relatively underdeveloped areas, so as to increase the Human Development Index (HDI) which has an impact on increasing

regional income. Increase and equalize investment between regions so that investment does not occur only in developed areas, but also in relatively underdeveloped areas.

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