PAPER – OPEN ACCESS

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DOI : 10.32734/lwsa.v8i1.2390
Electronic ISSN : 2654-7066
Print ISSN : 2654-7058

Volume 8 Issue 2 – 2025 TALENTA Conference Series: Local Wisdom, Social, and Arts (LWSA)

LWSA Conference Series 08 (2025)
TALENTA Conference Series
Available online at https://talentaconfseries.usu.ac.id

Analysis Of The Effect Of Economic Growth, HDI, Agglomeration And Local Government Spending On Development Inequality Between City Regions In North Sumatra Province

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Abstract

The purpose of this study is to analyze the factors that influence development inequality between urban areas in North Sumatra Province, namely Economic Growth, HDI, Agglomeration, and Local Government Expenditure. This study uses panel data analysis method with Fixed Effect Model (FEM) estimation to determine the effect of independent variables on the dependent variable. Development inequality between regions is measured using the concept of Relative GRDP per Capita which was popularized by Jaime Bonet (2006). Based on the results of panel data regression analysis with FEM estimation, it shows that the economic growth variable has a positive and insignificant effect on the development inequality of urban areas in North Sumatra Province. HDI has a positive and significant influence on the development inequality of urban areas in North Sumatra Province. Agglomeration has a negative and significant influence on the development inequality of city regions in North Sumatra Province. Government capital expenditure has a positive and insignificant effect on the development inequality of city regions in North Sumatra Province.

Keywords: Interregional Development Inequality; Economic Growth; HDI; Agglomeration; Local Government Capital Expenditure Local Government

1. Introduction

The economic growth rate in North Sumatra is the fifth largest on the island of Sumatra after South Sumatra with an average growth rate of 4.71%, Bengkulu 4.69%, Jambi 4.66%, West Sumatra 4.62%. If from the condition of the quality of human resources as measured by the Human Development Index (HDI), then North Sumatra Province is included in the high category because the average HDI for the last 10 years is above 70. When viewed from the data on the rate of economic growth and also the value of HDI in North Sumatra Province is quite good, but very different from the level of development inequality that exists in North Sumatra Province.

The development of the Williamson Index in North Sumatra Province in urban areas from 2018 to 2021 has decreased but has increased again in 2022. The average Williamson Index for the last 5 years is 0.84. When viewed from the Williamson Index formulation used according to Sjafrizal (2012) if the inequality index number is between 0.7-1 then the inequality is in the high category.

Selection and peer-review under responsibility of Event of Young Researcher and Economics Students (EVEREST) VIII
p-ISSN: 2654-7058, e-ISSN: 2654-7066, DOI: 10.32734/lwsa.v8i1.2390

Table 1. Inter-regional Inequality among Cities in North Sumatra Province 2011-2020

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sibolga	0.16	0.16	0.03	0.05	0.08	0.10	0.11	0.12	0.16	0.14
Tanjungbalai	0,10	0.13	0.13	0.13	0.12	0.11	0.10	0.08	0.07	0.05
Pamatangsiantar	0.20	0.01	0.12	0.03	0.04	0.04	0.03	0.01	0.01	0.05
Tebing Tinggi	0.26	0.34	0.33	0.33	0.33	0.33	0.34	0.34	0.34	0.36
Medan	0.84	0.75	0.76	0.78	0.82	0.87	0.88	0.91	0.93	0.82
Binjai	0.04	0.22	0.23	0.23	0.23	0.24	0.24	0.24	0.23	0.26
Padangsidempuan	0.51	0.48	0.48	0.49	0.49	0.48	0.48	0.48	0.48	0.47
Gunung Sitoli	0.25	0.37	0.37	0.37	0.36	0.34	0.33	0.31	0.29	0.23

Source : BPS North Sumatra Province 2024 (Data Processed)

2. Literature Review

2.1. Development inequality between regions

According to Sjafrizal (2012: 107), economic development inequality between regions is a common phenomenon that occurs in the process of economic development of a city area. This imbalance is initially caused by differences in the content of natural resources and differences in demographic conditions found in each region. As a result, the ability of cities to increase economic growth and drive the development process is also different.

