Factors That Influence the Level of Development Inequality in Districts / Cities Sumatera Utara Province

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Abstract: Inequality Development in North Sumatra Province during the period of 2012 to 2016 shows an increasing condition. The purpose of this study is to analyze the factors that influence development inequality in the Regency / City in North Sumatra Province using panel data. With the independent variable GRDP Per Capita, HDI, Government Expenditures Budget while the dependent variable is the Wiliamson index in districts / cities in North Sumatra province. Data obtained by the Central Sumatra Provincial Statistics Agency (BPS) during 2012-2016. The method used is Square Least Panel (PLS) with Fixed Effect Model (FEM). The results showed that GRDP Per Capita had a negative effect on the Wiliamson Index of 35.52% and significant, HDI had a negative effect on the Williamson Index of 18.26% and significant, the Government Expenditures Budget had a negative effect on the Wiliamson Index of 32.9% in North Sumatra.

1 INTRODUCTION

Development inequality in principle is an economic imbalance that implies poverty and inequality. In order for inequality and development between an area and other regions not to create a widening gap, the implications of policy towards the development cycle of development must be precisely formulated (Suryana, 2000).

The most common inequality discussed is economic inequality. Economic inequality is often used as an indicator of differences in average per capita income, between income level groups, between employment groups, and / or between regions. The average per capita income of a region can be simplified into Gross Regional Domestic Product divided by the population. Another way that can be used is to base on personal income which is approached by the consumption approach (Widiarto, 2001). To measure the inequality of regional economic development, the Williamson Index is used.

Regional disparity arises due to the lack of equity in economic development. This can be seen from the existence of advanced regions with underdeveloped regions, or less developed regions. This inequality in development is due to differences in development between regions.

During 2012-2016 there were still inequality in the provinces in Indonesia, using the relative per capita GRDP approach. Williamson Index results for development inequality nationally show that development inequality is still very high or inter-provincial development is uneven with the Williamson Index from 2012-2016 on average> 1. And one of the provinces in Indonesia that has increased development inequality from 2012 -2016 is North Sumatra Province. One of the prominent problems of inequality in North Sumatra Province is the disparity between regions as a consequence of the concentrated economic activities in the area adjacent to the Provincial Capital. (Alisjahbana, 2005).

Inequality causes economic inefficiencies, because inequality is high, overall savings rates in the economy tend to be low, because high savings rates are usually found in the middle class. Although rich people can save in larger amounts, they usually save in a smaller share of their income, and of course save with a smaller share of their marginal

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income (Todaro, 2006). This negative impact causes high inequality to be one of the problems in development in creating prosperity in a region.

Economic growth is one indicator of public welfare. Where when an area has high growth, the area can be said to be a prosperous region. One indicator of the level of welfare of the population of a region is the per capita GRDP figure. GRDP is the net value of final goods and services produced by various economic activities in an area in a period (Hadi Sasana, 2001), While GDP per capita is often used as an indicator of development. The higher the per capita GRDP of an area, the greater the potential source of income for the region due to the greater income of the people of the area (Thamrin, 2001). This also means that the higher the per capita GRDP the more prosperous the population of a region. In other words, if income is high and evenly distributed between regions, income inequality decreases.

Income inequality between regencies / cities in North Sumatra. During 2013 to 2016, the highest and ever increasing per capita income was in the city of Medan. Then it was followed by Toba Samosir Regency which although in 2013 the income per capita was still below Asahan Regency, but in 2013 to 2016 the income per capita of Toba Samosir Regency was more than that of Asahan Regency. The next highest per capita income is Karo Regency, although in 2013 it was still lower than Asahan Regency.

The lowest per capita income in 2013 until 2016 was Pakpak Barat Regency, then, the second lowest per capita income was Nias Regency, although in 2013 and 2014 Nias Regency per capita income was still higher compared to Pakpak Bharat District, but on average from 2013 to 2016 Nias Regency was still lower compared to Pakpak Bharat Regency. The next lowest per capita income is Pakpak Barat Regency.

For North Sumatra Province during 2013 until 2016 per capita income continued to increase. In 2013, North Sumatra's per capita income was only Rp. 25,391,986.04, - but in 2016 the income per capita of North Sumatra Province reached Rp. 36,371,825.67, -. Still not evenly distributed and the development gap in North Sumatra Province can be minimized by utilizing the maximum potential of each region to advance the regional economy concerned in order to reduce inequality that occurs.

