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Determinants of Economic Inequality Among Provinces in Sumatera Island

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ABSTRACT

This study aims to analyze the effect of Government Expenditure, Infrastructure, Total Working Age Population, and Domestic Investment on the Economic Inequality between provinces on Sumatra Island from 2012-2022. The analytical method used in this study is the Panel Data Regression method. The data type used is secondary data for 11 years (2012-2022) sourced from the Central Indonesia Statistic Agency, which is processed with the Eviews program. The study results show that Domestic Investment variables have a positive and significant effect on the Economic Inequality between provinces on Sumatra Island in 2012-2022. Meanwhile, the Infrastructure, Government Expenditure, and Total Working Age Population variables negatively and significantly affected the Economic Inequality between provinces on Sumatra Island from 2012-2022.

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INTRODUCTION

Development inequality is one of the unavoidable problems in a country's economy. Inequality does not occur naturally. It is created by humans, either through policies, institutions, greed in capital accumulation, rent-seeking, or other reasons (Eka Sastra, 2017). One indicator of successful development of a country/region is indicated by the rate of economic growth and the reduction of inequality both in the distribution of population income and between regions (Ihsan, et al 2019).

At In some developing countries, including Indonesia, economic inequality between regions has not decreased despite high economic growth rates. This is because development and economic growth are not directly felt by the people in each region. There are regions that are able to grow and develop quickly and there are regions that are unable to grow and continue to be underdeveloped (UNCFDF, 2013). For this reason, development goals should not only stop at a high rate of economic growth as has been done so far. However, economic growth must be accompanied by equitable distribution of income and alleviation of poverty and unemployment.

The development process is said to be successful if the level of economic inequality in a country/region decreases. The level of economic inequality can be measured by several parameters. Initially, Gross Regional Domestic Product (GRDP) and other harmonized indicators such as the level of government spending, investment, population, and inflation were used. However, these

indicators were replaced by the Williamson Index (IW). To provide an overview of the disparity between regions, the Williamson Index can be used (Sirojuzilam, 2008).

According to statistical science, the index developed by Jeffrey G. Williamson is actually a coefficient of variation. The basis for calculating the Williamson Index is by using Gross Regional Domestic Income (GRDP) per capita and the population of each regency/city. This index was first developed by Jeffrey G. Williamson, a Laird Bell Professor of Economics from Harvard University. Based on the calculation of the Williamson Index, it can be illustrated that the inequality that occurs in a region can be seen from the CVw value. If CVw = 0, then development is very equal. While the value of 1, means that regional development is very unequal. With this measurement tool, the government can see the level of economic inequality in the region and make it the focus of the problem to be solved. The following are the results of the calculation of the Williamson Index per archipelago in Indonesia during the study period, namely 2012 to 2022:

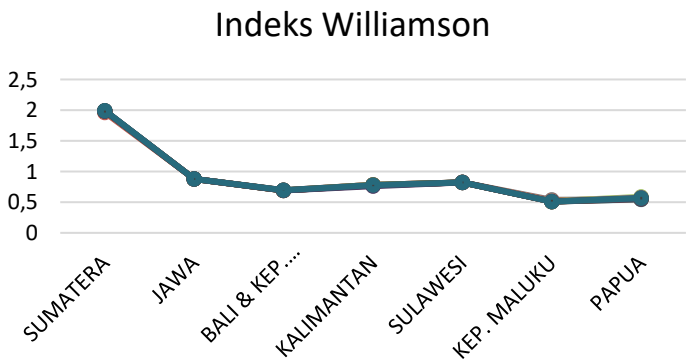

Figure 1. Williamson Index Chart by Indonesian Archipelago 2012-2022 (Data processed by researchers, 2024)

In Figure 1, it can be seen that the island of Sumatra has the largest economic inequality compared to other islands in Indonesia, and the distance between the economic inequality on the island of Sumatra and other islands is quite far. The economic inequality on the island of Sumatra is almost 2, while the other islands are still below 1. The lowest level of economic inequality is in the Maluku Islands at 0.510.

This can be influenced by several factors, one of which is the difference in geographical conditions of each region and the distance between the center of economic growth and the center of government, which affects government policies in development. Different geographical conditions, infrastructure availability, and development policies in each region trigger regional income inequality. Some regions can be more advanced and develop quickly because their economic activities develop rapidly and become places of economic growth and there are some regions that are less developed due to various factors. This causes economic inequality between regions.

