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## The Effect of HDI, Open Unemployment Rate, and Poverty on Income Disparity in Riau Islands Province in 2011-2022

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**Abstract** : Income disparity needs to be addressed so that the level of disparity can be low and controlled so that it can implement development policies properly and improve the welfare of the community. This research aims to analyze the effect of the HDI, Open Unemployment Rate, and Poverty on Income Disparity in Riau Islands Province in 2011-2022. The development of the HDI, Open Unemployment Rate, Poverty and Income Disparity in Riau Islands Province fluctuated considerably during 2011-2022. This research used panel data from 7 regencies/cities and 1 province from 2011-2022. The results of this research explain that the HDI, Open Unemployment Rate, and Poverty simultaneously have a significant effect on Income Disparity in Riau Islands Province. HDI has a negative and partially significant effect on Income Disparity in Riau Islands Province. Open Unemployment Rate and Poverty have no partial effect on Income Disparity in Riau Islands Province.

**Keywords** : Income disparity, Human development index, Open unemployment rate, Poverty

### INTRODUCTION

Economic development is a real process of increasing per capita income accompanied by changes and improvements in the institutional system. Economic development of a region can be considered successful if there is economic growth followed by reduced income disparity (Fattah et al., 2022). Disparity between regions is common in the economic activities of a region. According to Berg & Ostry (2017) in (Sukmaadi & Marhaeni, 2021) income inequality between regions occurs due to massive economic activities in certain regions. Each region has different regional characteristics. Differences in natural resource potential, geographical and demographic conditions in each region result in differences in the ability of an area to encourage the development process so that in that area there will be developed regions and underdeveloped regions.

Potential and natural wealth are comparative advantages for a region, but the ability to develop human resources and capital is still limited to the central area, as a result the condition of the community has not reached the level of equity. There is a very striking difference in the

level of income distribution between areas in the city center and peripheral or rural areas. Areas with low income show low levels of community welfare (Octavia, 2021). Therefore, if income disparity is allowed to continue to rise and is not immediately addressed, it will cause various problems such as high poverty rates and low levels of community welfare (Ningtiyas & Dwiputri, 2021). Income disparity needs to be addressed so that the level of disparity can be low and controlled so that it can implement development policies properly and improve the welfare of the community.

The following is the data presented in Table 1 regarding the Gini Ratio in Provinces in Sumatera Island in 2011-2022:

Table 1. Gini Ratio of Provinces in Sumatra Island in 2018-2022

Provinces	Gini Ratio				
	2018	2019	2020	2021	2022
Aceh	0,318	0,321	0,319	0,323	0,291
North Sumatera	0,311	0,315	0,314	0,313	0,326
West Sumatera	0,305	0,307	0,301	0,3	0,292
Riau	0,347	0,331	0,321	0,327	0,323
Jambi	0,335	0,324	0,316	0,315	0,335
South Sumatera	0,341	0,339	0,338	0,34	0,33
Bengkulu	0,355	0,329	0,323	0,321	0,315
Lampung	0,326	0,331	0,32	0,314	0,313
Bangka Belitung Island	0,272	0,262	0,257	0,247	0,255
Riau Island	0,339	0,337	0,334	0,339	0,325

It can be seen that the Gini Ratio of Riau Islands Province is in a moderate trend of inequality. However, if look at the composition of the Gini Ratio ranking of provinces on the island of Sumatra over the past five years, the top three positions have always been occupied by South Sumatra Province, Riau Province and Riau Islands Province. Riau Islands Province with a total of 7 regencies/cities is inseparable from the problem of income disparity. The inequality between districts/cities in Riau Islands Province is still quite high with each other. To find out can be seen in Table 2.