Economic development in an area can be said to be successful if a region / region can increase economic growth and improve people's living standards equally or better known as the Human Development Index (HDI). The problem that occurs is the HDI in each region is different, this makes the HDI value to be one of the factors that influence income inequality between regions / regions.

Lisnawati (2007) states that "In the context of regional development, the Human Development Index (HDI) is set as one of the main measures included in the Basic Pattern of Regional Development." This indicates that HDI occupies an important position in regional development management. The function of HDI and other human development indicators will be key to the implementation of targeted planning and development.

In 2016, North Sumatra Province had an HDI value of 70. This value was still lower than the national HDI value of 70.18. Although the province of North Sumatra is ranked 8th out of 37 provinces in Indonesia, but with the increasing value of inequality every year, it has indicated that HDI in North Sumatra Province needs special attention from the provincial government so that its function is a measure of the success of development in North Sumatra province can be achieved.

Based on BPS data from North Sumatra Province in 2016 the highest HDI value in North Sumatra was Medan City at 79.4. Then the cities of Pematang Siantar and the city of Binjai were 76.9 and 74.11 respectively. The lowest HDI value is West Nias City at 59.03. Then followed by South Nias City and Nias City at 59.14 and 59.75 respectively.

The rate of HDI in North Sumatra Province from 2014 to 2016 has increased. Although all regions in North Sumatra province experienced an increase in HDI values, there were several regions in the North Sumatra province which still had low HDI values and were far below the other regions. Therefore, this is where the role of the North Sumatra provincial government is needed in resolving regional development inequality so that regional equity in the North Sumatra province can increase. This is because the low or high HDI will have an impact on the level of productivity of the population, the lower the HDI, the level of productivity of the population will be low then low productivity can affect the low income, and vice versa if the higher the HDI the higher the productivity of the population push the level of income to be higher (Hidayat 2014).

Government expenditure is one of the tools of government intervention in the economy which is considered the most effective. The expenditure is the consumption of goods and services carried out by the government as well as financing by the government for the purposes of government

administration and development activities in the area (Sukirno, 2002).

Heshmati (2014) states that many countries in Asia will always pursue high economic growth because for them if economic growth is prioritized, then equity will be successful.

Regional financial capacity is shown in the form of the Regional Budget (APBD). According to Law No. 32 and 33 of 2004 the Regional Budget is an annual financial plan. Regional governments are discussed and agreed upon jointly by the Regional Government and the Regional People's Representative Council (DPRD), and are stipulated by regional regulations. APBD contains details of all regional revenues on one side and all regional expenditures on the other side. Before 2003 the APBD from the expenditure side consisted of routine expenditure and development expenditure, (Suyana Utama 2009).

The biggest expenditure from the local government is prioritized for basic, secondary and vocational education. Local governments administer primary and secondary education reflecting the benefits of regional budgets. With an educated workforce it will increase the productivity of an economy.

The allocation of government expenditure for North Sumatra and Regency / City Provinces in North Sumatra province is very fluctuating for each year and tends to increase. But the increase was also accompanied by the level of inequality in North Sumatra province which also tended to increase resulting in less optimal government spending to alleviate inequality in the province of North Sumatra.

The expenditure budget of the Regency / City Government in North Sumatra Province differs significantly between existing Districts / Cities. The highest Regency / City Government expenditure budget is Rp. 5,380,363,861 in Medan City followed by successively Deli Serdang Regency of Rp. 3,529,117,634, and Langkat District Rp. 1,826,780,689. If we analyze the district with the lowest expenditure budget, which is a newly established regency or a district that has been created, this should be a serious concern for both the Central Government and the Provincial Government in the division of regions that are deemed irrelevant to be re-divided.

If these conditions are allowed, in the future the level of inequality will be wider because per capita, HDI, and government expenditure are interrelated. Because of this, action needs to be taken so that income inequality in North Sumatra Province can be minimized.

2 THEORETICAL FRAMEWORK

The Williamson Index is an analytical tool used to measure inequality between regions. This index is used to measure the coefficient of a region's weighted variation and income disparity in the development process. The Williamson index also measures the spread of per capita income levels between regions relative to the center where each region's deviation is weighted by its contribution to the population of the region as a whole.