Income inequality between regions can be caused by the size of direct expenditure in a region, the greater the direct expenditure, the greater the amount of budget allocated for programs and activities that directly touch the interests of the community (Darzal, 2018).

In addition to government spending, an important indicator to see the success of economic development is infrastructure. Infrastructure development is one part of the driver of economic growth and national development. Improving infrastructure can be a strategic choice made in terms of increasing growth and also equity in Indonesia. The availability of good infrastructure can encourage good economic growth as well, so that it can create new jobs (Iqbal et al., 2017).

With good facilities, it can increase people's per capita income and reduce the level of economic inequality. One of the main focuses during the current administration is infrastructure development. This was done by the government considering the lack of infrastructure available in Indonesian regions.

The program is included in the National Medium-Term Development Plan (RPJMN) with the aim of realizing the welfare of all levels of society. It can be seen that of the 7 (seven) RPJMN IV

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agenda for 2020-2024, there are 2 (two) tasks related to regional development with the aim of reducing inequality and strengthening infrastructure to achieve economic development and basic services (Bappenas, 2019). This is also in line with the Regional Medium-Term Development Plan (RPJMD) of North Sumatra Province in 2019-2023 which stipulates that the development of North Sumatra Province is prioritized to one of them, namely improving good and environmentally sound infrastructure (Bappeda North Sumatra, 2019).

Basically, every government will measure the economic inequality of its region with various indicators that are considered the most influential. This is done to see the differences in economic growth and development between regions.

LITERATURE REVIEW

1. Economic Development

Development, especially in the economic sector, is placed in the first place of all development activities. In the framework of economic development, efforts to equalize development in all regions and gradually increase people's income are expected to reduce inequality, backwardness and poverty. In general, economic development is defined as a process that causes Gross National Product (GNP) or community income to increase over a long period of time. Therefore, economic development has three important characteristics, namely: a process that means continuous change, an effort to increase people's per capita income, and an increase in people's per capita income that occurs in the long term (Sirojuzilam & Bahri, 2014: 3).

Todaro (2003) defines economic development as a multidimensional process that involves major changes to both changes in economic structure, social change, reducing or eliminating poverty, reducing inequality, and unemployment in the context of economic growth. A high rate of economic growth does not necessarily indicate development.

2. Economic Inequality

Economic inequality between regions is one of the problems that is difficult to avoid in the development of a country. Inequality can occur due to differences in the content of natural resources and differences in demographic conditions found in each region. From these differences, there are regions that are able to grow and develop quickly (growing points) and regions that grow slowly (lagging regions). Economic inequality between regions is the difference between developed and lagging regions as measured by the level of GRDP per capita between regions (Sjafrizal, 2018).

The impact of economic inequality can be positive or negative. The positive impact of economic inequality is that it can encourage other less developed regions to compete and increase economic growth so that welfare will be achieved. The negative impacts of economic inequality include economic inefficiency, weakening social stability and solidarity, and high inequality will often be seen as unfair (Todaro, 2011). These negative impacts of inequality will become a development problem in creating community welfare.

3. Williamson Index

The Williamson Index is a tool used to measure the level of economic inequality between regions using GRDP per capita and the population of each region as the basic data for its calculation. IW was introduced by Jefrey G Williamson in 1966 through a study on inter-regional development inequality in developed and developing countries using time series and cross-section data.

The IW component is composed of two components, namely the level of income distribution between regions as measured by gross regional domestic product per capita and the population of a region, and the population as measured by the number of people by sex and gender. The stages in calculating the Williamson Index are:

$$CVw = \frac{\sqrt{\Sigma}(Yi - \bar{Y})^2 . \mathrm{fi/n}}{\bar{Y}}$$

Where:
CVw = Williamson Index
Yi = GRDP per capita of region i (Province)
$\bar{Y}$ = GRDP per capita average of all regions (Sumatera Island)

Fi = Total population of region i (Province)
n = Total population of all regions (Sumatera Island)

The Williamson Index score ranges between 0 and 1. The closer to 1 means very unequal and vice versa if the IW value is close to 0 means very evenly distributed. According to Sjafrizal (2018) to see the development of the level of IW status in a region, 4 criteria are distinguished as below:

a. Very high inequality with an IW value > 1
b. High inequality with an IW value of 0.7 – 1
c. Moderate inequality with an IW value of 0.4 - 0.69
d. Low inequality with an IW value of <0.39

This grouping aims to organize regions into groups that are similar in terms of inter-regional development inequality.