Table 2. Gini Ratio of Riau Island Province in 2018-2022

Regencies/Cities	Gini Ratio				
	2018	2019	2020	2021	2022
Karimun Regency	0,35	0,303	0,315	0,307	0,288
Bintan Regency	0,325	0,3	0,305	0,272	0,288
Natuna Regency	0,326	0,299	0,337	0,3	0,291
Lingga Regency	0,289	0,282	0,281	0,289	0,277
Anambas Island Regency	0,286	0,281	0,296	0,304	0,313
Batam City	0,314	0,331	0,323	0,334	0,336
Tanjungpinang City	0,32	0,314	0,345	0,347	0,347

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Riau Island Province	0,339	0,337	0,334	0,339	0,325
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The large level of income disparity between districts/cities that occur in Riau Islands Province. It is known that in the last five years the level of development of the Gini Ratio in districts/cities in Riau Islands Province has a stagnant trend which is in the classification of moderate inequality. However, the Gini Ratio figure that occurs in Riau Islands Province has implications for development inequality between regions on community welfare in districts/cities in Riau Islands Province. The composition of the ranking between districts/cities in the Gini Ratio in Riau Islands Province tends to have higher disparities than the surrounding districts. For the past five years, the top position has been occupied by Tanjung Pinang City and Batam City with a Gini Ratio of 0.347 and 0.336 and the lowest position is occupied by Lingga Regency with a Gini Ratio of 0.277.

The difference in HDI in each region is a problem and affects regional disparities. In 2022, the HDI figure of Riau Islands reached 76.46. The HDI value of Riau Islands Province is above the HDI value of Indonesia which has a value of 72.91. In addition, the HDI value between regions in Riau Islands Province has increased every year but there is still a considerable distance between the Batam City area and the Lingga Regency area. The highest HDI in Riau Islands Province in 2022 is Batam City with a value of 81.67 which has a status of "very high" and the lowest HDI is Lingga Regency with a value of 66.57 which has a status of "medium" which when related to income disparity, it can generally be seen that through the HDI value in Riau Islands Province, human development in each region in Riau Islands Province still experiences significant differences. Compared to other regions in Riau Islands, Lingga Regency has the lowest HDI achievement rating. Thus, the increase in HDI value in Riau Islands Province is considered unable to overcome the problem of income disparity between regions in the Riau Islands Province.

A high HDI value if not followed by equal distribution of income will reduce the welfare of the entire community which causes regional inequality. Walujadi et al. (2022), who stated that HDI negatively affects income inequality. The higher the HDI in a region, it will provoke an increase in productivity which will later increase income and reduce income inequality by underdeveloped areas, or in the sense that HDI and income inequality have a negative relationship. This is supported by the theory of Todaro & Smith (2011), which states that there are factors such as health and education that can overcome existing disparities. When the quality of human resources is improved for the better, it will increase productivity and regional per

capita income and reduce existing inequality. In other words, it can be interpreted that if HDI increases, then income inequality that occurs will decrease.

Another factor affecting income disparity is Unemployment. The Open Unemployment Rate also has a considerable influence on the distribution of income disparity in a region Masruri (2016). The low labor participation seen from Open Unemployment Rate has an impact not only on the welfare of the community, but also has an impact on regional development and income equality. The higher the Open Unemployment Rate, the higher the level of inequality that occurs. Absence of income will cause a person to be unable to meet the cost of living which will cause disparity. In this case, labor productivity is one of the important factors to reduce inequality, where regions that have high labor productivity will encourage investors to invest, thus creating jobs and reducing labor Open Unemployment Rate. Riau Islands Province has the highest Open Unemployment Rate in Sumatera. The lower the Open Unemployment Rate in an area, the better the economy of the area. In the last five years, the average Open Unemployment Rate in Riau Islands Province reached 8.59 percent. Sequentially, Open Unemployment Rate in Riau Islands Province in the last five years from 2022 to 2018 was 8.23 percent, 9.9 percent, 10.34 percent, 7.5 percent, and 8.04 percent. According to research from Mauliddah & Rosmaniar (2020), Open Unemployment Rate has a positive effect on income disparity, where if Open Unemployment Rate increases, income inequality will also increase.

According to the theory proposed by Kuncoro (1997), that inequality will be greater when there is a movement of people to a larger economic area and then leave their original area. This has a serious impact on the cities that are the destination of population movement, where large areas or cities will be burdened by the arrival of job seekers but the existing job opportunities are still few or only enough for the residents of the city. Then the abandoned area will further decline its economy due to the lack of workers who are interested in working in the area. The amount of Open Unemployment Rate in a region determines the income distributed in the community. The number of unemployed in a region is also influenced by the number of jobs available. The limited number of jobs available will cause the workforce to find it difficult to find work and potentially unemployed. In the end, Open Unemployment Rate in the area will increase. With the high Open Unemployment Rate in the region, it will cause more uneven or higher income inequality circulating in the community. Income disparity is closely related to unemployment, because an individual's inability to earn income or be unemployed will result in the individual reducing his consumption expenditure.