Williamson index formula:

$$V_w = \frac{\sqrt{\sum_{i=1}^{n}(y_i - y)^2 \left(\frac{f_i}{n}\right)}}{y} \qquad 0 < V_w < 1$$

V_w = Indeks Williamson
y_i = PDRB per kapita daerah i
y = PDRB per kapita rata-rata seluruh daerah
f_i = Jumlah penduduk daerah i
n = Jumlah penduduk seluruh daerah

The advantages of Williamson's Index are easy and practical in seeing disparities. While the disadvantage is the Williamson Index is aggregate so that it is not known which areas contribute to disparity (Achjar, 2004). Williamson index (IW), with the magnitude of the value between 0 and 1. The greater the IW, the greater the gap, on the contrary if IW gets smaller (close to 0), the more evenly distributed IW value <0.3 means that the income disparity is relatively low, IW between 0.3 - 0.5 is in the moderate category, then it is said to be high if IW> 0.5 (Kuncoro, 2004).

The relationship between per capita income of a country and the inequality of income distribution among its inhabitants is explained by a hypothesis proposed by Simon Kuznets (Arsyad, 1999). Using data between countries and data from a number of surveys or observations in each country with time series data, Kuznets found a relation between income inequality and the inverted U-level income per capita. Kuznets stated that in the early stages of economic growth, income distribution tended to deteriorate (rising inequality), but at a later stage income distribution would improve (downward inequality) (Kuznet, 1971).

The inverse U hypothesis proposed by Kuznets is based on Lewis's theoretical argument about

population movements from rural (agricultural sector) to urban (industrial sector). Rural areas that are very densely populated cause the wage rate in the agricultural sector to be very low (whereas in urban areas the wage rate is relatively high because the population or labor is relatively small) and makes the supply of labor from that sector to the industrial sector unlimited (Sri Isnowati, 2007).

The Human Development Index (HDI) / Human Development Index (HDI) is a comparative measurement of life expectancy, illiteracy, education and living standards for all countries worldwide (BPS, BAPPENAS, UNDP, 2001). The HDI also reveals that a country can do much better at a low income level, and that a large increase in income can play a relatively smaller role in human development (Todaro and Smith, 2004). Inequality that occurs in a region will affect the level of community welfare in the region.

The human development index and income inequality have interrelated relationships. According to Becker (in Agus Iman Solihin, 1995), states that HDI has a negative effect on inequality, Becker examines more deeply the role of formal education in supporting economic growth stating that the higher the formal education obtained, the higher the productivity of labor. This is in accordance with human capital theory, namely that education has an influence on economic growth and will reduce income disparities because education plays a role in increasing labor productivity.

According to Guritno (1999), government expenditure reflects government policy. If the government has established a policy to buy goods and services, government expenditure reflects the costs that must be spent by the government to implement the policy. The theory about the development of government expenditure was also stated by economists, namely the development model of the development of government spending, and regarding the development of government activities.

Musgrave and Rostow stated that the development of state expenditure is in line with the stage of economic development of a country. According to Musgrave (1980) that in a development process, private investment in the percentage of GDP is greater and the percentage of government investment in GDP will be smaller. In the early stages of economic development, large government expenditure is needed for government investment, mainly to provide infrastructure such as road facilities, health, education and other public facilities. At the middle stage of economic development, investment is still needed for economic growth, but it is expected that private sector investment has begun to develop. In the later stages of economic development, government spending is still needed, mainly to improve people's welfare.

According to Sukirno (2004), economic growth is the development of activities in the economy which causes the goods and services produced in society to increase and the prosperity of the community increases. This is in accordance with the theory of development of Harrod-Domar which explains that the formation of capital / investment is an important factor that determines economic growth. In his theory, Harror-Domar argues that investment has an effect on economic growth in a longer-term perspective.

3 RESEARCH METHOD

This study uses secondary data with time series data types during the period 2013-2016. With the data used sourced from the Central Statistics Agency. The data needed includes GDP per capita in rupiah units, HDI value with an index value of 0 to 100, government spending in rupiah units, and Wiliamson index with an index value of 0 to 1 in North Sumatra Province.

The data analysis method used in this study is quantitative with a panel data analysis model or data collection. Panel data is a combination of time series data and time data (cross section). To overcome the intercorrelations between independent variables which can eventually lead to inappropriate regression estimates, the panel data method is more appropriate to use. The data used in this study are time series data from 2013 to 2016 and cross sections consisting of 25 districts and 8 cities in North Sumatra Province. The function model of the equations in this study area:

$$IW = \beta_0 + \beta 1GRDPPC + \beta 2HDI + \beta 3GEB + \varepsilon it$$

4 ANALYSIS

4.1. Selection of Models in Data Processing

In panel data processing, it is necessary to select the most appropriate model between Common Effect estimation models, Fixed Effect estimation models

and Random Effect estimation models. To choose between the three estimation models there are several tests that can be done, including :

4.1.1 Chow Test (F-statistical test)

This test is used to determine the most appropriate model to be used between the Common Effect estimation model or the Fixed Effect estimation model, with the hypothesis:

- H0 : choose to use the Common Effect estimation model.
- H1 : choose to use the fixed effect estimation model.