4. Relationship Between Direct Government Expenditure and Interregional Economic Inequality

Government spending is one of the measurement tools used by local governments on the economy. The level of effectiveness of regional spending can be measured through how much economic growth can be achieved. According to (Niken, Inayati, 2021) in his research revealed that government spending has a positive and significant effect on the level of development inequality. This is because regional expenditure is more closely related to the Regional Budget (APBD), which will directly affect regional revenue and regional financing, so that it will directly affect economic growth. Then indirectly the perceived economic growth will cause inequality due to various factors. Decision-making in the allocation of regional budgets affects the size of inequality, because regions that can allocate to direct or investment expenditures tend to have faster economic growth than regions with little direct expenditure allocation.

RESEARCH METHODOLOGY

The type of research used in this study is descriptive research using a quantitative approach. Descriptive research is research that is used to analyze data by describing or describing the data that has been collected as it is without intending to make general conclusions or generalizations (Sugiyono, 2017). Quantitative approach is a research method used to research on certain populations or samples, data collection using research instruments and data analysis is statistical or quantitative with the aim of testing predetermined hypotheses.

According to (Sugiyono, 2012) dependent variables are often referred to as output variables, criteria, consequences or dependent variables. The dependent variable (bound) is the variable that is influenced or that is the result of the independent variable. Independent variables or often called free variables are variables that affect or cause changes and the emergence of dependent variables (Sugiyono, 2012). There are two variables in this study, namely:

Independent variables, namely:
X1 = Direct Expenditure
X2 = Infrastructure

The dependent variable, namely:
Y = Economic Inequality

The data used in this research is secondary data which is data taken from other parties or is data processed from a second party. The data collection technique in this study was carried out by reviewing journals, books, documents (both printed and electronic), or various publications of related agencies, such as the Central Bureau of Statistics of each province on the island of Sumatra which are considered relevant to the topic, focus or research variables to obtain the necessary data and information. The data analysis model used in this research is panel data regression analysis. According to Gujarati in Ghozali (2017: 195) states that the panel data technique is to combine cross-

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section and time series data types. The panel data regression analysis model is a regression test to determine the relationship between the dependent variable and more than one independent variable. The equation shown from the panel data regression analysis model is as follows:

$$Y = a + b1X1 + b2X2 + \cdots bnXn$$

Description:
Y = Dependent variable or dependent variable
b1, b2, ⋯ bn = Regression coefficient value
X1,X2, ..., Xn = Independent variable or independent variable

If there are 3 independent variables or independent variables, namely X1, X2, and X3, then the form of the regression equation is as follows:

$$Y = a + b1X1 + b2X2 + b3X3$$

A situation where the regression coefficients b1, b2, ⋯bn have a value:

1. Value = 0, Then in this case the dependent variable is not affected by the independent variable.
2. The value is negative, so in this case there is a relationship in the reverse direction between the dependent variable and the independent variable.
3. The value is positive, in this case there is a relationship in the same direction between the dependent variable and the independent variable.

RESULTS AND DISCUSSION

Panel Data Regression Analysis

The following are the results of panel data regression data processing using the Eviews application:

Table 1. Results of panel data regression analysis

Variable	Coefficients	Probability
(Constant)	0.147123	0.0799
X1	1.18E-11	0.0000
X2	-9.23E-05	0.0037

Source: (Research Result Data, 2024)

From the table above, the panel data regression equation can be written as follows:

$$Y = 0.147123 + 1.18E\text{-}11X1 - 9.23E\text{-}05X2$$

The above equation can be explained as follows:

1. The constant value is 0.147123, meaning that if all independent variables, namely government expenditure (X1) and infrastructure (X2), are zero, then the level of economic inequality (Y) is 0.147%.
2. The coefficient value of Government Expenditure (X1) is 1.18E-11, meaning that if the infrastructure variable (X2) is constant and government expenditure (X1) increases by 1 thousand rupiah, then the level of economic inequality (Y) will increase by 0.00000000118%. The coefficient is positive, meaning that government spending and economic inequality have a unidirectional relationship, so that if government spending increases, economic inequality will also increase, and vice versa.
3. The coefficient value of Infrastructure (X2) is -9.23E-05, meaning that if the government expenditure variable (X1) is constant and infrastructure (X2) increases by 1 km, the level of economic inequality (Y) will decrease by 0.00923%. The coefficient is negative, meaning that infrastructure and economic inequality have an unidirectional relationship, so that if infrastructure increases, economic inequality will decrease, and vice versa.

