Jurnal Ekonomi Pembangunan
Volume 20 (2): 181-192, December 2022
P-ISSN: 1829-5843; E-ISSN: 2685-0788

Research article

The Effect of Economic Growth, Fiscal Decentralization, Fiscal Stress, and Economic Openness on Regional Inequality

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Article Info: Received: 5 October 2022; Accepted: 29 December 2022; Published: 31 December 2022

Abstract: Regional inequality is a phenomenon that occurs universally in all countries, regardless of their size and level of development. Regional inequality is basically caused by differences in the content of natural resources and demographic conditions in each region This study aims to determine the effect of economic growth, the degree of fiscal decentralization, fiscal stress, and economic openness on regional inequality between provinces in Sumatra during the 2010-2020 period. The method used in this study is the panel data regression analysis method using the Random Effect Model. The results showed that simultaneously economic growth, degree of fiscal decentralization, fiscal stress and economic openness influenced regional inequality. Partially, economic growth and the degree of fiscal decentralization have a negative but not significant effect on regional inequality, while fiscal stress has a positive but not significant effect on regional inequality, and economic openness has a positive and significant effect on regional inequality. The implication of this research is that local governments need to adopt policies to impose restrictions on exports and imports, such as barriers in the form of quotas or tariffs.

Keywords: Economic growth, fiscal decentralization, fiscal stress, economic openness, inequality

JEL Classification: D63, E62, F43

Abstrak: Ketimpangan wilayah merupakan fenomena yang terjadi secara menyeluruh di semua negara, terlepas dari ukuran dan tingkat pembangunannya. Ketimpangan wilayah pada dasarnya disebabkan oleh perbedaan sumber daya alam dan kondisi demografis dimiliki masing-masing wilayah**.** Penelitian ini bertujuan untuk mengetahui pengaruh pertumbuhan ekonomi, derajat desentralisasi fiskal, *fiscal stress* dan keterbukaan ekonomi terhadap ketimpangan wilayah antarprovinsi Pulau Sumatra pada periode 2010-2020. Metode yang digunakan dalam penelitian ini adalah metode analisis regresi data panel dengan menggunakan *Random Effect Model*. Hasil penelitian menunjukkan bahwa secara simultan pertumbuhan ekonomi, derajat desentralisasi fiskal, *fiscal stress* dan keterbukaan ekonomi berpengaruh terhadap ketimpangan wilayah. Secara parsial, pertumbuhan ekonomi dan derajat desentralisasi fiskal berpengaruh negatif namun tidak signifikan terhadap ketimpangan wilayah, sedangkan *fiscal stress* berpengaruh positif namun tidak signifikan terhadap ketimpangan wilayah dan keterbukaan ekonomi berpengaruh positif dan signifikan terhadap ketimpangan wilayah. Implikasi dari penelitian ini adalah pemerintah daerah perlu mengambil kebijakan untuk melakukan pembatasan dalam ekspor dan impor seperti hambatan berupa kuota atau tarif.

Kata kunci: Pertumbuhan ekonomi, desentralisasi fiskal, *fiscal stress*, keterbukaan ekonomi, ketimpangan

How to Cite:
Putri, H. T., Susetyo, D., Marissa, F., & Sukanto. (2022). The Effect of Economic Growth, Fiscal Decentralization, Fiscal Stress, and Economic Openness on Regional Inequality. *Jurnal Ekonomi Pembangunan, 20*(2), 181-192. DOI: 10.29259/jep.v20i219113

1. INTRODUCTION

Economic development is a process in which the government and all members of society manage existing resources and then establish cooperation between local governments and the private sector to create new jobs and stimulate the development of economic activities in the region (Andhiani et al., 2018). Humans play an important role in carrying out economic development, namely as workers, components of development, and consumers of the results of these developments. The aim of economic development is to improve the economic and social welfare of the people (Kurniawan, 2017). One indicator of the success of a region's development is economic growth. In the implementation of development, high economic growth is accompanied by an equitable distribution of development results. However, in reality, higher economic growth causes inequality in development in each region (Andhiani et al., 2018).