Regional inequality is also the inequality of income received between one region and another. To measure regional inequality, we can use the concept of relative GRDP per capita. This inequality uses the formulation used in Jaime Bonet's research (2006).

2.2. Economy growth

According to classical economic theory, economic growth depends on market mechanisms, namely the actors of economic activity and the importance of division of labor and specialization. The economic actors who are very influential on economic growth according to Schumpeter are entrepreneurs. This is because entrepreneurs are able to provide innovation in the production process. In addition, another important thing that affects economic growth according to Neo-Classical and Harrord-Domar economic theory is the accumulation of capital that is able to develop new technology so that labor savings occur and production can run more efficiently.

2.3. Human Development Index (HDI)

Human resources (HR) are one of the factors that influence the success of development in a region, both in terms of quantity and quality. Thus, each city is expected to develop quality human resources and human development is needed evenly.

2.4. Agglomeration

According to Montgomery in Kuncoro (2002) agglomeration is the spatial concentration of economic activity in urban areas due to savings due to proximity.

2.5. Local government expenditure

Regional expenditures are prepared to fund the implementation of regional government affairs government affairs that fall under the authority of the provincial government, and which consists of mandatory and optional affairs.

3. Research Method

The type of data used is secondary data, which comes from publications published by the North Sumatra Central Bureau of Statistics (BPS). The secondary data used is a combination of time series from 2011-2020 and cross section of 8 cities, data representing 10 years and as much as 8 data representing provinces in North Sumatra, namely Sibolga, Tanjungbalai, Pamatangsiantar, Tebing Tinggi, Medan, Binjai, Padang Sidempuan, Gunung Sitoli. This study uses one dependent variable and four independent variables. The dependent variable in this study is Development Inequality (Y), while the independent variables in this study are economic growth, HDI, agglomeration and local government spending. The method used to answer this research is Panel data with the following model.

$$\text{INEQUALITY} = \beta 0 + \beta 1\text{PEit} + \beta 2\text{IPMit} + \beta 3\text{AGLOit} + \beta 4\text{BELANJAit} + \varepsilon\text{it}$$

3.1. Model specification test

Model specification test To determine the best model for panel data regression analysis among PLS, FEM and REM, several stages of testing are needed. The test consists of two stages, namely the Chow Test and the Hausman Test. The following is an explanation of each model specification test:

- Chow Test
- Hausman Test

3.2. Statistical test

After conducting the model specification test, the next step is statistical testing. In this study, several statistical tests were carried out, namely:

- *Partial Significance Test (t-Statistic Test)*
  The t test is carried out to determine the effect of the independent variable partially (each variable) on the dependent variable.
- *Simultaneous Significance Test (F-Simultaneous Test)*
  The F test was conducted to determine whether all independent variables simultaneously (together) had an effect on the dependent variable.

4. Results and Discussion

After conducting the chow test and Hausman test, the Fixed Effect Model (FEM) is the best panel data model in this study and can be explained by the following equation:

Dependent Variable: Y
Method: Panel Least Squares
Date: 01/18/24 Time: 11:42
Sample: 2011 2020
Periods included: 10
Cross-sections included: 8
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.224984	0.538096	-4.134918	0.0001
X1	0.001611	0.002411	0.668314	0.5062
X2	0.005031	0.001878	2.679613	0.0092
LOGX3	-0.540608	0.082136	-6.581862	0.0000
LOGX4	-0.004897	0.016120	-0.303782	0.7622

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.980928	Mean dependent var	0.306875
Adjusted R-squared	0.977843	S.D. dependent var	0.246662
S.E. of regression	0.036716	Akaike info criterion	-3.633733
Sum squared resid	0.091668	Schwarz criterion	-3.276429
Log likelihood	157.3493	Hannan-Quinn criter.	-3.490480
F-statistic	317.9561	Durbin-Watson stat	1.256440
Prob(F-statistic)	0.000000		

Table 2. Result of Fixed Effect Model (Source: Researcher Processed Data)

$$\text{INEQUALITY} = -2{,}2249 + 0{,}0016\ \text{X1} + 0{,}0050\ \text{X2} - 0{,}5406\ \text{LOGX3} - 0{,}0048\ \text{LOGX4}$$