Besides Open Unemployment Rate, income disparity can also be caused by poverty. As revealed by Arsyad (2017) in Hindun et al. (2019) revealed that the problem of income equality is also related to poverty alleviation efforts. Poverty has a positive effect on income disparity. Kuznets (1995), explained that economic growth is a condition where the state can develop its production based on technological developments followed by ideological adjustments. Apart from increasing economic output or production, increasing regional income and per capita income can also increase economic growth, because if regional income and per capita income increase then the level of consumption also increases so that the rate of economic growth increases which will reduce the number of poverties. If regional income and per capita income increase, the level of consumption also increases so that the rate of economic growth increases, which will reduce the number of poverties. The effect of poverty level on income disparity has a positive influence, where when the poverty rate increases it will increase income disparity that will occur. Therefore, efforts need to be made to reduce poverty so that income inequality is lower.

The poverty rate in Riau Islands Province has increased in the last five years. The increase in poverty in Riau Islands Province is due to the high unemployment rate in several cities as Batam, Karimun and Bintan. The poverty rate of Riau Islands Province in 2022 from the percentage of poor people is 6.24 percent. The highest poverty rate in Riau Islands Province is owned by Lingga Regency at 14.05 percent. Meanwhile, the lowest poverty rate is in the Batam area in terms of poverty percentage, which is 5.19 percent. In the last five years, the poverty percentage in Riau Islands has been 6.2 percent, 5.9 percent, 5.92 percent, 6.12 percent, and 6.24 percent. Therefore, efforts need to be made to reduce poverty so that income inequality is lower. Not achieving a significant reduction in poverty will result in inequality in the distribution of income in a developing region increasing. Therefore, reducing poverty is very necessary, so that income inequality in society is getting lower.

The occurrence of inequality is the fact that an economy is growing does not mean that the entire population benefits equally from that growth. There are always individuals who have incomes that are well above average and some have incomes far below average. The fluctuating Gini ratio in Riau Islands Province indicates that there are differences in the quality of human resources in each district/city. In this case, it can be seen that, high and positive HDI will not necessarily reduce the level of income disparity between regions. The level of Open Unemployment Rate and poverty also have a considerable influence on the distribution of income disparity in a region. So, it is very necessary for the government to be able to maximize

the development process and reduce the income disparity gap between regions in Riau Islands Province by maximizing economic sectors that have competitive advantages in each region to be developed in order to carry out an optimal economic development process. Moreover, Riau Islands Province is one of the provinces that has considerable economic development potential. Based on the description of the problem and the theoretical study above, the main objective of this research is to analyze the partial and simultaneous effect of the variables of Human Development Index, Open Unemployment Rate and Poverty on Income Disparity in Riau Island Province in 2011-2022.

## RESEARCH METHOD

The object of research in this study is income disparity in districts/cities in Riau Islands Province in 2011-2022 which is influenced by HDI, Open Unemployment Rate and Poverty. This research is a type of associative research using a quantitative approach. This research used secondary data sources obtained from the Central Bureau of Statistics of Riau Islands Province. This research was conducted in Riau Islands Province using time series data for 12 years and cross section as many as 7 districts/cities and 1 province in Riau Islands Province resulting in 96 observations. The analytical technique used in this study using Panel Data.