There have been many theories that try to explain the problem of inequality and provide solutions to achieve a more even situation. To comprehensively explain and reduce regional inequality is indeed difficult (Priatama et al., 2022). The issue of inequality has caused scientists to debate at length about the theories, findings, and policies to follow (Wei, 2015). Regional inequality is a phenomenon that occurs universally in all countries, regardless of their size and level of development. Regional inequality is basically caused by differences in the content of natural resources and demographic conditions in each region. As a result of these differences, the ability of a region to promote the development process is different; therefore, it is not surprising that each region usually has developed and underdeveloped regions (Baransano et al., 2016). The differences in each region can cause the growth rates of each region to also be different. Therefore, in development, economic growth is often the benchmark for whether the development carried out is successful or not. Economic growth is an important indicator that can determine the success of development in increasing productivity in economic activity which is expected to provide a trickle-down effect on welfare society (Farida et al., 2021).

Kuznets's work on relationships between economic growth and inequality is one of the best-known studies (Lyubimov, 2017). In the short term, there is a positive correlation between economic growth and income inequality, but in the long term, the relationship between the two becomes negative. This means that in the short term, increased economic growth will be followed by increased income inequality, and in the long term, increased economic growth will be followed by a decrease in inequality (Nuryanto, 2017). Kuznets Hypothesis predicts that in the early stages of growth, income distribution tends to worsen so that resulting an increasing in inequality (Apriyani, 2021). This observation is called the “inverted-U” Kuznets curve, because the time series in the income distribution looks like an inverted U-curve. Additionally, to the stages of development as described by the Kuznets curve, the effect of economic growth on inequality also depends on which level of society benefits the most from this growth. If growth affects only the top of income groups, then inequality will increase. Conversely, if growth reduces the financial constraints of poor households, then inequality will decrease (Alamanda, 2020).

One of the policies implemented by local governments to reduce inequality in a region is by implementing fiscal decentralization policies. Based on Kyriacou et al.'s research (2017), he supports the idea that fiscal decentralization tends to reduce inequality but does not support the idea that regional inequality has a major impact on fiscal decentralization. The results have a positive or negative impact depending on the data, the type of data, and the estimation method used. Regarding inequality, Roy et al. (2021) informed that one of implications of fiscal decentralization has a positive effect on inequality.

Fiscal stress is also one of the problems that can hinder the development process of a region. Fiscal stress can be interpreted as a condition of being below budget. It arises if the government of a region is unable to support regional expenditures independently or when local own-source revenue, as a source of regional income, cannot afford capital expenditures. Then the situation becomes a situation of fiscal stress. Regional fiscal stress can be overcome if each region can explore the existing potential to the maximum, so that regional spending does not depend on central transfer funds. According to Zhang et al. (2017), there is no research that suggests one right way to find out the causes of fiscal stress.

The relationship between economic openness and regional inequality is still a matter of debate. Some views reveal that economic openness can reduce the level of regional inequality. Dorn et al. (2022) conducted research on the effect of economic openness on inequality in 139 countries in the 1970–2014 period. The results of his research show that economic openness in developing countries can reduce income inequality, while in developed countries it increases it. In Daumal's research (2013), trade openness has a contributes to reducing regional inequality. Based on the background that has been described, it can be concluded that regional inequality is one of the problems in implementing development. If regional inequality is allowed to continue, it will create poverty groups in remote, isolated, critical, and resource-poor areas. This study uses the variables of economic growth, degree of fiscal decentralization, fiscal stress, and economic openness to determine the effect of these four variables on regional inequality among the provinces of Sumatra during 2010-2020.

2. RESEARCH METHODS

2.1. Data collection

This study takes a quantitative approach. The data in this research is secondary data. The dependent variable in this study is regional inequality, which is calculated using the Williamson index, while the independent variable is economic growth, calculate by using gross regional domestic product at constant prices; the degree of fiscal decentralization, calculated by using local revenue to total regional income; fiscal stress, calculated using the realization of regional original income to the regional original income budget; and economic openness, calculated using exports and imports of gross regional domestic product in the provinces of Sumatra Island during 2010-2020. The data used comes from the Central Bureau of Statistics and the Directorate General of Fiscal Balance, Ministry of Finance.