Partial Hypothesis Test (t-test)

The t test is used to test the significance of the model partially between the independent variables, namely Government Expenditure (X1) and Infrastructure (X2) on the Economic Inequality dependent variable (Y). The following are the results of the t test data processing:

Table 2. Partial Hypothesis Test Results (t-test)

Variable	Unstandardized Coefficients	T - Count	T - Table	Probability
X1	1.18E-11	5.499	1.982	0.0000
X2	-9.23E-05	-2.974		0.0037

Source: (Research Result Data, 2024)

From the table it can be explained that:

1. Government Expenditure (X1)

The analysis shows that the independent variable of government expenditure (X1) has a significant positive effect on the dependent variable of economic inequality (Y). This can be seen from the Coefficients value of 1.18E-11 which indicates a positive effect and seen from the calculated t value (5.4990) > the t table value (1.9822) indicating that there is an influence between the government expenditure variable on economic inequality and from the probability value of the significance of the regression results (0.0000) < the probability value (0.05) which indicates a significant effect.

2. Infrastructure (X2)

The analysis shows that the independent variable infrastructure (X2) has a significant negative effect on the dependent variable economic inequality (Y). This can be seen from the Coefficients value of -9.23E-05 which indicates a negative effect and seen from the calculated t value (2.9736) > t table value (1.9822) indicating that there is an influence between the infrastructure variable on economic inequality and from the significance probability value of the regression results (0.0037) < the probability value (0.05) which indicates a significant effect.

Simultaneous Hypothesis Test (F-test)

To test this hypothesis, the basic decision-making criteria are used. If the significant value is greater than 0.05 then Ho is accepted or Ha is rejected, this means that all independent variables have no joint influence on the dependent variable. If the significant value is smaller than 0.05 then Ho is rejected or Ha is accepted, this means that all independent variables have a joint influence on the dependent variable. This test also compares the value of f table and f count. The value of f table is determined by finding the value of the numerator and denominator degrees. Then the value of f table is 3.06. If f count is greater than f table then the hypothesis is accepted. The results of the F test can be seen in the following table:

Table 3. Simultaneous Hypothesis Test Results (F-test)

F-Count	F-Table	Probability	α	Description
5432.308	2.46	0.000	0.05	Influential

Source: (Research Result Data, 2024)

Based on the table above, it is known that the value of f count is greater than f table, which is 5432.308> 2.46 at α = 5% and a significance value of 0.000 <0.05. Thus, Ho is rejected and Ha is accepted. This indicates that the variables of government expenditure (X1) and infrastructure (X2) together (simultaneously) have a significant influence on the variable of economic inequality (Y).

Coefficient of Determination (R2)

The coefficient of determination or R2 is the contribution of the influence given by the independent variable on the dependent variable, or in other words, the coefficient of determination measures how far the model's ability to explain or explain the variation in the independent variable on the dependent variable. The value is 0 to 1, getting closer to 0 means that the model is not good

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or the variation of the model in explaining is very limited, on the contrary, the closer to 1, the better the model. The results of the coefficient of determination test can be seen in the following table:

Table 4. Coefficient of Determination Results (R2)

R – Square Value	Description
0.998	There is a Linkage

Source: (Research Result Data, 2024)

Based on Table 4, the Adjusted R-Square value of 0.998459 is obtained, which shows that the R^2 value is close to 1, meaning that the independent and dependent variables are related. This also explains that the government expenditure (X1) and infrastructure (X2) variables simultaneously influence the economic inequality variable (Y) by 99.85%, while the remaining 0.15% is influenced by other factors not included in the model estimation.

CONCLUSION

Based on the results presented, it can be concluded that partially the government expenditure variable has a positive effect on economic inequality. Meanwhile, the infrastructure variable partially has a negative effect on economic inequality. In this study, it can be seen that the variables of government expenditure and infrastructure have a large influence on economic inequality, amounting to 99.85%. Based on these findings, several recommendations are proposed that are expected to provide benefits to relevant stakeholders. For the government, to pay more attention and improve policies that will have an impact on economic inequality. For future researchers, to further expand research on economic inequality, both from more time series data and broader variables as well.