## RESULT AND DISCUSSION

To determine the best estimation model for Panel Data from the results of Pooled Ordinary Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM), should estimates the Chow Test, Hausman Test, and Lagrange Multiplier Test. Based on the results of the panel data regression model selection test for the three models, the panel data regression model used is the Fixed Effect Model (FEM). The following table is the estimation model data using fixed effect model:

Table 3. Multiple Regression Results of Panel Data with Fixed Effect Model

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	0.875726	0.102702	8.526835	0.0000
HDI (X1)	-0.007221	0.001469	-4.916505	0.0000
Open Unemployment Rate (X2)	-0.001635	0.001504	-1.087039	0.2801
Poverty (X3)	-0.002569	0.004390	-0.585297	0.5599
R-squared	0.472168	Mean dependent var		0.327938
Adjusted R-squared	0.410070	S.D. dependent var		0.031044
S.E. of regression	0.023844	Akaike info criterion		-4.527090
Sum squared resid	0.048326	Schwarz criterion		-4.233258
Log likelihood	228.3003	Hannan-Quinn criter.		-4.408318
F-statistic	7.603604	Durbin-Watson stat		1.797283

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Prob F-statistic	0.000000
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The Effect of HDI, Open Unemployment Rate, and Poverty Simultaneously on Income Disparity. Based on Table 3,  $F_{\text{count}}$  value is 7.603604. The value of  $F_{\text{table}}$  at the significance level of 5 percent is determined through  $F_{\text{table}}$  is 2.70. This result shows that  $F_{\text{count}} = 7.603604 > F_{\text{table}} = 2.70$ , so  $H_0$  is rejected or  $p \text{ value} = 0.00 < \alpha = 0.05$ . So, it can be concluded that simultaneously HDI, Open Unemployment Rate, and Poverty have a significant effect on Income Disparity in Riau Islands Province. In addition, Table 3, shows that the value of the coefficient of determination is 0.472168 or 47.21 percent which means 47.21 percent of Income Disparity in Riau Islands Province in 2011-2022 can be explained by HDI, Open Unemployment Rate, and Poverty variables while 52.79 percent is explained by other variables that were not studied in this research.

The Effect of HDI on Income Disparity. The HDI variable has a  $t_{\text{count}}$  is -4.916505 and  $t_{\text{table}}$  is 1.66159. Thus, the  $t_{\text{count}} = -4.916505 < -t_{\text{table}} = -1.66159$  or  $p \text{ value} = 0.00 < \alpha = 0.05$  then  $H_0$  is rejected, meaning that partially HDI has a negative and significant effect on Income Disparity in Riau Islands Province. That is, every one percent increase in HDI then Income Disparity will decrease by 0.0072 points and conversely every decrease of one percent HDI then Income Disparity will increase by 0.0072 points. This research is in accordance with the research hypothesis, namely HDI has a negative effect on Income Disparity in Riau Islands Province. This research is in line with the research of Febrianto (2017), Putra (2018), Ningtiyas & Dwiputri (2021), Suryani & Woyanti (2021), Yuliani et al. (2021) and Ghifara et al. (2022) which states that the Development Index has a negative and significant effect on Income Disparity. However, the results of this research are not in accordance with the results of research from Mauliddah & Rosmaniar (2020) and Yoertiara & Feriyanto (2022), which states that HDI has a positive and significant effect on Income Disparity. In addition, the results of this research are not in accordance with the results of research from Ersad et al. (2022) which states that HDI has no effect on Income Disparity, which means that increasing or decreasing HDI does not affect Income Disparity. The results of this research can be concluded that the Development Index has a negative and significant effect on Income Disparity in Riau Islands Province, which means that increasing HDI will reduce Income Disparity and vice versa.

The Effect of Poverty on Income Disparity. The Open Unemployment Rate variable has a  $t_{\text{count}}$  is -1.087039 and  $t_{\text{table}}$  is 1.66159. Thus, the  $t_{\text{count}} = -1.087039 > -t_{\text{table}} = -1.66159$  or  $p \text{ value} = 0.2801 > \alpha = 0.05$  then  $H_0$  is accepted, meaning that Open Unemployment Rate does not have a significant effect on Income Disparity in Riau Islands Province. The test results

showed that Open Unemployment Rate did not have a significant effect on Income Disparity in Riau Islands Province. The test results are not in accordance with the research hypothesis which states that Open Unemployment Rate has a positive effect on income disparity in Riau Islands Province. The results of this research are not in accordance with the results of research from Masruri (2016), Mauliddah & Rosmaniar (2020), Ningtiyas & Dwiputri (2021), which states that Open Unemployment Rate has a positive and significant effect which means that increasing Open Unemployment Rate will increase Income Disparity and vice versa. In addition, this research is not in accordance with the results of research from Asmaiyah & Nugroho (2022), which states that Open Unemployment Rate has a negative and significant effect on Income Disparity, which means that increasing Open Unemployment Rate will reduce Income Disparity and vice versa. The results of this research are in line with research by Hariani (2019) and Rizkia & Andriyani (2022) which states that Open Unemployment Rate has no effect on Income Disparity. The results of this research can be concluded that Open Unemployment Rate does not affect Income Disparity in Riau Islands Province. Income Disparity in Riau Islands Province is influenced by other factors not examined in this research.