2.2. Model

The data analysis technique used in this study is panel data analysis. The analytical technique used in this study is the same as that used in Fajri et al. (2016) study entitled "The Impact of Fiscal Autonomy, Economic Growth, and Regional Openness on Regional Inequality in Sumatra". Panel data analysis was carried out with the help of EViews software with the aim of knowing the effect of regional inequality on economic growth, degree of fiscal decentralization, fiscal stress, and economic openness. The following is the regression analysis equation that will be used:

$$RI = \beta_0 + \beta_1 ln(EG_{it}) + \beta_2 ln(DOFD_{it}) + \beta_3 ln\,(FS_{it}) + \beta_4 ln(EP_{it}) + e_{it} \quad (2)$$

Signifies RI is regional inequality; EG_{it} is the economic growth of a province i, and year t; $DOFD_{it}$ is the degree of fiscal decentralization of a province, i, and year t; FS_{it} is the fiscal stress of a province i, and year t; EP_{it} is the economic openness of a province i, and year t; e_{it} is random error.

3. RESULTS AND DISCUSSION

Provinces on the Sumatra Island are areas that are not exempt from the problem of inequality, given the existence of ten provinces on the island of Sumatra, which certainly have potential, superior sectors, and different problems. Regional inequality in the ten provinces of Sumatra Island can be seen based on an indicator of regional inequality, one of which is the Williamson Index. Table 1 shows the calculation of the Williamson Index in Sumatra from 2010 to 2020.

Table 1 reports the calculations using the Williamson index show that there is regional inequality in Sumatra. The Williamson index value in Sumatra during 2010-2020 was 0.40, which fluctuates every year. The province with the highest Williamson index score during 2010-2020 was South Sumatra Province at 0.71; this figure shows that inequality in South Sumatra is relatively high. Meanwhile, the province with the lowest Williamson index value is Bengkulu Province at 0.15; this figure shows that Bengkulu Province is in the low inequality category. The high value of the

Williamson Index in South Sumatra Province shows the magnitude of the challenge for local governments in solving this large inequality problem.

Table 1. The results of Williamson index in Sumatra from 2010 to 2020.

Province	Williamson Index											Avg
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Aceh	0,50	0,48	0,47	0,51	0,41	0,45	0,33	0,33	0,33	0,33	0,35	0,41
North Sumatra	0,66	0,67	0,55	0,58	0,58	0,58	0,56	0,57	0,57	0,58	0,56	0,59
West Sumatra	0,26	0,26	0,25	0,26	0,26	0,26	0,26	0,26	0,26	0,27	0,30	0,26
Riau	0,55	0,56	0,53	0,48	0,44	0,42	0,39	0,37	0,35	0,33	0,30	0.43
Jambi	0,53	0,52	0,51	0,50	0,48	0,42	0,44	0,46	0,49	0,47	0,44	0,48
South Sumatra	0,70	0,70	0,71	0,71	0,71	0,71	0,71	0,71	0,71	0,66	0,74	0,71
Bengkulu	0,12	0,11	0,11	0,13	0,12	0,12	0,12	0,14	0,12	0,49	0,12	0,15
Lampung	0,30	0,30	0,26	0,26	0,26	0,26	0,27	0,28	0,28	0,28	0,26	0,27
Bangka Belitung	0,18	0,18	0,18	0,18	0,19	0,19	0,19	0,20	0,20	0,21	0,20	0,19
Riau Island	0,55	0,53	0,53	0,52	0,51	0,51	0,50	0,50	0,46	0,45	0,44	0,50
Sumatera	0,43	0,43	0,41	0,41	0,39	0,39	0,38	0,38	0,38	0,41	0,37	0,40

Source: Authors calculation

Table 2 shows economic growth in Sumatra during 2010-2020, where economic growth fluctuated. The province with the highest average economic growth is Jambi, with a growth rate of 5.29 percent. In terms of business fields, the agricultural sector is the main factor for Jambi's economy, with a contribution of 31.56 percent to the GDP. The province with the lowest average economic growth is Riau, with a growth rate of 2.53 percent. The economy in Riau is supported by commodity exports, which is very risky when there is turmoil abroad. For example, a slowdown in the world economy will directly impact demand for palm oil, oil, and rubber commodities, which are the foundation of Riau Province.