This hypothesis test can be done by comparing F-statistics with F-tables. If F-statistics > F-table then H0 is rejected which means the most appropriate model to use is the Fixed Effect Model and can also be done by considering the probability value (Prob.) For F-statistics. If the value of the Prob. F-statistic < 0.05 (determined at the beginning as the level of significance or alpha) then the chosen model is Fixed Effect Model, but if > 0.05 then the chosen model is the Common Effect Model (Ekananda, 2016).

Table 1: Chow Test Results

Redundant Fixed Effects Tests			
Equation: FEM			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	7.458908	(32,129)	0.0000
Cross-section Chi-square	172.823370	32	0.0000

From Table 1, the F-statistic value is 7.458908 with the F-table value at df (32.129) α = 5% is 1.0000000 so that the F-statistic value> F-table with a probability of 0.0000 (<0.05), so H1 statistics are accepted and reject H0, according to the results of this estimation the right model used is the estimation model Fixed Effect Model.

4.1.2 Hausman Test

This Hausman test is used to select the model that will be used between the Fixed Effect estimation model or the Random Effect estimation model, with the following hypothesis test:

- H0 : choose to use the Random Effect estimation model.
- H1 : choose to use the Fixed Effect estimation model.

The Hausman test can be done by comparing Chi-Square statistics with Chi-Square tables. If Chi-Square statistics > Chi-Square table then H0 is rejected which means the most appropriate model to use is the Fixed Effect Model and can also be done by considering the probability value (Prob.) For Chi-Square statistics. If the value of the Prob. Chi-Square statistic < 0.05 (determined at the beginning as a significance level or alpha), the chosen model is Fixed Effect Model, but if > 0.05 then the selected model is Random Effect Model (Ekananda, 2016).

Table 2 :Hausman Test Results

Correlated Random Effects - Hausman Test			
Equation: REM			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.694560	3	0.0528

From Table 2, the statistical Chi-Square value is 7.694560 with the Chi-Square table on df (3) α = 5% is 7.815 so the Chi-Square value is statistics> Chi-Square table with a probability of 0.05 (<0, 05) H1 is accepted and H0 is rejected so the panel data model used is the Fixed Effect Model.

4.2 Hypotesis Result

4.2.1 T-Test (Partial Test)

The t-statistic test aims to determine the effect of the independent variable GDP per capita, HDI, Government Expenditures in the Regency / City of North Sumatra Province.

Table 3: The Results of The T-Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.642758	2.979274	-2.565309	0.0115
PDRB	-0.150958	0.042496	-3.552254	0.0005
IPM	-1.608587	0.880617	-1.826660	0.0401
PP	-0.106689	0.032423	-3.290567	0.0013

Table 3 is the result of testing the independent variables namely Per capita GRDP, HDI, and Government Expenditures partially on Development Inequality in North Sumatra Province in 2013 - 2016. This study uses α = 5% or α = 0.05.

If written in an equation, the result is :

$$IW_{it} = -7.642758 - 0.150958GRDPPC_{it} - 1.608587HDI_{it} - 0.106689GEP_{it} + \varepsilon_{it}$$

From this equation it can be concluded as follows:

1. The constant is - 7.642758 which means that if the variable per capita GRDP, HDI, and Government Spending is zero, it means that the effect of the three variables on the value of development inequality in North Sumatra Province is - 7.642758 percent.
2. Perkapita GRDP variable has a t-statistic of - 0,150958 and the probability shows a value of 0,0005 which is smaller than the confidence level α = 5% (0,0005 <0,05) so that this can prove that the Perkapita variable has a significant negative effect towards development inequality in North Sumatra Province which means H1 is accepted and H0 is rejected. The percentage percentage of the Percapita variable coefficient is -0.150958, which means that each increase in Percentage Percentage of 1 percent will reduce development inequality by 0.15 percent assuming the HDI variable, Government Expenditures are considered zero, meaning there is no increase or decrease. This is in line with the results of the study of Nita Tri Hartini (2015) who concluded that an increase in GDP per capita would also reduce the Development Gap.
3. The HDI variable has a t-statistic of -1.61 and probability shows a value of 0.041 which is smaller than the confidence level α = 5% (0.0401 <0.05), so this can prove that the HDI variable has a significant negative effect on development inequality in North Sumatra Province which means H1 is accepted and H0 is rejected. The HDI variable coefficient is -1.61, which means that every increase in the HDI value is 1 percent, it will increase the development imbalance by 1.61 percent assuming the GDP per capita variable, and Government Expenditures expenditure is considered to be zero, meaning there is no increase or decrease . These results are in accordance with the study of Nita Tri Hartini (2017) who concluded that the human development index has a negative and significant effect on income inequality in the province of DIY.
4. The Government expenditure expenditure variable has a t-statistic of - 0.106689 and probability shows a value of 0.0013 which is smaller than the confidence level α = 5% (0.0013 <0.05) so this can prove that the Government expenditure expenditure variable has a negative and significant effect on development inequality in the district / city of North Sumatra Province which means H1 is accepted and H0 is rejected. The variable expenditure expenditure government coefficient is - 0.106689, which means that every increase in Government expenditure is 1 percent, it will reduce development inequality by 0.106689 percent with the per capita GRDP variable assumption, HDI is considered to be zero, meaning there is no increase or decrease.