The Effect of Open Unemployment Rate on Income Disparity. The Poverty variable has a  $t_{\text{count}}$  is -0.585297 and  $t_{\text{table}}$  is 1.66159. Thus, the  $t_{\text{count}} = -0.585297 > -t_{\text{table}} = -1.66159$  or  $p \text{ value} = 0.5599 > \alpha = 0.05$  then  $H_0$  is accepted, meaning that poverty does not have a significant effect on income disparity in Riau Islands Province. The test results show that poverty does not have a significant effect on income disparity in Riau Islands Province. The test results in this research are not in accordance with the initial hypothesis which states that poverty has a positive effect on income disparity in Riau Islands Province. The results of this research are not in accordance with the results of research from Hindun et al. (2019) which states that Poverty has a positive and significant effect on Income Disparity which means that increasing Poverty will increase Income Disparity and vice versa. In addition, the results of this research are not in accordance with the results of research from Syahri & Gustiara (2020) which states that poverty has a negative and significant effect on income disparity, which means that increasing poverty will reduce income disparity or vice versa. The results of this research are in line with the research of Andiny & Mandasari (2021), Arkum & Amar (2022), Fadliansah et al. (2021) and Ersad et al. (2022), which explain that poverty does not have a significant effect on income inequality. This means that increasing or decreasing poverty does not affect income disparity. The results of this research can be concluded that poverty does not affect income disparity in



Riau Islands Province. Income Disparity in Riau Islands Province is influenced by other factors not examined in this research.

## **CONCLUSION**

HDI has a negative and significant effect on Income Disparity in Riau Islands Province. In calculating HDI, there are three main indicators, namely health, education and expenditure. If these three indicators increase in Riau Islands Province, human resources will also be more advanced. Improving human quality through education and health can be seen as a kind of investment. HDI, not only as a development output but also as an input. Income disparity decreases when HDI increases can lead to an increase in community productivity which can be useful in increasing income so that people's living needs can be fulfilled. As health improves, people become more productive and vice versa. If the education taken by the community to a higher level can expand the opportunity to get a job with a better income than low-level education. Higher HDI can help reduce income disparities by providing better access to basic services such as health and education, so that people can develop the skills needed to find decent work. In addition, by increasing access to education and skills, communities can increase social mobility and improve economic standing within society.

Open Unemployment Rate does not have a significant effect on Income Disparity in Riau Islands Province. This explains that an increase or decrease in the amount of Open Unemployment Rate does not affect the increase or decrease in Income Disparity. The non-impact of Open Unemployment Rate on Income Disparity in Riau Islands Province can be caused by the needs of unemployment, most of which still depend on working families, and use their assets/savings to get jobs and wages. In addition, optimization of assistance and policies carried out by the government such as guarantees and social assistance from the government are in the form of the Family Hope Program, Non-Cash Food Assistance, Prosperous Rice, Village Funds, Healthy Indonesia Cards and Smart Indonesia Cards. The existence of this assistance can ease the burden on the community because the needs of life can be met.

Poverty does not have a significant effect on income disparity in Riau Islands Province. It is explained that an increase or decrease in poverty does not affect the increase or decrease in Income Disparity. Poverty in Riau Islands Province occurs due to imbalances in resource ownership patterns, or can occur due to uneven development in an area, resulting in high poverty in certain areas in Riau Islands Province. This can also happen because areas in Riau Islands Province have low poverty rates but still have high levels of income inequality due to

the gap between rich and poor. In addition, there is a stark inequality of poverty between regions in Riau Islands Province. In the long run there is a positive relationship between poverty and income disparity which suggests that a certain proportion of poverty is indeed associated with poverty.

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