Table 2. The economic growth in Sumatra from 2010 to 2020

Province	Economic Growth											Avg
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Aceh	2,74	3,28	3,85	2,61	1,55	(0,73)	3,29	4,18	4,61	4,14	(0,37)	2,65
North Sumatra	6,42	6,66	6,45	6,07	5,23	5,10	5,18	5,12	5,18	5,22	(1,07)	5,05
West Sumatra	5,94	6,34	6,31	6,08	5,88	5,53	5,27	5,30	5,14	5,01	(1,6)	5,02
Riau	4,21	5,57	3,76	2,48	2,71	0,22	2,18	2,66	2,35	2,81	(1,12)	2,53
Jambi	7,35	7,86	7,03	6,84	7,36	4,21	4,37	4,60	4,69	4,37	(0,46)	5,29
South Sumatra	5,63	6,36	6,83	5,31	4,79	4,42	5,04	5,51	6,01	5,69	(0,11)	5,04
Bengkulu	6,10	6,85	6,83	6,07	5,48	5,13	5,28	4,98	4,97	4,94	(0,02)	5,15
Lampung	5,88	6,56	6,44	5,77	5,08	5,13	5,14	5,16	5,23	5,26	(1,67)	4,91
Bangka Belitung	5,99	6,90	5,50	5,2	4,67	4,08	4,10	4,47	4,45	3,32	(2,30)	4,22
Riau Island	7,19	6,96	7,63	7,21	6,6	6,02	4,98	1,98	4,47	4,84	(3,80)	4,92
Sumatra	5,74	6,33	6,06	5,36	4,93	3,91	4,48	4,39	4,71	4,56	(1,25)	4,48

Source: Authors calculation

Table 3 reports the province with the highest average degree of fiscal decentralization in Sumatra during 2010–2020 was North Sumatra at 53.26 percent. This means that North Sumatra has a high level of fiscal independence, with 53.2 percent of total regional revenue coming from local sources. The province with the lowest average DDF is Aceh, at 14.5 percent. This means that the degree of fiscal decentralization in Aceh is still low because only 14.54 percent of the total regional revenue comes from local sources. The low original regional income shows that most of the regional income in Aceh comes from the central government, either through revenue-sharing or allocation funds.

Table 3. The degree of fiscal decentralization in Sumatra from 2010 to 2020

Province	The degree of fiscal decentralization											Avg
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Aceh	11,4	10,5	9,8	12,4	14,9	16,9	16,6	15,8	16,3	17,1	17,8	14,5
North Sumatra	65,7	72,1	56,2	55,3	56,8	57,5	47,4	43,2	44,4	44,0	42,8	53,2
West Sumatra	52,4	55,4	41,9	43,4	47,5	46,3	42,4	35.1	36,1	36,4	35,4	42,9
Riau	41,8	40,6	37,8	38,9	39,9	50,3	44,8	42,5	42,9	40,8	38,6	41,7
Jambi	41,8	47,3	37,5	36,8	40,4	39,6	37,2	36,7	37,5	35,3	34,8	38,6
South Sumatra	42,5	46,6	38,3	36,9	38,6	42,3	38,6	36,9	38,6	37,6	36,3	39,4
Bengkulu	35,0	37,7	30,9	30,9	33,8	32,1	31	28,6	30,5	28,1	25,5	31,3
Lampung	53,4	55,2	45,1	45,3	50,2	46,9	42,3	40,3	40,3	41,5	40,4	45,5
Bangka Belitung	38,6	38,4	31,6	32,4	37,7	37,1	29,4	31,5	33,2	30,6	28,5	33,6
Riau Island	28,1	33	29,2	31,9	36,6	40,2	36,4	33,6	34,8	33,3	34	33,7
Sumatra	41,1	43,7	35,8	36,4	39,6	40,9	36,6	34,4	35,5	34,5	33,4	37,4

Source: Authors calculation

According to Figure 1, the Riau Island had the highest average fiscal stress, with a score of 123.57. Bengkulu has the lowest average fiscal stress at 92.92, while Sumatra has the highest average fiscal stress at 106.12 between 2010 and 2020. Level of fiscal stress a high value indicates that spending on development is greater than existing income because it will have an impact on the government's financial performance in managing the budget for regional development.

Basically, local revenue that continues to increase can lower the level of fiscal stress in an area. The level of regional original income in Sumatra has fluctuated; this can be used as the cause of the high level of fiscal stress in the Riau Island. Then it is necessary to optimize regional revenue in the form of regional original revenue so that problems arising from fiscal stress can be reduced. As well as allocating regional income and expenditure budgets, it is necessary to increase capital expenditures so that development will be more advanced and developed and to be able to reduce problems of fiscal stress.