REFERENCES

[1] Albrecht, D. E., & Albrecht, C. M. (2007). Income Inequality: The Implications of Economic Structure and Social Conditions, Sociological Spectrum, 27(2), 165–181.

[2] Alrakhman, Dikko dkk. (2022). An Analysis on Inequality, Economic Growth, and Unemployment In Sumatera Island, Quality Access to Success, 23(190), 302-314.

[3] Amir, Amri. (2007). Perekonomian Indonesia. Biografika: Bogor

[4] Andhiani, Kartira Dorcas dkk. (2018). Analisis Pertumbuhan Ekonomi dan Ketimpangan Pembangunan di Wilayah Sumatera. Jurnal Perspektif Ekonomi dan Pembangunan Daerah, 7(1).

[5] Asih, W. (2015). Analisis Ketimpangan dalam Pembangunan Ekonomi Antar Kecamatan di Kabupaten Cilacap Tahun 2004-2013. Skripsi Universitas Negeri Yogyakarta.

[6] Basri, Faisal. (2002). Perekonomian Indonesia: Tantangan dan Harapan bagi Kebangkitan Indonesia. Erlangga: Jakarta.

[7] Boediono. (1999). Teori Pertumbuhan Ekonomi. BPFE: Yogyakarta

[8] Cai, F., Wang, D., & Du, Y. (2002). Regional disparity and economic growth in China, China Economic Review, 13(2–3), 197–212.

[9] Didia, K. A. (2016). Analisis Ketimpangan Pembangunan di Kawasan Kedungsepur. Economics Development Analysis Journal, 5(1), 101-108.

[10] Febriyanda, Andri. (2022). Analisis Ketimpangan Pembangunan Ekoomi di Pulau Sumatera. Skripsi Universitas Islam Negeri Ar-Raniry.

[11] Firdaus, M. (2013). Ketimpangan Pembangunan Antar Wilayah di Indonesia: Fakta dan Strategi Inisiatif. Orasi Ilmiah Guru Besar, 1-34.

[12] Gujarati, Damodar. (2006). Ekonometrika Dasa. Erlangga: Jakarta.

[13] Hasyim, A. I. (2016). Ekonomi Makro. PRENADAMEDIA GROUP: Jakarta.

[14] Hidayat, M., & Rahayu, S. (2018). Ketimpangan Pembangunan Antar Kabutapen/Kota di Provinsi Riau: Pendekatan Regresi Kuadratik. Jurnal Ekonomi Sakti, 7(1), 11-9.

[15] Hodijah, S. (2015). Analisis Penanaman Modal Asing di Indonesia dan Pengaruhnya Terhadap Nilai Tukar Rupiah. Jurnal Paradigma Ekonomika, 10(2), 350-362.

[16] Ilham, M., & Pangaribowo, E. H. (2017). Analisis Ketimpangan Ekonomi Menurut Provinsi di Indonesia Tahun 2011-2015. Jurnal Bumi Indonesia, 6(4), 1-10.

[17] Jhingan, M.L. (2008). Ekonomi Pembangunan dan Perencanaan. Raja Grafindo Persada: Jakarta.

[18] Kiton, M. A. (2019). Analisis Ketimpangan Pembangunan Ekonomi di Provinsi Sumatera Utara. Jurnal Ilmiah Smart, 3(2), 68-80.
[19] Ridho, Muhammad. (2022). Analisis Ketimpangan Pembangunan Wilayah Antar Provinsi di Pulau Sumatera. Jurnal Perspektif Ekonomi dan Pembangunan Daerah, 11(1).
[20] Sjafrizal. (2012). Pertumbuhan Ekonomi dan Ketimpangan Regional Wilayah Indonesia Bagian Barat. Jurnal Buletin Prisma.
[21] Sugiyono. (2017). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alfabeta CV: Bandung.
[22] Sukirno, Sadono. (2013). Pengantar Teori Makroekonomi. Raja Grafindo Persada: Jakarta.
[23] Walujadi, Dedi dkk. Determinants of Income Inequality Among Provinces: Panel Data Evidence from Indonesia, Quality Access to Success, 23(190), 243-250.
[24] Widiyanto. (2013). Statistika Terapan. PT. Elex Media Komputindo: Jakarta.
[25] Williamson, J.G. (1965). Regional Inequality and the Process of National Development, a Description of the Patterns. Economic Development and the Cultural Change, 3(4), 1-84.