4.2.2 F-Test

To test whether the independent variables have a simultaneous effect on the dependent variable, the F-test is used by looking at probability and F-statistics.

The hypothesis is as follows :

H0 : Per Capita GRDP, HDI, and Government Expenditure together have a significant influence on Development Inequality in North Sumatra Province for the period 2013-2016.

H1 : Per capita GRDP, HDI, and Government Expenditures have no effect on Development Inequality in North Sumatra Province for the period 2013-2016.

From the regression results, the F-statistic value is 12.45468 with a probability of 0.0000 which means it is smaller than α = 5%. The probability value of F-Statistics in Table 4.11 is smaller than α = 5%, then H1 is accepted and H0 is rejected so it can be concluded that together the variable per capita, HDI, and Government Expenditures have a significant effect of 12.45468 on Inequality Development in North Sumatra Province for the period 2013-2016.

4.2.3 Determination Coefficient Test Results (R^2)

According to Gujarati and Porter (2012), the coefficient of determination (R2) is used to measure the goodness of fit of a regression line. This value shows how much influence the independent variables together can provide an explanation of the dependent variable, where the coefficient of determination (R2) is between 0 to 1 (0 ≤R2 ≤1). The smaller R2 approaches 0, meaning that the smaller the influence of the independent variable on the dependent variable. Conversely, if R2 approaches 1, it indicates the stronger influence of independent variables on the dependent variable.

Based on the results of panel data regression analysis, the determination coefficient was 0.77. This means 77 percent of inequality. Development in 33 (thirtythree) regencies / cities in the Province of North Sumatra in the period 2013-2016 can be explained by the variable per capita, HDI, and Government Expenditures. While the remaining 23

percent is explained by other variables not examined in this study.

4.2.4 Interpretation of Analysis Results

Based on the statistical calculations that have been done, it can be concluded that the resulting regression is good enough to explain the factors that influence development inequality in the Province of North Sumatra for the period 2013-2016. But of all the variables studied all variables did not have a positive effect.

5 RESULT

Based on the results of the analysis that has been carried out regarding the factors that influence development inequality in North Sumatra province, the following conclusions are obtained :

a. From the coefficient of determination in the estimation results, the variables of development inequality in North Sumatra Province can be explained by the variables of GDP per capita, ipm and government expenditure can be explained by the model used.
b. The variables used explain the development inequality variables showing the direction of influence in accordance with the hypothesis. Per capita GRDP has a negative and significant effect, IPM has a negative and significant effect, and government expenditure also has a negative and significant effect.
c. The magnitude of the coefficient value of the variables that explain the variables of development inequality, the largest is the variable government expenditure, followed by successive variables per capita GRDP and HDI variables.

6 CONCLUSIONS

Based on the results of testing and discussion, the following are some suggestions related to the results of the study:

a. Development inequality in North Sumatra Province is still in the category of low inequality. However, the Government of North Sumatra Province is expected to continue to provide the greatest access to the community, especially the creation of new jobs so that the employment opportunities of the population are increasingly high. Thus it will increase per capita income which in turn will reduce the income disparity itself.
b. Besides increasing the per capita income of the population, the government should also make budget allocations that better accommodate the interests of the community, especially for vital accesses that can improve the quality of human resources.
c. Government expenditure is also an obstacle if it is not managed wisely which in turn will trigger development inequality. For this reason, management of government expenditure must prioritize aspects that require attention such as education, health, poverty alleviation and so on.

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