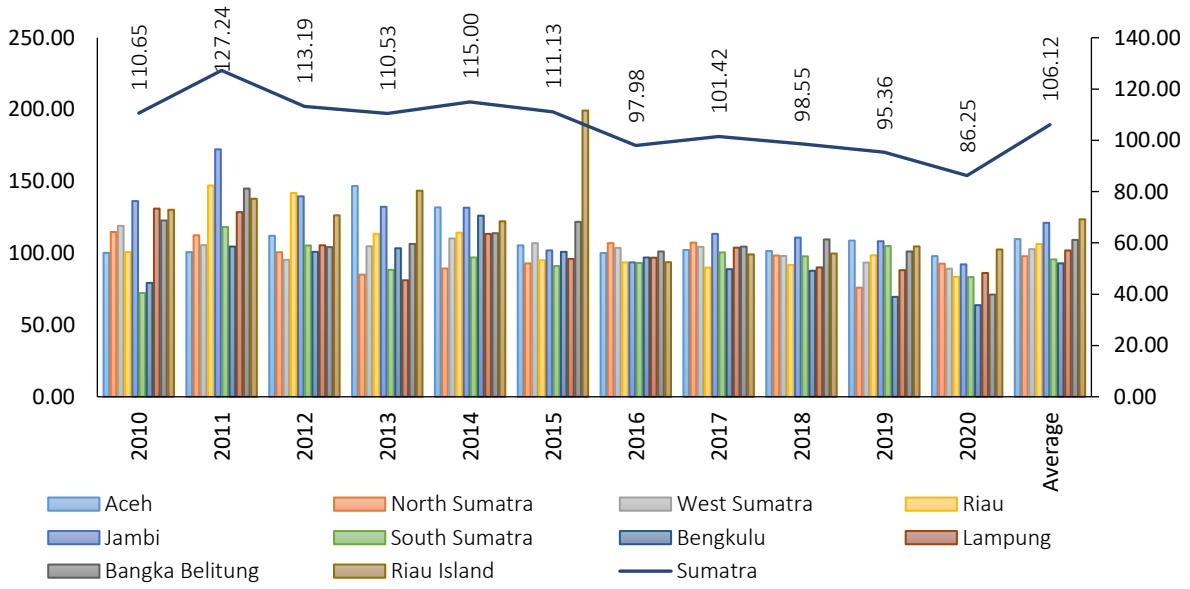

Figure 1. Fiscal stress in Sumatra from 2010 to 2020

Based on Figure 2, economic openness in Sumatra during 2010-2020 was quite high because the average value of economic openness was above 40 percent; during 2010-2020, only in 2016 was the value of economic openness in Sumatra below 40 percent. This high value of economic openness shows that Sumatra is an island that is very open to international trade traffic. The highest value of economic openness was in 2013, at 57.85 percent, where the Riau Archipelago was a province that made a large contribution. The Riau Island's export value in 2013 was 16.76 million USD, and the

import value was 12.25 million USD. The Riau Island made the greatest contribution to the value of economic openness between 2010 and 2020.