The effect of independent variables on the dependent partially as follows:

- The results of the t test on variable X1 obtained a calculated value of 0.668314 < t table, namely 1.99084 and a Sig value of 0.5062> 0.05, then ha is rejected and h0 is accepted, meaning that the economic growth variable has no significant effect on development inequality between cities in North Sumatra.
- The t test result of variable X2 obtained a calculated value of 2.679613> t table which is 1.99084 and a sig value of 0.0092 < 0.05, then H0 is rejected and ha is accepted, meaning that the X2 HDI variable has a significant effect on development inequality among cities in North Sumatra.
- The t-test result of variable X3 obtained a calculated value of -6.581862 < t count which is 1.99084 and a sig value of 0.0000 < 0.05, then H0 is rejected and ha is accepted, meaning that variable X3 agglomeration has a significant effect on development inequality among cities in North Sumatra.

- The results of the t test of variable X4 obtained a calculated value of -0.7622 < t count which is 1.99084 and a sig value of 0.7622> 0.05, then Ha is rejected and h0 is accepted, meaning that variable X4 regional expenditure has no significant effect on development inequality between cities in North Sumatra.

5. Conclusions

This study was conducted to determine the effect of economic growth, HDI, agglomeration and city government capital expenditure on development inequality between city regions in North Sumatra Province. Based on the test results, the best panel data regression used is the Fixed Effect Model (FEM). The author obtained the following conclusions:

1. Economic growth has a positive and insignificant influence on development inequality among urban areas in North Sumatra Province.
2. Human Development Index (HDI) has a positive and significant influence on development inequality among urban areas in North Sumatra Province.
3. Agglomeration has a negative and significant influence on development inequality among city regions in North Sumatra Province.
4. Government capital expenditure has a negative and insignificant effect on development inequality among city regions in North Sumatra Province.
5. All independent variables in this study, namely economic growth, HDI, agglomeration, and local government capital expenditure, simultaneously or jointly affect development inequality among city regions in North Sumatra Province. If there is a change in the variables of economic growth, HDI, agglomeration, and local government spending, it will jointly change the development inequality between regions in the object of research, namely the city regions in North Sumatra.

References

[1] Amir, M.S, (2004). "Strategi Memasuki Pasar Ekspor", PPM, Jakarta.
[2] Basuki, dkk, (2016). "Analisis Regresi Dalam Penelitian Ekonomi & Bisnis", PT Rajagrafindo Persada, Depok.
[3] Ibnu, M. N., dkk, (2022). "Pengaruh Luas Lahan dan Jumlah Produksi terhadap Ekspor Karet Alam Di Indonesia", *Jurnal Ekonomi Pertanian Unimal,* (5)4, 1-16.
[4] Manumono, Danang, dan Listiyani, (2022). "Kajian Perkembangan Teh di Indonesia", *Jurnal Agrifitia, Yogyakarta,* (2)2, 133-146.
[5] Agung, Kurniawan. 2005. Transformasi Pelayanan Publik. Yogyakarta. Penerbit Pembaharuan
[6] Arikunto, S. 2006. Prosedur Penelitian Suatu Pendekata Praktik. Jakarta : PT Rineka Cipta
[7] Bastian, I. (2011). Akuntansi Sektor Publik Di Indonesia. Yogyakarta: BPFE Drucker, Peter. (1964). Managing for result. New York: Harper & Row
[8] Ellen Christina dkk. 2011. Anggaran Perusahaan : Suatu Pendekatan Praktis. Jakarta : PT Gramedia Pustaka.
[9] Ekuivalensi : Jurnal Ekonomi Bisnis, 239-257.
[10] Sukirno, Sadono., (1997). "Pengantar Teori Makroekonomi", *Raja Grafindo Persada*, Jakarta.
[11] Widarjono, Agus. 2009. *Ekonometrika Pengantar dan Aplikasinya, Edisi Ketiga*.Yogyakarta: Ekonesia.
[12] Yunianto, Dwi. "Analisis Pertumbuhan Dan Kepadatan Penduduk Terhadap Pertumbuhan Ekonomi." *Forum Ekonomi*. Vol. 23. No. 4. 2021