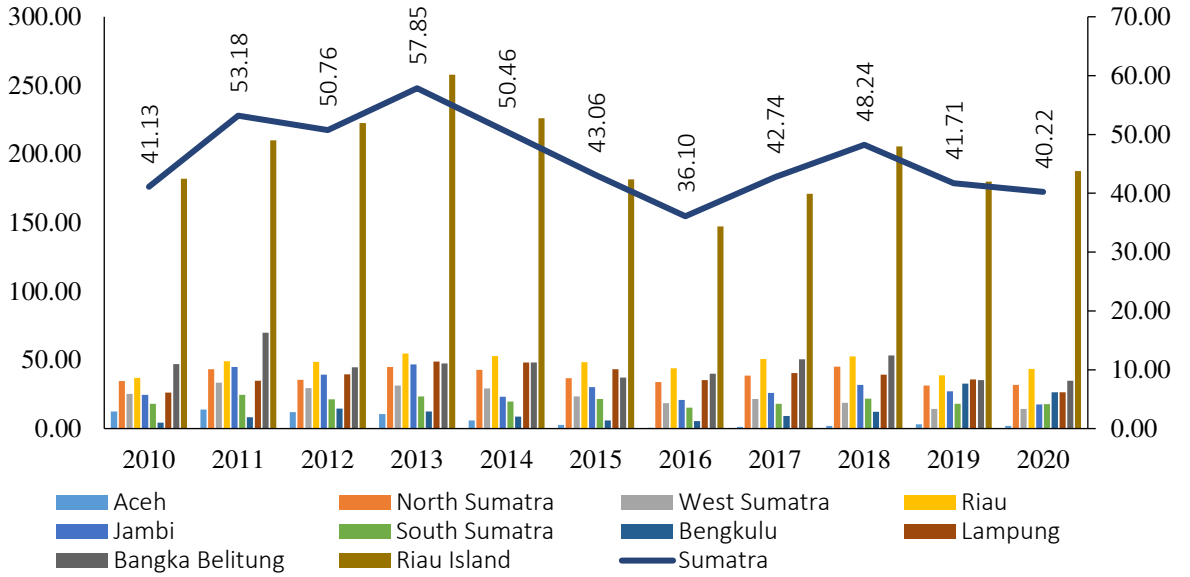

Figure 2. Economic openness in Sumatra from 2010 to 2020

3.1. Empirical Result

The model used in this research is the random effect. This is known from the Chow test, Hausman test, and Lagrange multiplier test. The Chow test results show a Chi-square probability value of 0.000 < 0.05. So, it can be concluded that the Chow test results refuse to use the common effect model and accept the fixed effect model. Then proceed with the Hausman test; the results show a probability value of 0.9687 > 0.05. So, it can be concluded that the Hausman test rejects the use of the fixed effect model and accepts the random effect model. Because the results of the Chow test and Hausman test are different, they are followed by the Lagrange multiplier test. The results of the Lagrange multiplier test show a Breusch-Pagan probability value of 0.0000 < 0.05, so it can be concluded that the results of the Lagrange multiplier test refuse to use the common effect model and accept the random effect model. So, the most appropriate model to use in this study is the random effect model. The following are the results of the random effect regression model:

Table 4. Regression results of panel random effect

Dependent variable: RI				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**
Constant	-1.248940	0.758185	-1.647275	0.1025
lnEG	-0.013027	0.043855	-0.297059	0.7670
lnDOFD	-0.140501	0.132125	-1.063395	0.2900
lnFS	0.045076	0.120330	0.374602	0.7087
lnEP	0.155973	0.038199	4.083202	0.0001
Summary:				
R^2	0.199338			
Adjusted R^2	0.168837			
F-statistic	6.535391			
Prob(F-statistic)	0.000098			
Diagnostic test				
Normality test	0.0783			
Multicollinearity test	< 0.80			

Source: Output EViews 9

Table 4 reports the results of the random effect model approach show that the t-stat value of the variables economic growth, degree of fiscal decentralization, and fiscal stress is smaller than t-table (1.65950) with a probability value greater than 0.05. This means that the variables of economic growth, degree of fiscal decentralization, and fiscal stress do not have a significant effect on regional inequality. Meanwhile, the t-stat value of the economic openness variable is greater than the t-table (1.65950) with a probability value of less than 0.05. This means that the variable level of economic openness has a significant effect on regional inequality. Then, for the f test, the value of f-stat > f-table (6.535351 > 2.459057) with a probability value of 0.000098 < 0.05 means that all independent variables jointly affect regional inequality.

The adjusted R-square random effect model value of 0.168837 (16.88%) means that the regional inequality variable can be explained by economic growth, degree of fiscal decentralization, fiscal stress, and economic openness to the tune of 16.88%, while the rest (100% - 16.88% = 83.12%) is explained by variables outside of this study. The results of the normality test were obtained at 0.078351, which is greater than 0.05. This indicates that the data is normally distributed. The results obtained from the multicollinearity test show that the correlation value between the independent variables is less than 0.80. So, it can be concluded that in the regression model there are no symptoms of multicollinearity between the independent variables.

3.2. The Effect of Economic Growth on Regional Inequality

Based on the results of panel data regression using the Random Effects Model of economic growth, the coefficient value is -0.013027. It means that economic growth has a negative effect on regional inequality in Sumatra during the 2010-2020 period. It is consistent with Kuznets hypothesis which states that in the long run, economic growth will reduce inequality. Thus, this study has been able to provide new evidence for Kuznets Hypothesis in Sumatra. However, this study finds that there is no significant relationship between economic growth and inequality in Sumatra. These results are not in line with research conducted by Danawati et al., (2016), the results show that economic growth has a positive and significant effect on inequality.

According to Chotia and Rao (2017), the absence of a relationship between inequality and economic growth can also be caused by infrastructure development that is concentrated in certain areas. Therefore, existence of insignificant effect in Sumatra was due because there was a relatively high concentration of production activities in a small number of provinces in Sumatra that South Sumatra and Riau which drive regional growth faster than other provinces. Meanwhile, most provinces in Sumatra have a low concentration of production activities which will encourage unemployment and low levels of income in the local community. Furthermore, due to the concentration of production activities in several provinces, it will encourage the developing of development centered on areas with high profit expectations, while other areas will be neglected. The gap on distribution of investment distributed in each region can lead to scarcity of capital which results in unequal development in Sumatra. This condition indicates even if development can be pursued by increasing the rate of economic growth, it does not mean that existing disparities between regions will immediately decrease.

In addition, the economic growth of each region is also contributed by the potential of different economic sectors. The development of the economic sector during this period has fluctuated. This causes economic growth to have no significant effect on regional inequality. The results of this study are the same as Andiny & Mandasari (2017), where the results of the study show that economic growth has no significant effect on regional inequality. Therefore, an effective way to reduce inequality is to improve infrastructure and the quality of education, health, and social welfare in underdeveloped areas (Li et al., 2017).

3.3. The Effect of the Degree of Fiscal Decentralization on Regional Inequality

Based on the results of panel data regression using the Random Effect Model, it is known that the variable degree of fiscal decentralization has a coefficient value of -0.140501 and a probability value of 0.29 > 0.05. It means that the degree of fiscal decentralization has a negative but not significant effect on regional inequality.

According to Izzati et al. (2021), the increasing in the level of independence of local governments in managing their finances should be able to improve people's welfare and reduce inequality and conversely. In practice, however, this did not occur in Sumatra during 2010–2020. This is reflected of conditions in North Sumatra, West Sumatra, Riau and Lampung. Although independence in managing regional finances as calculated by Fiscal Decentralization Degree Interval Scale has decreased over the period, the four provinces are still classified as "good" with an average of 40 to 50 percent. Meanwhile, Aceh, although the region's ability to manage regional finances has increased continuously in each period, it still not make it be independent region or remains in the less or low category. The low degree of fiscal decentralization indicates that the regions are still not independent in spending their own regional interests. Because of this, the regions still rely on transfer funds from the State Revenue and Expenditure Budget. This is consistent with Aditya (2020) which states that the low level of fiscal independence in several provinces is hinted at as a trigger for the Degree of Fiscal Desentralization (DDF) not having any effect on regional inequality. In addition, poor financial governance can also be a parameter of the DDF's no effect on regional inequality.

The degree of fiscal decentralization is an important aspect in the administration of regional government because the degree of fiscal decentralization describes the ability of the government to increase local revenue through taxes, fees, and so on. However, it must be admitted that the degree of fiscal decentralization in several provinces on the island of Sumatra is still low, meaning that these regions have not been able to finance their regional expenditures independently (Sutriani & Damanik, 2022). The results of this study are in line with research by Song's (2013), where fiscal decentralization from the expenditure side cannot reduce income inequality; instead increase levels of income inequality. However, this contradicts the research of Kyriacou et al., (2017), where the results show that increasing the degree of fiscal decentralization can reduce income inequality.

The low-level degree of fiscal decentralization indicates that the region is still not independent in spending its own regional interests. Therefore, the region still relies on transfer funds from the State Revenue and Expenditure Budget. The degree of fiscal decentralization is one of the important aspects of the implementation of regional government because the degree of fiscal decentralization describes the government's ability to increase regional original income through taxes, fees, and so on. However, it must be admitted that the degree of fiscal decentralization in several provinces on the island of Sumatra is still low, meaning that the regions were not able to finance their regional expenditures independently (Sutriani & Damanik, 2022). The results of this study are in line with Song's (2013) research, where fiscal decentralization from the expenditure side cannot reduce income inequality; instead, it increases the level of income inequality. However, it contradicts the research of Kyriacou et al., (2017), where the results show that increasing the degree of fiscal decentralization can reduce income inequality.

3.4. The Effect of Fiscal Stress on Regional Inequality

Based on the panel data regression method with the Random Effect Model variable, fiscal stress shows a coefficient value of 0.045076 with a probability value of 0.70 < 0.05. This means that fiscal stress has a positive but not significant effect on regional inequality. Fiscal stress has a positive but not significant effect on regional inequality because fiscal stress in Sumatra during 2010-2020 was relatively high enough that it had an impact on the government's financial performance in managing the budget for regional development. The fiscal stress that occurs in Indonesia is mostly caused by declining local-own source revenue results while the demand for public services to the community continues to increase, which is reflected in the increasing number of regional fiscal needs, resulting in regions experiencing fiscal stress because of the difficulty of financing regional needs. Besides that, in recent years there has also been a decline in the value of the plantation sector's commodities, which is the leading sector in Sumatra, causing the local economy to decline and the impact on local-source revenue acquisition to become uncertain.

There are ten provinces in Sumatra that have not been able to run their government independently. The use of transfer funds from central government has exceeded local revenue in financing development in Sumatra. It shows that the role of local revenue is smaller than total

revenue receipts. It can be interpreted that the preparation of the regional budgetary has not been supported by the concept of regional financial independence. so that, it will obstruct the process of economic development in Sumatra which will eventually lead to a gap in inequality.

3.5. The Effect of Economic Openness on Regional Inequality

Based on the results of panel data regression with the Random Effect Model, it is known that the economic openness variable shows a coefficient value of 0.155973 with a probability value of 0.0001 < 0.05. This means that economic openness has a positive and significant effect on regional inequality in Sumatra. This result is contrary to Barua & Chakraborty's research (2010) where the results show that increased economic openness can reduces regional disparities. In accordance with the opinion of Cahyadi et al. (2021) which states that the higher the economic openness, the higher the economic activity especially exports and imports activities. But it is not valid if only dominated by one region while other regions are not. The results show that economic openness has a positive effect on regional inequality caused by dominating exports and imports activity by Riau Island Province. In 2020 the total exports of Riau Island reached USD 12 billion; the total value of these exports decreased by 6.5 percent compared to 2019 which reached USD 11.9 billion. Imports in 2020 increased by 4.6 percent where total imports reached USD 11.26 billion, this increase was largely due to increased imports in the non-oil and gas sector.

The results of this study are in line with the research of Fajri et al. (2016) where an increase in economic openness will increase inequality. So that, there is a need for restrictions on export and import activities. Restrictions are carried out by implementing several barriers such as quotas, tariffs, and others. According to Samuelson and Stopler theorem, lowering tariffs can increase economic openness if an area has a lot of low-skilled workers. This is because by lowering tariffs, there will be a decrease in wages for high-skilled workers and an increase in wages for low-skilled workers, so that it will reduce inequality (Winter et.al, 2004). The results of this study are in line with the research of Dorn et al. (2022), who found that economic openness in developed countries can increase income inequality. This result contradicts the research by Daumal (2013), whose results show that economic openness reduces regional inequality.

4. CONCLUSIONS

Based on the results and discussions that have been described previously, the conclusion of this study is that economic growth, degree of fiscal decentralization, fiscal stress, and economic openness affect regional inequality simultaneously. Partially, economic growth and the degree of fiscal decentralization have a negative but not significant effect on regional inequality, while fiscal stress has a positive but not significant effect on regional inequality, and economic openness has a positive and significant impact on regional inequality. Policy implications that can be taken by the government to reduce regional inequality are that the regional government needs to apply growth centers evenly in Sumatra to advance the growth center development system in remote areas. Local governments also need to impose export and import restrictions because, as shown in this study, variable economic openness increases regional inequality. There must be constraints in the form of quotas or tariffs.

ACKNOWLEDGEMENT

The author would like to thank the development economics study program, Faculty of Economics, Sriwijaya University, for providing the opportunity and guidance in completing this research.

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